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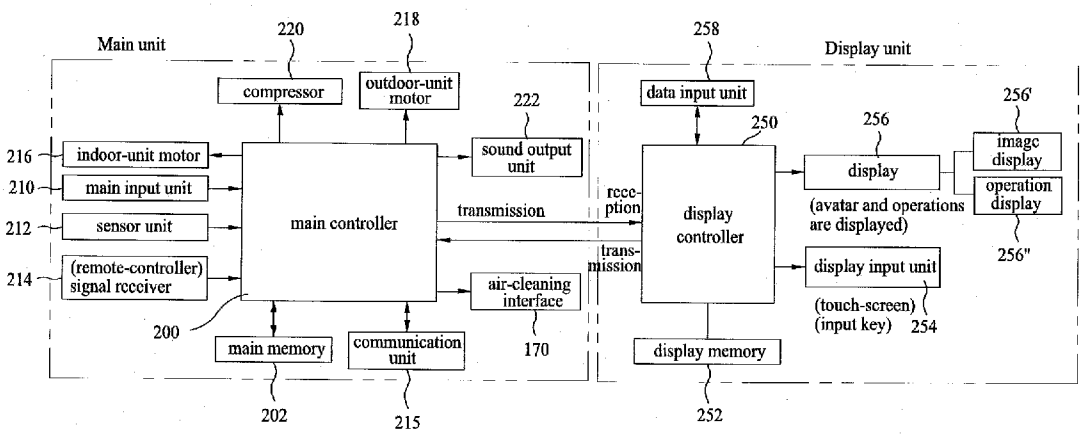
(54) **Title:** AIR CONDITIONER



(57) **Abstract:** An air-conditioner invention includes an electronic album for editing/storing a plurality of photo-images. The photo-images can be displayed/edited on the display. The air-conditioner includes a memory for storing variety of data to be displayed on the display. The data stored in the memory is stored while being classified according to folders, and the stored data is displayed in the form of various shapes. Therefore, the air-conditioner can easily manage variety of data according to data types, such that a user can easily search for desired data in the memory, resulting in greater convenience of the user.

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Description

AIR CONDITIONER

Technical Field

[1] The present invention relates to an air-conditioner, and more particularly to an air-conditioner for performing an electronic album function to edit/store images, and displaying the stored data in the form of various shapes.

Background Art

[2] Generally, an air-conditioner is arranged at any indoor space or wall of an office or household, and acts as a heating/cooling device for heating/cooling room air. The air-conditioner includes a compressor, a condenser, an expansion valve, and an evaporator, such that it configures a cooling cycle. In this case, the compressor, the condenser, the expansion valve, and the evaporator are sequentially connected.

[3] Specifically, the air-conditioner includes an outdoor unit (i.e., an outdoor or heat-radiation side) arranged outdoors and an indoor unit (i.e., an indoor or heat-absorbing side) arranged indoors. The outdoor unit includes a condenser (i.e., an outdoor heat-exchanger) and a compressor. The indoor unit includes an evaporator (i.e., an indoor heat-exchanger).

[4] As well known to those skilled in the art, the air-conditioner is generally classified into a separation-type air-conditioner wherein an indoor unit and an outdoor unit are installed separately from each other, and an integration-type air-conditioner wherein an indoor unit and an outdoor unit are integrated in one unit.

[5] FIG. 1 shows the appearance of an indoor unit for use in a conventional separation-type air-conditioner.

[6] Referring to FIG. 1, the separation-type air-conditioner is divided into an indoor unit 10 and an outdoor unit (not shown), and includes a refrigerant pipe (not shown) located between the indoor unit 10 and the outdoor unit.

[7] Lateral- and back- appearances of the indoor unit 10 are formed by a cabinet 20 configured in the form of a vertically-elongated shape. A base 22 is located under the cabinet 20, and a front panel 24 forming a front frame of the indoor unit 10 is located on the top of the base 22.

[8] A display 30 for displaying operation states of the air-conditioner is located at the center part of the front panel 24. A button unit 32 composed of a variety of buttons for operating the air-conditioner is located at a lateral surface of the display 30.

[9] The display 30 is generally comprised of Light Emitting Diodes (LEDs). Therefore, the display 30 is switched on when the air-conditioner is powered on, such that it displays operation states of the air-conditioner. If the air-conditioner is powered off,

the display 30 is switched off.

[10] In more detail, the display 30 displays the direction of the wind and strength/ weakness degrees of the wind as shown in FIG. 1. In addition, the display 30 displays a room temperature and a desired temperature. In other words, the display 30 externally displays air-conditioner state information established by a user using the LEDs.

Disclosure of Invention

Technical Problem

[11] However, the above-mentioned conventional air-conditioner has the following problems. The display 30 switches on or off a screen image composed of LEDs, such that it can statically display a current temperature or operation state. Therefore, the conventional air-conditioner is unable to provide the user with information other than the air-conditioner state information or additional functions.

Technical Solution

[12] Accordingly, the present invention is directed to an air-conditioner that substantially obviates one or more problems due to limitations and disadvantages of the related art.

[13] An object of the present invention is to provide a method for controlling a display of an air-conditioner which implements a variety of images (e.g., avatars) on the display.

[14] Another object of the present invention is to provide an air-conditioner for displaying stored data in various ways.

[15] Additional advantages, objects, and features of the invention will be set forth in part in the description which follows and in part will become apparent to those having ordinary skill in the art upon examination of the following or may be learned from practice of the invention. The objectives and other advantages of the invention may be realized and attained by the structure particularly pointed out in the written description and claims hereof as well as the appended drawings.

[16] To achieve these objects and other advantages and in accordance with the purpose of the invention, as embodied and broadly described herein, an air-conditioner comprises: an indoor unit equipped with a communication interface capable of transmitting/receiving data to/from an external part; and a display unit which includes a display controller for controlling content data to be displayed, a display for displaying an image or message, a display memory for storing at least one photo-image to be displayed on the display; and an electronic album for editing/storing the stored photo-image.

[17] Preferably, the photo-image stored in the electronic album is displayed on the display.

[18] Preferably, the display unit includes an album function which performs Input/

Output (I/O) operations of the photo-image stored in the electronic album, and edits the stored photo-image.

[19] Preferably, the album function includes: an "Album View" function for allowing a user to view the stored photo-images; a "Photo Retrieve" function for downloading a desired photo-image from an external storage unit; a "Photo Rotate" function for rotating the selected photo-image by a predetermined angle; a "Screen-Saver Setup" function for selecting a desired photo-image, and setting the selected photo-image to a screen-saver screen image; a "Total Deletion" function for deleting all the stored photo-images; and a "Selective Deletion" function for selectively deleting some of the stored photo-images.

[20] Preferably, the electronic album is contained in the display memory, or is configured in the form of an additional storage medium.

[21] Preferably, the photo-images stored in the electronic album can be transmitted/ received to/from the external part via the communication interface.

[22] Preferably, the communication interface transmits/receives data to/from a Universal Serial Bus (USB) memory, and supports Infrared communication, Bluetooth communication, and Internet communication.

[23] In another aspect of the present invention, there is provided an air-conditioner comprising: a main controller for controlling overall operations of the air-conditioner; a display for displaying an image or message; and a memory for storing data to be displayed on the display, wherein the data is stored while being classified according to folders.

[24] Preferably, the data is a still image or a moving image file.

[25] Preferably, the data is an avatar(character) or a photo-file.

[26] Preferably, the data to be displayed on the display includes an icon and a file name, such that the icon and the file name are displayed at the same time.

[27] Preferably, the data to be displayed on the display is displayed in the form of a "Large Icon View" menu, a "Small Icon View" menu, a "Detailed View" menu, and "Small View" menu according to a user command.

[28] Preferably, the "Large Icon View" menu includes the icon having a vertical size larger than that of the file name.

[29] Preferably, the "Small Icon View" menu includes the icon having a vertical size equal to that of the file name.

[30] Preferably, the "Detailed View" menu includes the icon having a vertical size equal to that of the file name, and size-, type-, and correction date- information of the data is displayed by the "Detailed View" menu.

[31] Preferably, the "Small View" menu controls data content to be displayed on the icon.

[32] The air-conditioner according to the present invention includes an electronic album for editing/storing a plurality of photo-images. The photo-images can be displayed/ edited on the display.

[33] Therefore, the air-conditioner can perform unique functions for the air-conditioning effect, and can store/edit the photo-images.

[34] The air-conditioner includes a memory for storing variety of data to be displayed on the display. The data stored in the memory is stored while being classified according to folders, and the stored data is displayed in the form of various shapes.

[35] Therefore, the user can easily recognize data stored in internal/external storage units.

[36] The air-conditioner according to the present invention displays variety of data on the display in the form of various shapes. Size-, type-, and correction date- information of the data is displayed, and the icon and the file name are simultaneously displayed.

[37] Therefore, the air-conditioner can easily manage variety of data according to data types, and the user can easily search for desired data in the memory, resulting in greater convenience of the user.

[38] It is to be understood that both the foregoing general description and the following detailed description of the present invention are exemplary and explanatory and are intended to provide further explanation of the invention as claimed.

Brief Description of the Drawings

[39] The accompanying drawings, which are included to provide a further understanding of the invention and are incorporated in and constitute a part of this application, illustrate embodiment(s) of the invention and together with the description serve to explain the principle of the invention. In the drawings:

[40] FIG. 1 is a perspective view illustrating an indoor unit of a conventional separation-type air-conditioner;

[41] FIG. 2 shows the appearance of an indoor unit for use in an air-conditioner equipped with an electronic album according to the present invention;

[42] FIG. 3 is a perspective view illustrating an open state of a front panel of an indoor unit of the air-conditioner in accordance with a preferred embodiment of the present invention;

[43] FIG. 4 is a front view illustrating a detailed configuration of a button unit mounted to a front panel of an indoor unit of the air-conditioner in accordance with a preferred embodiment of the present invention;

[44] FIG. 5 is a block diagram illustrating a control system for the air-conditioner in accordance with a first preferred embodiment of the present invention;

[45] FIG. 6 is a block diagram illustrating a control system for the air-conditioner in

accordance with a second preferred embodiment of the present invention;

[46] FIG. 7 shows a variety of display modes displayed on a display window according to the present invention;

[47] FIG. 8 shows a display state of an "Album View" menu contained in an album function of the air-conditioner according to the present invention;

[48] FIG. 9 shows a display state of a "Photo Retrieve" menu contained in the album function of the air-conditioner according to the present invention;

[49] FIG. 10 shows a display state of a "Photo Rotate" menu contained in the album function of the air-conditioner according to the present invention;

[50] FIG. 11 shows a display state of a "Total Deletion" menu contained in the album function of the air-conditioner according to the present invention;

[51] FIG. 12 shows a display state of a "Selective Deletion" menu contained in the album function of the air-conditioner according to the present invention;

[52] FIG. 13 shows a display state of a "Screen-Saver Setup" menu contained in the album function of the air-conditioner according to the present invention;

[53] FIG. 14 shows another display state of a "Photo Retrieve" menu contained in the album function of the air-conditioner according to the present invention;

[54] FIG. 15 shows a display state illustrating that data is stored while being classified according to individual folders according to a preferred embodiment of the present invention;

[55] FIG. 16 shows a display state illustrating that data is stored while being classified according to individual folders according to another preferred embodiment of the present invention;

[56] FIG. 17 shows a screen image illustrating data listed when a user selects a "Large Icon View" menu according to a preferred embodiment of the present invention;

[57] FIG. 18 shows a screen image illustrating data listed when a user selects a "Small Icon View" menu according to a preferred embodiment of the present invention;

[58] FIG. 19 shows a screen image illustrating data listed when a user selects a "Detailed View" menu according to a preferred embodiment of the present invention;

[59] FIG. 20 shows a screen image illustrating data listed when a user selects a "Small View" menu according to a preferred embodiment of the present invention; and

[60] FIGS. 21 and 22 is a flow chart illustrating a display control method for an air-conditioner according to the present invention.

Best Mode for Carrying Out the Invention

[61] Reference will now be made in detail to the preferred embodiments of the present invention, examples of which are illustrated in the accompanying drawings. Wherever possible, the same reference numbers will be used throughout the drawings to refer to

the same or like parts.

[62] FIG. 2 shows the appearance of an indoor unit of an air-conditioner according to the present invention.

[63] Referring to FIG. 2, the air-conditioner includes an indoor unit 100 and an outdoor unit (not shown). A front panel 110 is located at the front of the indoor unit 100. The front panel 110 is configured in the form of a vertically-elongated shape, such that it acts as a front frame of the indoor unit 100.

[64] A hinge 112 is located at right upper/lower ends of the front panel 110, such that it serves as a rotation center of the front panel 110. Therefore, the front panel 110 rotates in a counterclockwise direction on the basis of a right end of the front panel 110, such that it can be opened from the indoor unit 100.

[65] A display window 120 is located at the center of an upper part of the front panel 110. The display window 120 displays at least one avatar. Preferably, the display window 120 may be implemented with a Liquid Crystal Display (LCD), etc.

[66] A button unit 130 is located under the display window 120. The button unit 130 includes a plurality of operation buttons such as a power-supply button, such that a user can easily adjust a variety of operations of the air-conditioner.

[67] A remote-controller receiver 140 is located under the button unit 130. The remote-controller receiver 140 receives signals from the remote-controller.

[68] FIG. 3 is a perspective view illustrating an open state of the front panel 110 of the indoor unit 100 of the air-conditioner. As can be seen from FIG. 3, the front panel 110 rotates around an axis of the hinge 112, such that it is opened from the indoor unit.

[69] A display unit 150 is located at a back surface of the front panel 110. The display unit 150 includes a variety of electronic components to control a variety of avatars (images) to be displayed on the display window 120.

[70] The display unit 150 further includes a Universal Serial Bus (USB) mounting unit 152. A USB memory 160 is selectively mounted to the USB mounting unit 152. Therefore, the display unit 150 can easily receive external data via the USB memory 160.

[71] Needless to say, data can be downloaded from the USB memory 160 or a variety of mobile recording mediums, or can also be transmitted to a destination via the USB memory 160 or the mobile recording mediums. Likewise, the display unit 150 may download data via the Internet if required.

[72] For example, data can also be transmitted to a destination via an IEEE1394 port instead of the USB memory 160.

[73] The display unit 150 further includes a speaker 162. The speaker 162 is used as an example of the sound output unit 222, and outputs music or melody sound.

[74] In the meantime, an air-cleaning unit 170 for filtering impurities or alien substances

from the air so as to clean the air is located at an inner lower part of the indoor unit 100. A plurality of filters are located at the air-cleaning unit 170, such that a variety of impurities (e.g., dust or unpleasant odorous particles, etc.) are filtered by the filters of the air-cleaning unit 170.

[75] A plurality of components (e.g., a heat-exchanger) (not shown) for air-conditioning functions (e.g., a cooling function and a heating function) are contained in the indoor unit 100. Functions and configurations of the above-mentioned components are well known to those skilled in the art, such that it will herein be omitted for the convenience of description.

[76] FIG. 4 is a front view illustrating a detailed configuration of a button unit mounted to a front panel of an indoor unit of the air-conditioner according to the present invention.

[77] A detailed configuration of the button unit 130 is depicted in FIG. 4. Individual keys contained in the button unit 130 may be implemented in various ways, for example, a press-button scheme or a touch-screen scheme, etc.

[78] An operation/stop button (or key) 132 is located at the center of the button unit 130.

[79] The operation/stop key 132 is adapted to perform or stop an air-conditioning function of the air-conditioner. In more detail, the operation/stop key 132 is used as a key for powering on the air-conditioner when the air-conditioning function of the air-conditioner has stopped its operation. The operation/stop key 132 is used as a key for powering off the air-conditioner when the air-conditioning function of the air-conditioner is being performed.

[80] The air-conditioner according to the present invention further includes an additional function such as an air-conditioning function. Generally, the air-conditioner mainly performs the air-conditioning function to cool/heat room air via a heat-exchanging operation. A first case in which the air-conditioning function of the air-conditioner is executed is called an "Operation". A second case in which the air-conditioning function of the air-conditioner is not executed is called a "Stop".

[81] Two temperature keys 134 are located above or below the operation/stop key 132.

[82] Each temperature key 134 acts as a button for setting a temperature state. The upper temperature button acts as a button for increasing a temperature, and the lower temperature button acts as a button for reducing the temperature.

[83] The temperature key 134 is not operated while the air-conditioner has stopped its operation. Specifically, the temperature key 134 is used as a key for increasing/ reducing the temperature during an operation mode (e.g., a character operation mode), but it should be noted that the temperature key 134 is used as an up/down movement key during a specific function selection mode (e.g., an album function).

[84] In the meantime, two volume keys 135 are located at right and left sides of the

operation/stop key 132, respectively, and adjust the volume of sound. In other words, the volume keys 135 adjust the volume of sound outputted via a speaker (not shown) contained in the indoor unit 100 of the air-conditioner. The left volume key 135 acts as a button for reducing the volume of sound, and the right volume key 135 acts as a button for increasing the volume of sound. The volume key 135 also acts as a right/left movement key such as the temperature key 134.

[85] A wind-volume key 136 is located at a left lower end of the button unit 130. The wind-volume key 136 is used as a key for setting the volume of wind generated from the air-conditioner. The wind-volume key 136 is operated only when the air-conditioner is operated, and is not operated when the air-conditioner has stopped its operation.

[86] A plasma key 137 is located at a right lower end of the button unit 130. The plasma key 137 is used as a key for operating the air-cleaning unit 170 contained in the air-conditioner. The plasma key 137 is designed to be operated during an operation mode or stop mode of the air-conditioner.

[87] Therefore, the air-cleaning unit 170 performs the air-conditioning function of the air-conditioner, and at the same time cleans air. Also, the air-cleaning unit 170 can operate alone even though the air-conditioner is in the stop mode, such that it cleans room air.

[88] A left key 138 is located at a left upper end of the button unit 130, and a right key 139 is located at a right upper end of the button unit 130.

[89] If the air-conditioner is in the stop mode, the left key 138 and the right key 139 are not operated. If the air-conditioner is in the operation mode, the left key 138 and the right key 139 are adapted to select a variety of menus from among the following function selection modes.

[90] A system for controlling the air-conditioner according to the present invention will hereinafter be described with reference to FIG. 5.

[91] FIG. 5 is a block diagram illustrating a control system of the air-conditioner according to the present invention. Detailed block diagrams of the indoor unit 100 and the display unit 150 are shown in FIG. 5. As can be seen from FIG. 5, the main controller 200 and the display controller 250 are installed independently of each other.

[92] Needless to say, it should be noted that the following preferred embodiments of the present invention is also applicable to a control system shown in FIG. 6. Therefore, besides the control system of FIG. 5, if there is a need to explain the control system of FIG. 6, detailed operations of the control system of FIG. 6 will be additionally described at a later time.

[93] Referring to FIG. 5, the indoor unit 100 for use in the air-conditioner includes the main controller 200 for controlling overall operations of the air-conditioner. A variety

of electronic components are connected to the main controller 200, such that the main controller 200 can receive/transmit variety of data from/to the electronic components.

[94] In more detail, the main controller 200 includes a main memory 202. The main memory 202 is used as a storage medium basically mounted to the air-conditioner, such that it stores variety of data. For example, the main memory 202 stores sound data to be output from the sound output unit 222, etc.

[95] The main controller 200 is connected to a main input unit 210, a sensor unit 212, a signal receiver 214, a communication interface 215, an indoor-unit motor 216, an outdoor-unit motor 218, and a compressor 220, etc.

[96] The main input unit 210 allows a user to enter an operation signal of the air-conditioner via the button unit 130. The input signal received via the main input unit 210 is transmitted to the main controller 200.

[97] The sensor unit 212 includes a plurality of sensors mounted to the air-conditioner, for example, a temperature sensor, a moisture sensor, a dust sensor, and a gas sensor, etc. Accordingly, the sensor unit 212 measures an air state and an air-pollution level, such that the measurement values detected by the sensor unit 212 are transmitted to the main controller 200.

[98] The signal receiver 214 receives an external signal in the same manner as in the remote-controller receiver 140. A signal received in the signal receiver 214 is also transmitted to the main controller 200.

[99] The communication interface 215 may also be designed to receive/transmit wireless communication data (or signal) from/to a computer (or the Internet). In other words, the communication interface 215 can receive a variety of signals from an external part or can transmit state information of the air-conditioner to the external part.

[100] For example, the communication interface 215 can transmit/receive data to/from the USB memory 160.

[101] The communication interface 215 can transmit/receive data using a variety of communication methods, for example, Infrared communication, Bluetooth communication, and Internet communication, etc.

[102] The Bluetooth communication is indicative of a communication method for wirelessly interconnecting a computer, household appliances, and a mobile terminal, which are located within a local area to implement two-way real-time communication.

[103] The indoor-unit motor 216 is contained in the indoor unit 100 of the air-conditioner, and rotates a fan. The indoor-unit motor 216 is operated by a signal received from the main controller 200. For example, if the main input unit 210 transmits an input signal of the operation/stop key 132 to the main controller 200, the main controller 200 operates the indoor-unit motor 216.

[104] The main controller 200 controls a rotation speed of the indoor-unit motor 216 on

the basis of an air-pollution level received from the sensor unit 212.

[105] The compressor 220 and the outdoor-unit motor 218 are operated by the main controller 200. In more detail, if a user enters the operation/stop key 132 via the main input unit 210 in the same manner as in the indoor-unit motor 216, or if the user enters an operation command via the remote-controller receiver 140, the main controller 200 operates the compressor 220 and the outdoor-unit motor 218, etc., such that the air-conditioner is switched from the stop mode to the operation mode.

[106] The main controller 200 is also connected to additional devices (e.g., an air-cleaning unit 170 and a sound output unit 222, etc.).

[107] As previously stated above, the air-cleaning unit 150 filters impurities from the air to clean the air. The main controller 200 controls operations of the air-cleaning unit 170 upon receiving a signal from the main input unit 210. In more detail, as described above, the air-cleaning unit 170 is operated by an input signal of the plasma key 137 contained in the button unit 130.

[108] The main controller 200 automatically controls the degree of an air-cleaning operation (i.e., strength or weakness of the air-cleaning function) of the air-cleaning unit 170. In more detail, the main controller 200 detects an air-pollution level (e.g., dust or gas, etc.) measured by the sensor unit 212, and automatically adjusts the strength or weakness of the air-cleaning function of the air-cleaning unit 170 on the basis of the detected air-pollution level.

[109] A sound output unit 222 outputs sound or audio data, and is composed of a speaker, etc., such that it can output a variety of sounds (e.g., buzzer sound, melody sound, or music sound, etc.) For example, if an unexpected error occurs in any components of the air-conditioner, the sound output unit 222 outputs buzzer sound or various melody sounds based on individual avatar images or messages displayed on the display 256. In addition, if a music file is executed, the sound output unit 222 may output various music sounds.

[110] The main controller 200 communicates with the display controller 250 contained in the display unit 150. Air-conditioner operation signals such as an input signal of the operation/stop key 132 contained in the main input unit 210 are transmitted to the main controller 200, and are also be transmitted to the display controller 250, such that the display controller 250 forms a display screen image suitable for operating the air-conditioner.

[111] Data received in the display controller 250 via a data input unit 258 may also be transmitted to the main controller 200. A signal received via a display input unit 254 is transmitted to the main controller 200, such that it outputs sound via the sound output unit 222.

[112] The display unit 150 includes a display controller 250 for controlling content data to

be displayed; a display 256 for being controlled by the display controller 250, and displaying an image or message; a display memory 252 for storing a variety of data to be displayed on the display 256; and an electronic album 253 for editing/storing a plurality of photo-images stored in the display memory 252.

[113] The display controller 250 for controlling displayed content data is connected to the display memory 252, the display input unit 254, the display 256, and the data input unit 258, etc.

[114] The display memory 252 is contained in the display unit 150, and stores various data (e.g., a photo-avatar or a character-avatar, etc.) for the display unit 150. In other words, the display memory 252 stores image data (e.g., avatar) to be displayed on the display 256.

[115] Needless to say, data displayed on the display 256 may also be stored in other memory (or recording medium), instead of the display memory 252. In other words, data stored in the main memory 202 or an electronic album 253"s memory may also be stored in an external storage medium such as the USB memory 160.

[116] Data displayed on the display 256 is comprised of a still image or a moving-image file. In more detail, the data displayed on the display 256 is comprised of an avatar(character) or a photo file.

[117] The above-mentioned data can be stored while being classified according to folders, and is displayed in the form of various shapes. The display format of the above-mentioned data will hereinafter be described.

[118] A folder acting as a data storage space is formed by a user who desires to easily search for desired data in the memory of the computer. In more detail, the folder acts as a file cabinet for effectively managing a plurality of related files, and is the same as the directory for use in a DOS or UNIX system. The folder may include other folders and files as necessary.

[119] A plurality of photo-images are stored in the electronic album 253. The stored photo-images are displayed on the display 256.

[120] The electronic album 253 receives photo-images from an external part, stores the received photo-images, and outputs the stored photo-images on the display. In other words, the photo-images stored in the electronic album 253 can be transmitted/received to/from an external part via the communication interface 215 or the data input unit 258.

[121] The display unit 150 includes a variety of album functions 344 which transmit/ receive and edit the photo-images contained in the electronic album 253. A detailed description of the above-mentioned album function 344 will hereinafter be described.

[122] The display input unit 254 allows a user to enter an operation signal of the display unit 150 via the button unit 130 or the remote-controller, etc. The display window 120 of the front panel 110 is comprised of a touch-screen, such that the user may enter a

control command by touching the display window 120.

[123] The display 256 displays individual operation states of the air-conditioner in the form of an image or message.

[124] The display 256 implements the image or message according to a command of the display controller 250. The display 256 includes an image display 256'for displaying an image file, and an operation display 256"for displaying operation states of the air-conditioner.

[125] The image display 256'displays an avatar or real image according to operation states of the air-conditioner. The image file displayed on the image display 256'may be comprised of at least one of a JPEG file, a BMP file, and a TIFF file. The JPEG file, the BMP file, and the TIFF file have been widely used as extensions indicative of image data, and a detailed description thereof will herein be omitted for the convenience of description.

[126] The operation display 256"displays a variety of information (i.e., an operation state of the air-conditioner, a current temperature, or a setup temperature) in the form of a character (text) message or numerical message.

[127] The above-mentioned display 256 may be comprised of a Liquid Crystal Display (LCD) or an organic EL (Electro-Luminescent), etc.

[128] The LCD is an electronic component for converting a variety of electrical information generated from a variety of devices into visual information using a variation in liquid crystal transmittance based on an input voltage.

[129] The organic EL is indicative of an organic material formed by a luminescence effect acquired when a current signal flows in a fluorescent organic compound. The organic EL is referred to as an Organic Light Emitting Diode (OLED) or an organic diode.

[130] The aforementioned LCD and the aforementioned EL have been recently researched by many developers, and have been widely used throughout the world, such that their detailed description will herein be omitted for the convenience of description.

[131] As stated above, the display controller 250 controls image-, character-, or numerical- data to be displayed on the display 256. An execution program of the display controller 250 may be implemented with a variety of languages.

[132] For example, the execution program is implemented with JAVA program language or C language (e.g., at least one of C, C++, or C# program languages).

[133] Preferably, the display controller 250 may implement a two-dimensional (2D) image on the display 256, or may implement a three-dimensional (3D) image on the display 256. In other words, a planar image or/and a stereoscopic image can be implemented on the display 256.

[134] The data input unit 258 receives data (or signals) from an external part via the USB memory 160 or the IEEE1394 port. The data input unit 258 allows the user to enter a

photo or image to be displayed on the display window 120 or a music file (including an MP3 file) to be outputted via the sound output unit 222.

[135] FIG. 7 shows a variety of display modes displayed on a display window according to the present invention. In more detail, a variety of display modes displayed on the display window 120 by the display controller 250 are exemplarily shown in FIG. 7.

[136] Referring to FIG. 7, the display modes implemented by the display 256 include a standby mode 300 for indicating a standby state before an air-conditioning function is executed; an operation mode 320 for indicating current execution of the air-conditioning function; and a function selection mode 340 for allowing a user to select a variety of functions, etc.

[137] Generally, the standby mode 300 includes a screen-off mode 302 for displaying no image on a screen; a clock mode 304 for displaying a current time; a screen-saving mode 306 for executing a screen-saver program; and a user setup mode 308 for displaying an image established by a user. Accordingly, the standby mode 300 is designed to display at least one of the above-mentioned modes 302, 304, 306, and 308.

[138] In more detail, at least one of the screen-off mode 302, the clock mode 304, the screen-saving mode 306, and the user setup mode 308 has been generally set in the air-conditioner during a manufacturing process of the air-conditioner. However, if the user transmits a power-supply signal to the air-conditioner, the booting of the standby mode 300 is initially executed, such that the standby mode 300 is displayed on the display window 120.

[139] Needless to say, the setting information of the above-mentioned standby mode 300 may be changed to other information. In more detail, provided that the user may select a desired mode from among the screen-off mode 302, and the clock mode 304, the screen-saving mode 306, and the user setup mode 308, and the booting of the selected mode is executed, the selected mode may also be displayed on the display window 120 via the display 256.

[140] The screen-off mode 302 indicates that the display window 120 is powered off, such that the powered-off state of the display window 120 is maintained during the screen-off mode 302.

[141] The clock mode 304 indicates that a current time is displayed on the display window 120. Besides the current time information, the clock mode 304 further indicates month/year information, and at the same time may indicate a measurement value of the temperature sensor or the moisture sensor.

[142] The screen-saving mode 306 executes a predetermined screen-saving program. In more detail, the screen-saving mode 306 indicates that a screen saver is operated. Therefore, the screen-saving mode 306 displays a screen image acquired by the execution of the screen saver widely used for computers.

[143] The user setup mode 308 displays an image pre-established by the user. In other words, the user freely pre-establishes a desired photo-image (i.e., a user's photo-image or a user's family photo-image) or his or her character image during the user setup mode 308, such that the air-conditioner displays the above pre-established image upon receiving a power-supply signal.

[144] The operation mode 320 shows state information of an image implemented by the display 256 when the air-conditioner is operated by the operation/stop key 132 at the standby mode 300. The operation mode 320 is classified into a real-operation mode 322, a user-operation mode 324, and a character operation mode 326, etc.

[145] Therefore, if the air-conditioner is operated, any one of the real-operation mode 322, the user-operation mode 324, and the character operation mode 326 contained in the operation mode 320 is executed. In other words, any one of the user-established modes is executed.

[146] The real-operation mode 322 displays an actual-object image (or a real photo) pre-stored in the main memory 202 or the display memory 252. The above-mentioned actual-object image may be comprised of a still image or moving images.

[147] The user operation mode 324 uploads a user-desired image or user-desired moving images to the display memory 252. Accordingly, the user selects the uploaded image or moving images, and the selected image or moving images are displayed on the display window 120.

[148] The character operation mode 326 displays a pre-stored character on the display window 120. The above-mentioned character may be configured in the form of a still image or a moving character. For example, if the character operation mode 326 is executed, a skiing character is displayed on the display window 120, and it is preferable for the skiing character to be displayed in the form of moving images.

[149] In the meantime, the above-mentioned operation mode 320 is continuously operated on the condition that an additional key signal for executing another command is not applied to the air-conditioner. If the air-conditioner stops operation in the operation mode 320, the operation mode 320 returns to the standby mode 300. In this case, the air-conditioner may perform an automatic cleaning function 310 when returning to the standby mode 300. However, it should be noted that the above-mentioned automatic-cleaning function 310 can be executed on the condition that it is pre-set in the air-conditioner.

[150] The above-mentioned operation mode 320 may also be switched to the screen-saving mode 306 according to a user command if the user enters no key until reaching a predetermined time after the operation mode 320 has been executed.

[151] If the user enters a predetermined key signal in the screen-saving mode 306, the screen-saving mode is automatically terminated, and returns to the operation mode

320.

[152] The function selection mode 340 allows the user to select/establish a variety of functions of the air-conditioner.

[153] The function selection mode 340 includes an operation/additional function 342 and an album function 344, etc.

[154] The operation/additional function 342 enables the user to establish an operation state and additional functions of the air-conditioner. The album function 344 allows the user to store/edit a variety of pictures.

[155] According to the operation function, the user selects state information (e.g., a cooling or dehumidifying function) of the air-conditioner, and can adjust the volume of wind of the air-conditioner.

[156] In the meantime, the pop-up function 360 may be further executed during the above-mentioned individual modes.

[157] The pop-up window 360 loads a variety of pop-up windows on the display window 120, such that the user can visually recognize an error state or input key state of the air-conditioner while the above-mentioned individual modes are executed.

[158] The above-mentioned function selection mode 340 may also be switched to the screen-saving mode 306 according to a user command in the same manner as in the operation mode 320. In other words, if the user enters no execution key until reaching a predetermined time after the function selection mode 340 has been executed, the function selection mode 340 is also switched to the screen-saving mode 306.

[159] FIGS. 8 to 14 shows screen images displayed when the album function 344 contained in the function selection mode 240 is selected.

[160] The album function 344 includes a variety of menus, for example, an "Album View" menu for allowing a user to view stored photo-image(s), a "Photo Retrieve" menu for retrieving a desired photo-image from an external storage unit, a "Photo Rotate" menu for rotating the selected photo-image at a predetermined angle, a "Screen-Saver Setup" menu for setting the stored photo-image to a screen-saver image, a "Total Deletion" menu for deleting all the stored photo-images, and a "Selective Deletion" menu for selectively deleting some of the stored photo-images, etc.

[161] FIG. 8 shows an exemplary screen image formed when the "Album View" menu contained in the album function 344 is selected.

[162] Referring to FIG. 8, if the user presses the right key 139 in the function selection mode 340 shown in FIG. 8(a), the album function is selected, such that the screen image of FIG. 8(b) is displayed. In this case, the user selects a desired menu using the above-mentioned movement keys (◀, ▶, ▲, and ▼), and sets the selected menu by pressing the operation/stop key 132.

[163] In this case, if the "Album View" menu is selected by the user, the screen image of

FIG. 8(c) is displayed. Therefore, the photo-image stored in the electronic album 253 is displayed. Needless to say, other photo-images stored in other storage units (e.g., the display memory 252 and the USB memory 160, etc.) may also be displayed if required.

[164] In this case, the user moves a cursor to a desired photo-image using the above-mentioned movement keys (◀, ▶, ▲, and ▼), and sets the corresponding photo-image by pressing the operation/stop key 132, such that the corresponding photo-image is selected and previewed.

[165] FIG. 9 shows a display state of the "Photo Retrieve" menu contained in the album function 344 of the air-conditioner according to the present invention.

[166] Referring to FIG. 9, if the user presses the left key 138 on the screen image of FIG. 8(c), the list of a plurality of menus is displayed as shown in FIG. 9(a).

[167] In this case, the above-mentioned menus are comprised of a "Photo Retrieve" menu, a "Photo Rotate" menu, a "Screen-Saver Setup" menu, a "Selective Deletion", and a "Total Deletion" menu, etc.

[168] In this case, if the user selects the "Photo Retrieve" menu, the screen image of FIG. 9(b) is displayed. The user selects one of a "Partial Selection" menu and a "Total Selection" menu using the movement keys (◀, ▶, ▲, and ▼).

[169] For example, if the user selects the "Partial Selection" menu, selects a desired photo-image using the movement keys (◀, ▶, ▲, and ▼), and presses the left key for a photo-retrieve operation, the "Photo Retrieve" function is executed, and a current screen image returns to the screen image of FIG. 8(c).

[170] In the meantime, if the user presses the right key acting as a close function, the "Photo Retrieve" function is cancelled, and a current screen image returns to the screen image of FIG. 8(c).

[171] FIG. 10 shows a display state of a "Photo Rotate" menu contained in the album function of the air-conditioner according to the present invention.

[172] Referring to FIG. 10, if the user selects the "Photo Rotate" menu on the condition that the list of a plurality of menus is displayed as shown in the screen image of FIG. 10(a), the photo-rotation pop-up window 370 is displayed as shown in the screen image of FIG. 10(b). Therefore, the user selects a desired menu using the movement keys (◀, ▶, ▲, and ▼). The "Photo Rotate" menu includes a 90° right-rotation item, 180° left-rotation item, and 90° left-rotation item, etc.

[173] If the user selects a desired rotation item from among the above-mentioned rotation items, and presses the operation/stop key 132, a preview image of the selected photo-image is displayed for about 3 seconds, and the above-mentioned rotation pop-up window 370 is displayed. In this case, the user may select other rotation menus instead of the above-mentioned rotation items as necessary. If the user presses an "Initialize" menu displayed on the rotation pop-up window 370, a current state returns to an

original state provided before the photo-image is rotated

[174] If the user presses the right key (i.e., the close key) after the above-mentioned "Photo Rotate" menu has been executed, a photo-image rotated by the "Photo Rotate" menu is finally stored, and a current state returns to the "Album View" menu of FIG. 7(c).

[175] FIG. 11 shows a display state of the "Total Deletion" menu contained in the album function 344 of the air-conditioner according to the present invention.

[176] Referring to FIG. 11, the user selects the "Total Deletion" menu on the condition that the list of a plurality of menus is displayed as shown in FIG. 11(a), such that the "Total Deletion" pop-up window 372 is displayed as shown in FIG. 11(b). In this case, the user selects the "YES" or "NO" button using the movement keys (◀, ▶, ▲, and ▼).

[177] If the user selects the YES button, the "Total Deletion" operation is executed. Otherwise, if the user selects the NO button or the "Total Deletion" operation has been executed, a current screen image returns to the "Album View" screen image.

[178] FIG. 12 shows a display state of a "Selective Deletion" menu contained in the album function 344 of the air-conditioner according to the present invention.

[179] Referring to FIG. 12, the user selects the "Selective Deletion" menu on the condition that the list of a plurality of menus is displayed as shown in FIG. 12(a), such that a current screen image is switched to the "Selective Deletion" screen image. In this case, the selection cursor is located at a first photo-file other than the folder.

[180] In this case, if the user selects a desired photo-image to be deleted using the movement keys (◀, ▶, ▲, and ▼), a predetermined confirmation window "Do you want to delete selected photo-image" is displayed. If the user selects the YES button on the above-mentioned confirmation window, the selected photo-image is deleted, and a current screen image returns to the screen image of FIG. 12(b).

[181] Otherwise, if the user selects the NO button on the above-mentioned confirmation window, the selected photo-image to be deleted is cancelled, and a current screen image returns to the "Selective Deletion" screen image of FIG. 12(b).

[182] FIG. 13 shows a display state of a "Screen-Saver Setup" menu contained in the album function 344 of the air-conditioner according to the present invention.

[183] Referring to FIG. 13, the user selects the "Screen-saver setup" menu on the condition that the list of a plurality of menus is displayed as shown in FIG. 13(a), such that a current screen image is switched to the "Screen-saver setup" screen image. In this case, the selection cursor is located at a first photo-file other than the folder.

[184] In this case, if the user selects a desired photo-image using the movement keys (◀, ▶, ▲, and ▼), the selected photo-image is set to the screen-saver image. If the user presses the right key acting as the close key, a current screen image returns to the

"Album View" screen image.

[185] FIG. 14 shows another display state of a "Photo Retrieve" menu contained in the album function 344 of the air-conditioner according to the present invention, differently from FIG. 8.

[186] Referring to FIG. 14, if the user presses the right key 139 in the function selection mode 340 shown in FIG. 14(a), the album function is selected, such that the screen image of FIG. 14(b) is displayed. In this case, the user selects a "Download" menu using the movement keys (◀, ▶, ▲, and ▼).

[187] Therefore, a current screen image is switched to the "Photo Retrieve" screen image of FIG. 14(c). In this case, the "Photo Retrieve" screen image is equal to the screen image of FIG. 8(b). A method for executing the "Photo Retrieve" menu is equal to that of FIG. 8. In this case, if the user presses the right key acting as the close key, a current screen image returns to the screen image of FIG. 14(b).

[188] A method for managing/editing/storing data of the air-conditioner will hereinafter be described.

[189] FIGS. 15~20 show display states of data displayed on the display 256. In this case, a photo-image may be used as the aforementioned data.

[190] As can be seen from FIGS. 15~16, data is stored while being classified according to folders.

[191] A folder icon 374 and a folder name 374" are vertically or horizontally displayed as shown in FIG. 15. The folder name 374" is located under the folder icon 374, and the folder name 374" is located to the right side of the folder icon 374.

[192] FIGS. 17~20 show a variety of files which are stored while being classified according to folders. As shown in FIGS. 17~20, data displayed on the display 256 simultaneously is classified into the icon 376 and the file name 376", such that the icon 376 and the file name 376" may be displayed at the same time. The above-mentioned data can be displayed in various ways, for example, a "Large Icon View" menu, a "Small Icon View" menu, a "Detailed View" menu, and a "Small View" menu.

[193] FIG. 17 shows a screen image illustrating data listed when a user selects the "Large Icon View" menu according to a preferred embodiment of the present invention. As can be seen from FIG. 17, a vertical size of the icon 376 is larger than a vertical size of the file name 376". Preferably, the file name 376" may be located under the icon 376.

[194] FIG. 18 shows a screen image illustrating data listed when a user selects the "Small Icon View" menu according to a preferred embodiment of the present invention. As can be seen from FIG. 18, a vertical size of the icon 376 is equal to that of the file name 376". Preferably, the file name 376" may be located to the right side of the icon 376.

[195] FIG. 19 shows a screen image illustrating data listed when a user selects the

"Detailed View" menu according to a preferred embodiment of the present invention. As can be seen from FIG. 19, a vertical size of the icon 376 is equal to that of the file name 376". A variety of information (i.e., size, type, and correction date information) of data are displayed. The icon 376, the file name 376", and size-, type-, and correction date- information of data are sequentially arranged in the right direction.

[196] FIG. 20 shows a screen image illustrating data listed when a user selects the "Small View" menu according to a preferred embodiment of the present invention. Contents of data are displayed on the icon 376. For example, if the data is a photo-image, the photo-image is displayed on the icon 376, and the file name 376" is located under the icon 376.

[197] A method for executing individual modes having the above-mentioned configuration will hereinafter be described with reference to FIGS. 21 and 22.

[198] FIGS. 21 and 22 is a flow chart illustrating a display control method for an air-conditioner according to the present invention. In more detail, FIGS. 21 and 22 shows detailed operations of the standby mode 300, the operation mode 320, and the function selection mode 340.

[199] Referring to FIGS. 21 and 22, the display controller 250 determines whether a power-supply signal is received in the air-conditioner at step S400. If the power-supply signal is received in the air-conditioner, the air-conditioner executes the standby mode 300 at step S410. Otherwise, if the power-supply signal is not received in the air-conditioner, the air-conditioner executes no action.

[200] It is determined whether the operation/stop key 132 is pressed by the user at step S420. If the user presses the operation/stop key 132 at step S420, a corresponding signal is transmitted to the main controller 200, such that the air-conditioner is operated at step S421. In other words, the main controller 200 operates air-conditioner components (e.g., an indoor-unit motor 216 or an outdoor-unit motor 218), resulting in the implementation of air-conditioning effect of room air at step S421.

[201] Otherwise, if the operation/stop key 132 is not pressed by the user at step S420, it is determined whether the plasma key 137 is pressed at step S430. If the plasma key 137 is pressed by the user at step S430, a corresponding signal is transmitted to the main controller 200, and operates the air-cleaning unit 170, resulting in the implementation of an air-cleaning function at step S432.

[202] It is determined whether the stop key is pressed at step S434 while the air-cleaning function is executed by the air-cleaning unit 170. If the stop key is pressed, a corresponding signal is transmitted to the main controller 200, such that the air-cleaning unit 170 stops operation at step S436. In this case, the stop key indicates the plasma key 137 pressed by the user. In other words, if the user presses the plasma key 137 once, the air-cleaning unit 170 starts operation. Under this condition, if the plasma key

137 is re-pressed by the user, the air-cleaning unit 170 stops operation.

[203] If the air-conditioning function is executed at step 421, the operation mode 320 is executed on the display window 120 at step 440.

[204] If the operation mode is executed at step S440, the display memory 252 sets a time (T) to zero as denoted by "T=0" at step 460. It is determined whether a specific function key (e.g., the left key 138 or the right key 139) is pressed via the button unit 130.

[205] If the function key is pressed at step S462, the function selection mode 340 is executed at step S480. Otherwise, if the function key is not pressed at step S462, it is determined whether the operation/stop key 132 is pressed at step S464.

[206] If the operation/stop key 132 is not pressed, the air-conditioner reads the time value stored in the display memory 252 at step S466, such that it determines whether the stored time value T is equal to or higher than the time setup value (e.g., 5 minutes) established by the environment setup process at step S468.

[207] If the time value T is equal to or higher than the time setup value at step S468, the air-conditioner executes the screen-saving mode 306 at step S470. If a specific key is pressed, the screen-saving mode 306 is closed at step S474.

[208] If the function selection mode is executed at step S480, the display memory 252 re-establishes a time. In more detail, the time is set to zero as denoted by "T=0" at step S530. It is determined whether the right key 139 acting as a function close key is pressed via the button unit 130 at step S532.

[209] If the right key 139 acting as the function close key is pressed at step S532, the current mode returns to the operation mode. Otherwise, if the right key 139 is not pressed at step S532, it is determined whether the operation/stop key 132 is pressed at step S534.

[210] If the operation/stop key 132 is not pressed, the air-conditioner reads the time value stored in the display memory 252 at step S536, such that it determines whether the stored time value T is equal to or higher than the time setup value (e.g., 5 minutes) established by the environment setup process at step S538.

[211] If the time value T is equal to or higher than the time setup value at step S538, the air-conditioner executes the screen-saving mode 306 at step S540. If a specific key is pressed, the screen-saving mode 306 is closed at step S544.

[212] It is determined whether the operation/stop key 132 is pressed at steps S464 and S534. If the operation/stop key 132 is pressed, the main controller 200 stops operation of the air-conditioner, such that the air-conditioning function stops operation at step S550.

[213] If the air-conditioner stops operation, an automatic cleaning function is executed at step S552. Needless to say, the automatic cleaning function can be executed when it is

pre-established in the air-conditioner by the user.

[214] Thereafter, it is determined whether a power-off state is established at step S560. If the power-off state is established at step S560, all operations of the display are closed at step S570. Otherwise, if the power-off state is not established at step S560, the current mode returns to the standby mode.

[215] For example, although the present invention has disclosed the electronic album 253 installed separately from the display memory 252, it should be noted that the electronic album 253 may also be installed in the display memory 252 if required. In other words, the display memory 252 may perform not only unique functions but also the electronic album function for storing the photo-image at the same time if required.

Industrial Applicability

[216] As apparent from the above description, the air-conditioner according to the present invention performs an electronic album function to edit/store images, and displays the stored data in the form of various shapes.

[217] Therefore, the air-conditioner can store/edit photo-images, can classify variety of data according to categories, can manage the above-mentioned data, can search for a desired photo-image in the stored photo-images, such that the user can conveniently operate the air-conditioner simultaneously employing additional functions thereof, resulting in greater convenience of the user.

[218] It will be apparent to those skilled in the art that various modifications and variations can be made in the present invention without departing from the spirit or scope of the inventions. Thus, it is intended that the present invention covers the modifications and variations of this invention provided they come within the scope of the appended claims and their equivalents.

Claims

[1] An air-conditioner comprising:
an indoor unit equipped with a communication interface capable of transmitting/receiving data to/from an external part; and
a display unit including:
a display controller for controlling content data to be displayed;
a display for displaying an image or message;
a display memory for storing at least one photo-image to be displayed on the display; and
an electronic album for editing/storing the stored photo-image.

[2] The air-conditioner according to claim 1, wherein the photo-image stored in the electronic album is displayed on the display.

[3] The air-conditioner according to claim 1, wherein the display unit includes an album function which performs Input/Output (I/O) operations of the photo-image stored in the electronic album, and edits the stored photo-image.

[4] The air-conditioner according to claim 3, wherein the album function includes:
an "Album View" function for allowing a user to view the stored photo-images;
a "Photo Retrieve" function for downloading a desired photo-image from an external storage unit;
a "Photo Rotate" function for rotating the selected photo-image by a pre-determined angle;
a "Screen-Saver Setup" function for selecting a desired photo-image, and setting the selected photo-image to a screen-saver screen image;
a "Total Deletion" function for deleting all the stored photo-images; and
a "Selective Deletion" function for selectively deleting some of the stored photo-images.

[5] The air-conditioner according to claim 1, wherein the electronic album is contained in the display memory, or is configured in the form of an additional storage medium.

[6] The air-conditioner according to claim 1, wherein the photo-images stored in the electronic album can be transmitted/received to/from the external part via the communication interface.

[7] The air-conditioner according to claim 6, wherein the communication interface transmits/receives data to/from a Universal Serial Bus (USB) memory, and supports Infrared communication, Bluetooth communication, and Internet communication.

[8] An air-conditioner comprising:

a main controller for controlling overall operations of the air-conditioner;
a display for displaying an image or message; and
a memory for storing data to be displayed on the display,
wherein the data is stored while being classified according to folders.

[9] The air-conditioner according to claim 1, wherein the data is a still image or a moving image file.

[10] The air-conditioner according to claim 1, wherein the data is an avatar(character) or a photo-file.

[11] The air-conditioner according to claim 1, wherein the data to be displayed on the display includes an icon and a file name, such that the icon and the file name are displayed at the same time.

[12] The air-conditioner according to claim 1, wherein the data to be displayed on the display is displayed in the form of a "Large Icon View" menu, a "Small Icon View" menu, a "Detailed View" menu, and "Small View" menu according to a user command.

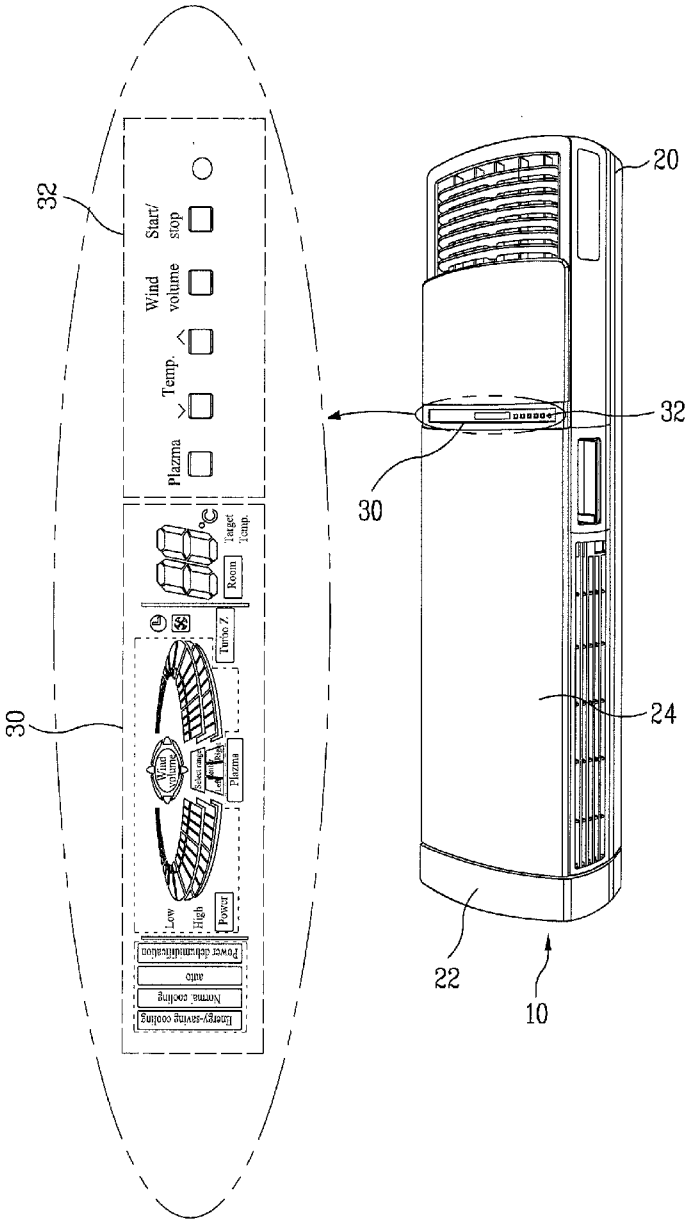
[13] The air-conditioner according to claim 12, wherein the "Large Icon View" menu includes the icon having a vertical size larger than that of the file name.

[14] The air-conditioner according to claim 12, wherein the "Small Icon View" menu includes the icon having a vertical size equal to that of the file name.

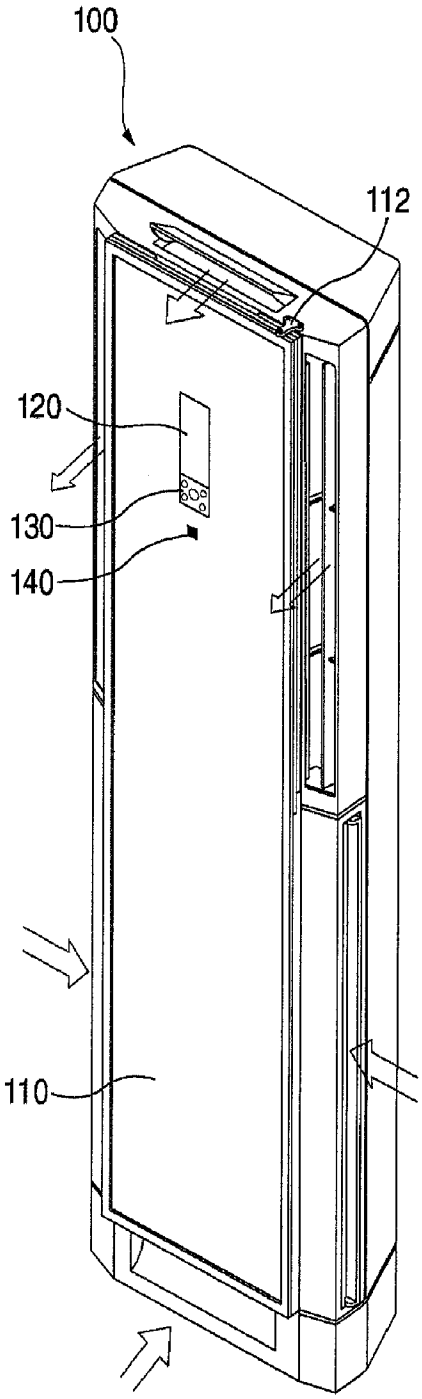
[15] The air-conditioner according to claim 12, wherein the "Detailed View" menu includes the icon having a vertical size equal to that of the file name, and size-, type-, and correction date- information of the data is displayed by the "Detailed View" menu.

[16] The air-conditioner according to claim 12, wherein the "Small View" menu controls data content to be displayed on the icon.

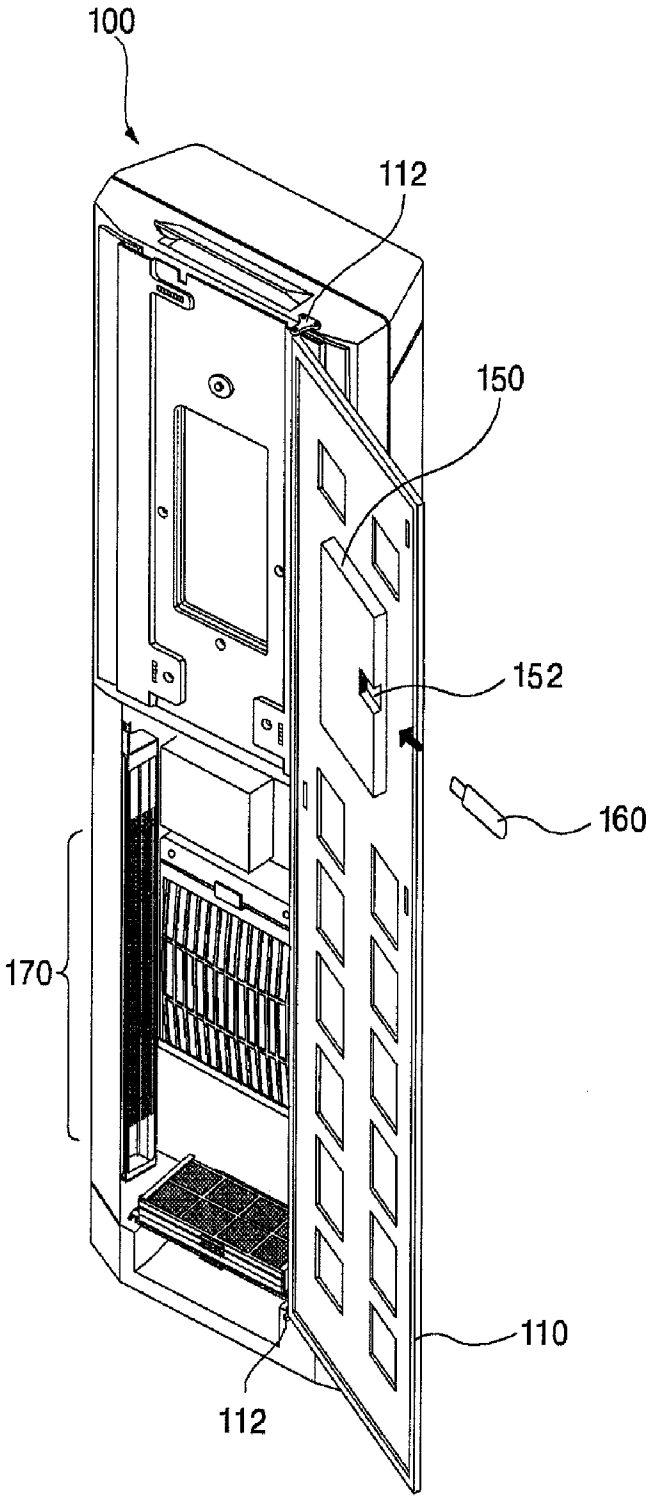
[Fig. 1]


32
Start/ stop
Wind volume
Temp.
Plazma
Target Temp.
Room
Turbo 2
Plasma
Low
High
Power
Energy-saving cooling
Normal cooling
auto
Power dehumidification
30
20
32
30
24
22
10

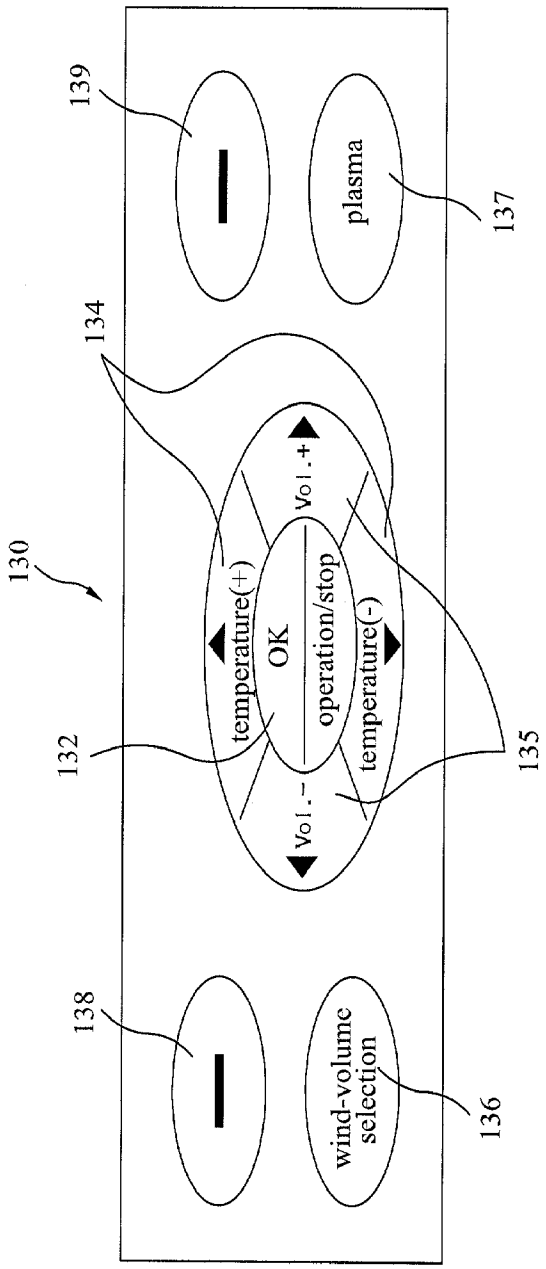
[Fig. 2]



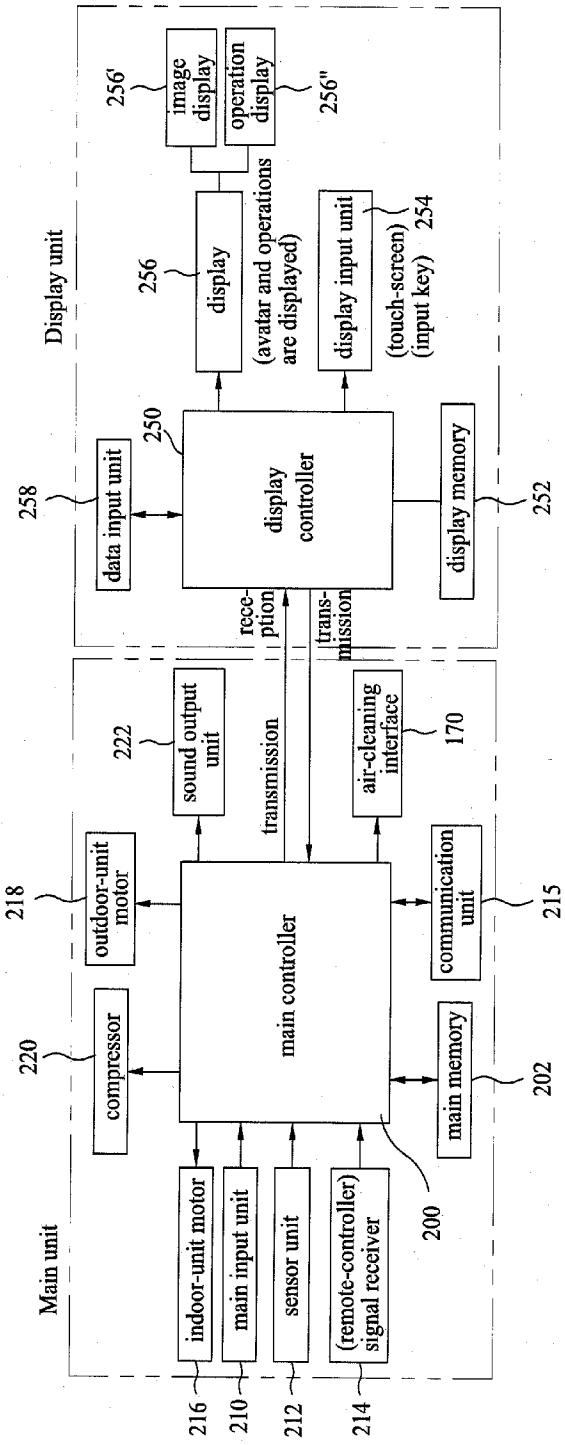
[Fig. 3]



[Fig. 4]


130
132
134
135
136
137
138
139
plasma
wind-volume selection
temperature(+)
OK
operation/stop
temperature(-)
Vol.+
Vol.-

[Fig. 5]


Display unit
Main unit
image display
operation display
display
(avatar and operations are displayed)
display input unit
(touch-screen) (input key)
display controller
data input unit
display memory
reception
transmission
sound output unit
air-cleaning interface
outdoor-unit motor
main controller
communication unit
compressor
main memory
indoor-unit motor
main input unit
sensor unit
(remote-controller) signal receiver
256'
256"
256
254
250
258
252
222
170
218
215
220
202
200
216
210
212
214

[Fig. 6]

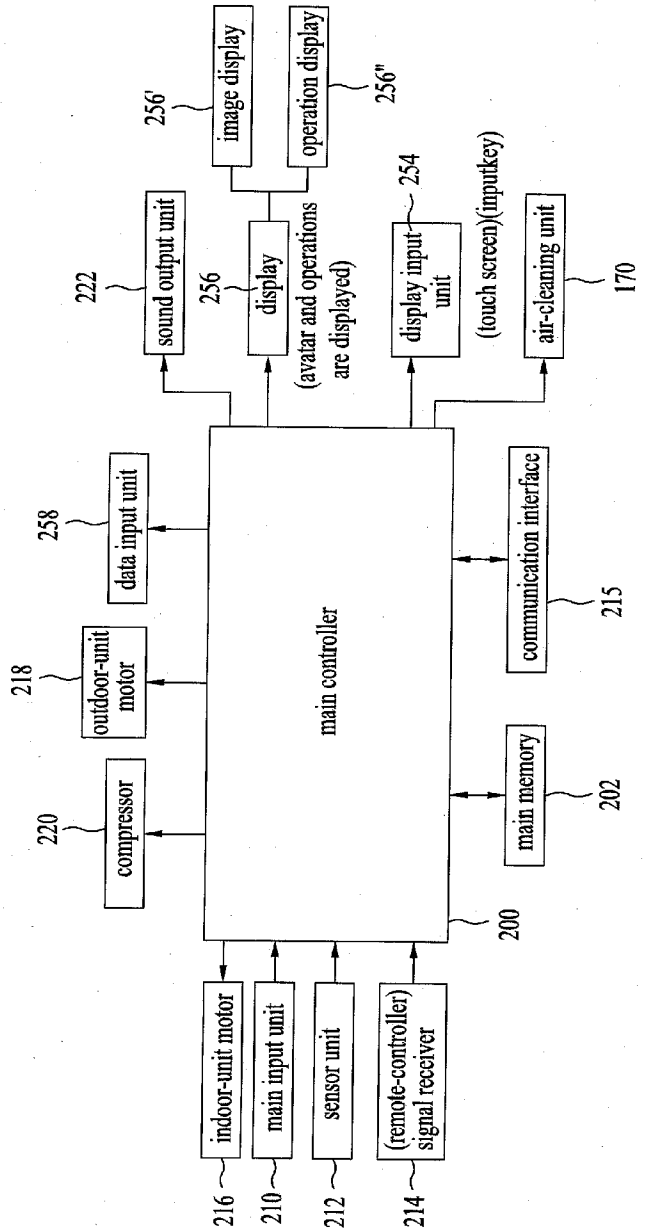
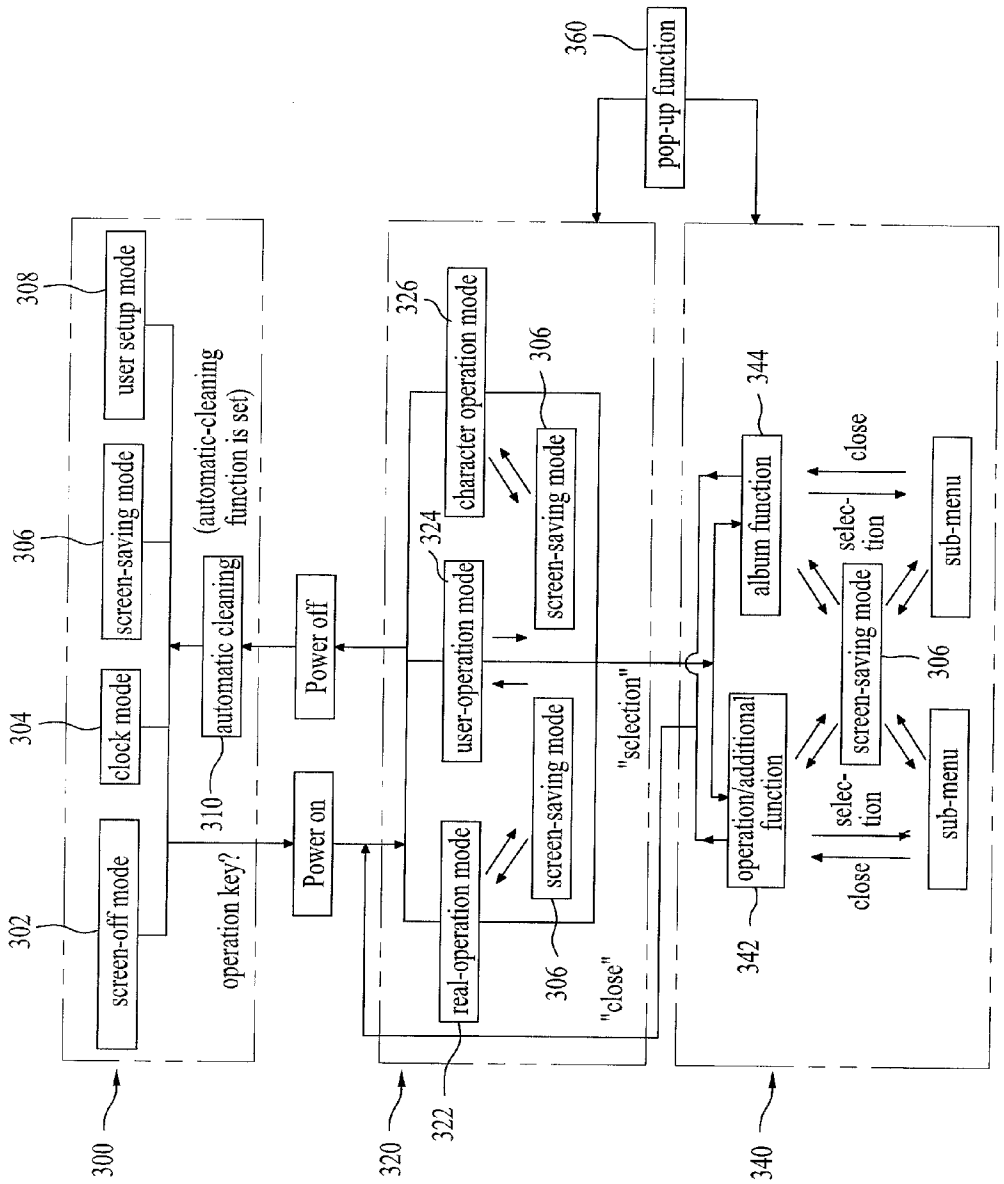
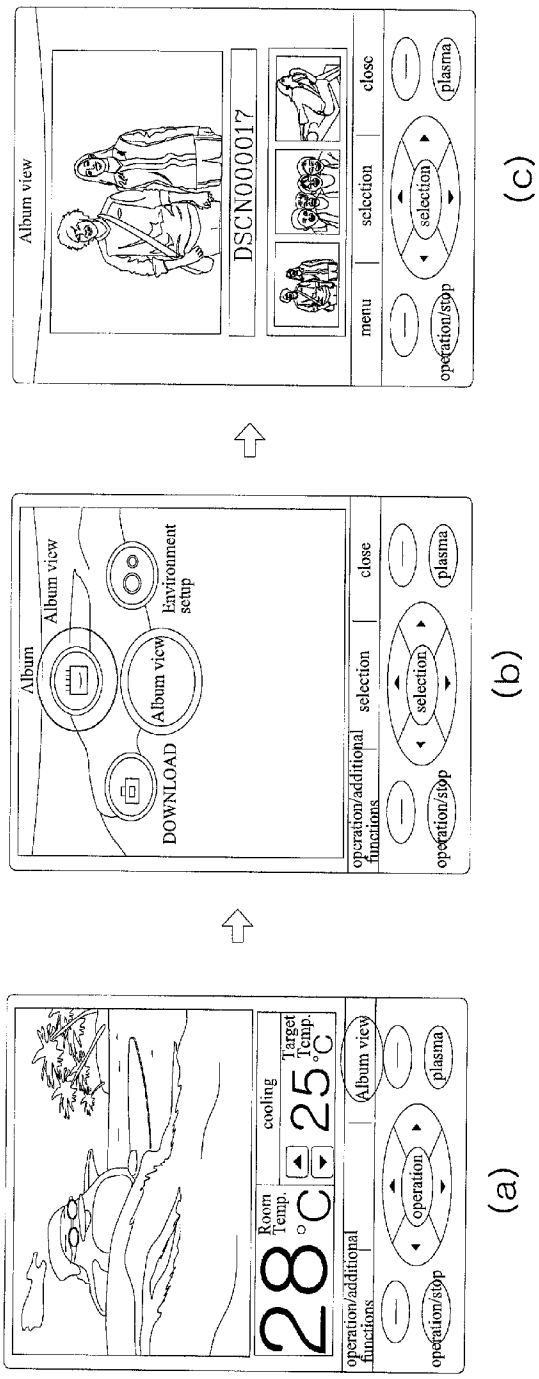


image display
256'
operation display
256"
sound output unit
222
display
256
(avatar and operations are displayed)
display input unit
254
(touch screen)(inputkey)
air-cleaning unit
170
data input unit
258
communication interface
215
outdoor-unit motor
218
main controller
main memory
202
compressor
220
200
indoor-unit motor
main input unit
sensor unit
(remote-controller) signal receiver
216
210
212
214

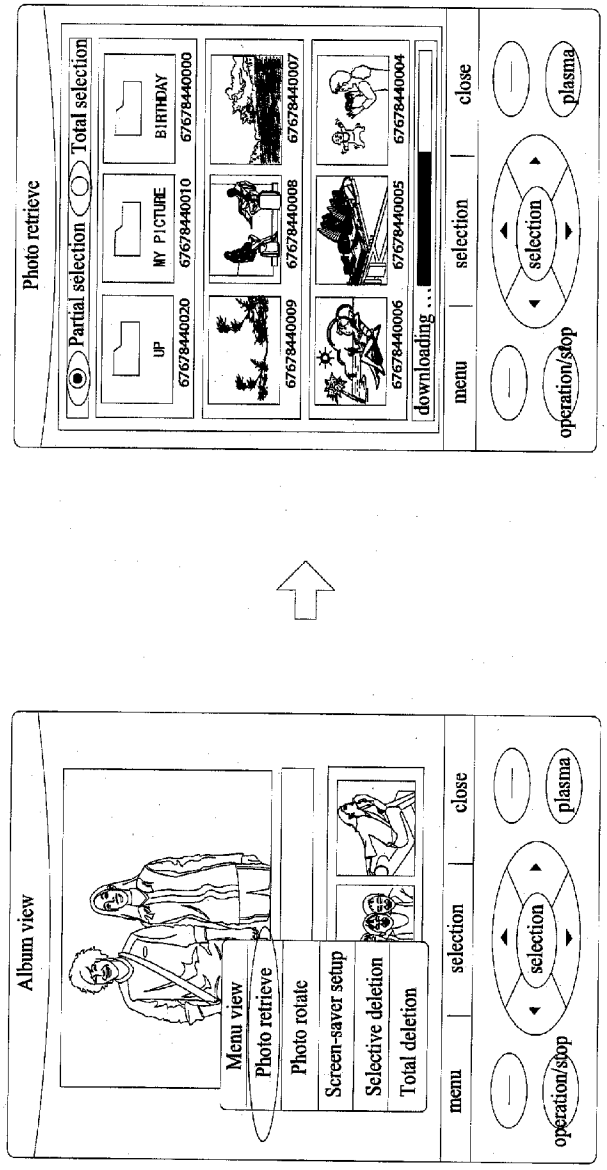
[Fig. 7]


360
pop-up function
308
user setup mode
306
screen-saving mode
304
clock mode
302
screen-off mode
310
automatic cleaning
(automatic-cleaning function is set)
operation key?
Power off
Power on
326
character operation mode
324
user-operation mode
real-operation mode
screen-saving mode
306
"sclection"
"close"
344
album function
operation/additional function
342
selec-tion
close
sub-menu
300
320
322
340

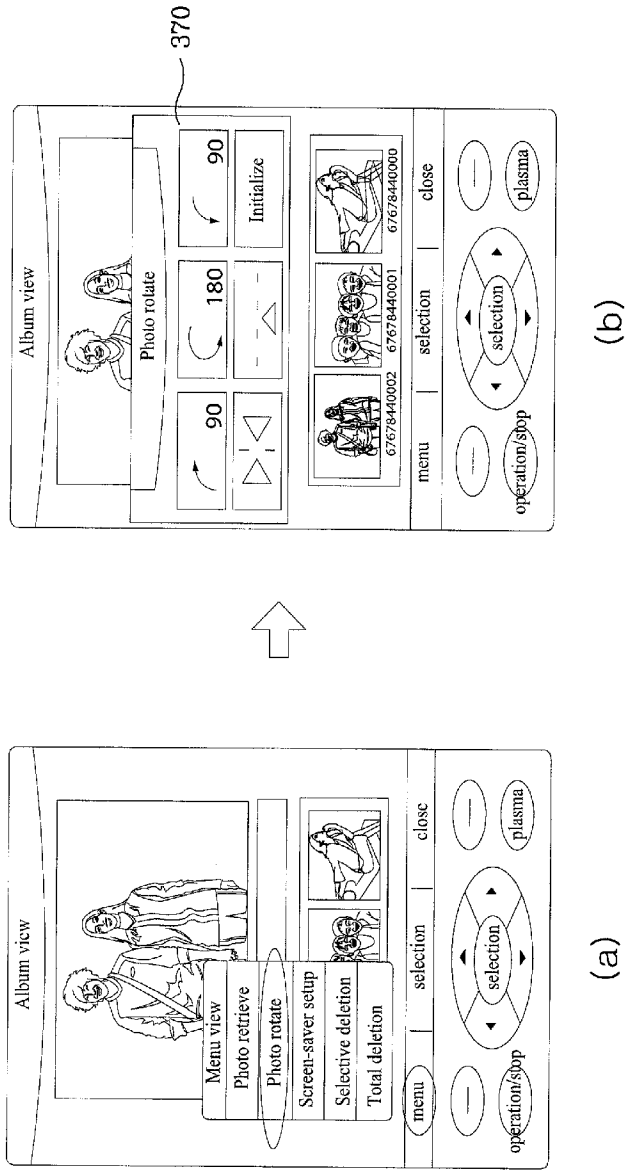
[Fig. 8]


Album view
DSCN000017
menu
selection
close
operation/stop
selection
plasma
(c)
Album
Album view
Environment setup
DOWNLOAD
Album view
operation/additional functions
selection
close
operation/stop
selection
plasma
(b)
28°C
Room Temp.
cooling
Target Temp.
25°C
Album view
operation/additional functions
operation
operation/stop
plasma
(a)

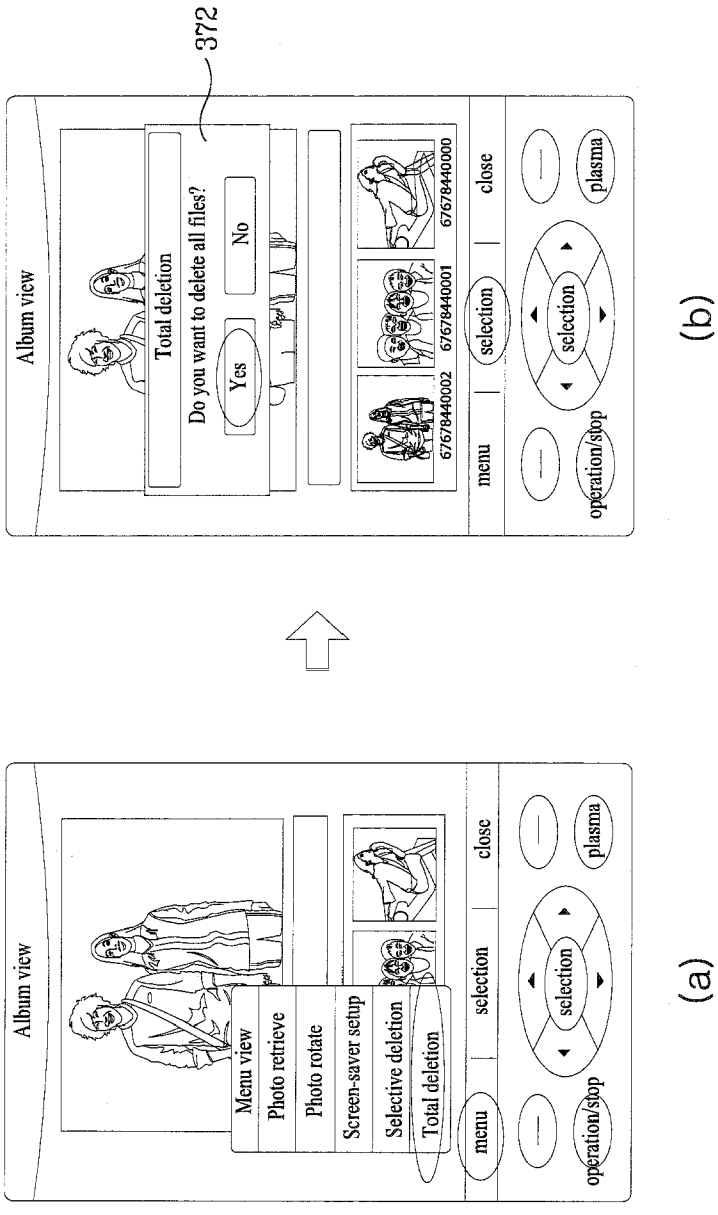
[Fig. 9]


Album view
Menu view
Photo retrieve
Photo rotate
Screen-saver setup
Selective deletion
Total deletion
menu
selection
close
operation/stop
selection
plasma
(a)
Photo retrieve
Partial selection
Total selection
UP
MY PICTURE
BIRTHDAY
67678440020
67678440010
67678440000
67678440009
67678440008
67678440007
67678440006
67678440005
67678440004
downloading . . .
menu
selection
close
operation/stop
selection
plasma
(b)

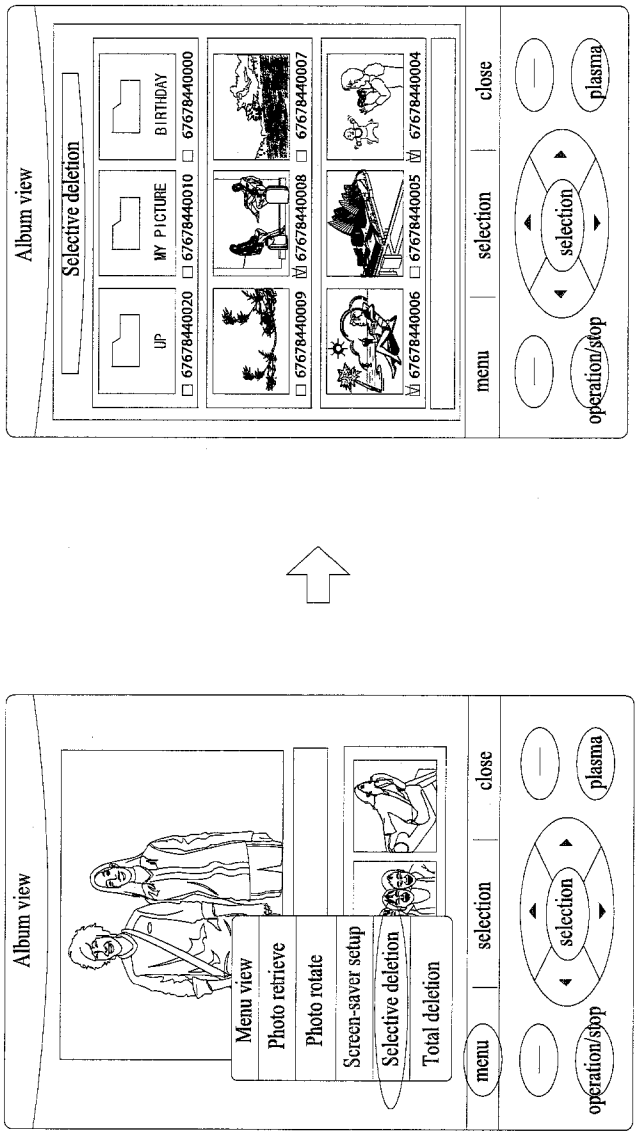
[Fig. 10]


370
Album view
Photo rotate
90
180
90
Initialize
6767840002
6767840001
6767840000
menu
selection
close
operation/stop
selection
plasma
(b)
Album view
Menu view
Photo retrieve
Photo rotate
Screen-saver setup
Selective deletion
Total deletion
menu
selection
close
operation/stop
selection
plasma
(a)

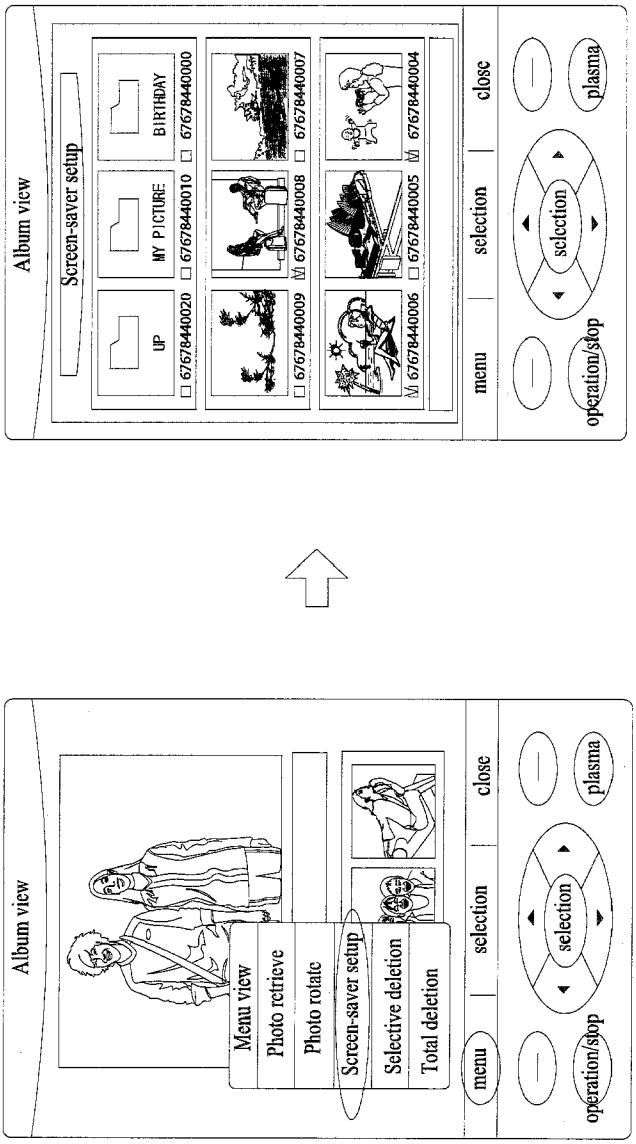
[Fig. 11]


372
Album view
Total deletion
Do you want to delete all files?
Yes
No
6767844000
6767844001
6767844002
menu
selection
close
operation/stop
selection
plasma
(b)
Album view
Menu view
Photo retrieve
Photo rotate
Screen-saver setup
Selective deletion
Total deletion
menu
selection
close
operation/stop
selection
plasma
(a)

[Fig. 12]


Album view
Menu view
Photo retrieve
Photo rotate
Screen-saver setup
Selective deletion
Total deletion
menu
selection
close
operation/stop
selection
plasma
(a)
Album view
Selective deletion
UP
MY PICTURE
BIRTHDAY
menu
selection
close
operation/stop
selection
plasma
(b)

[Fig. 13]


Album view
Menu view
Photo retrieve
Photo rotate
Screen-saver setup
Selective deletion
Total deletion
menu
selection
close
operation/stop
selection
plasma
(a)
Album view
Screen-saver setup
UP
MY PICTURE
BIRTHDAY
menu
selection
close
operation/stop
selection
plasma
(b)

[Fig. 14]

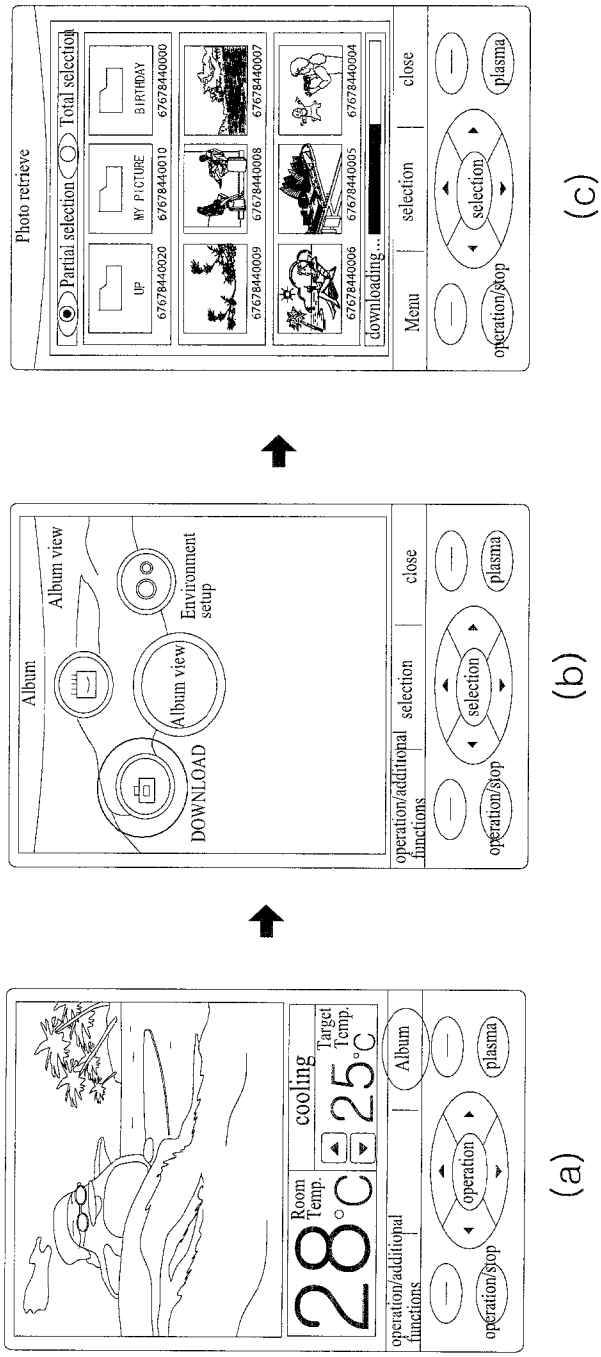
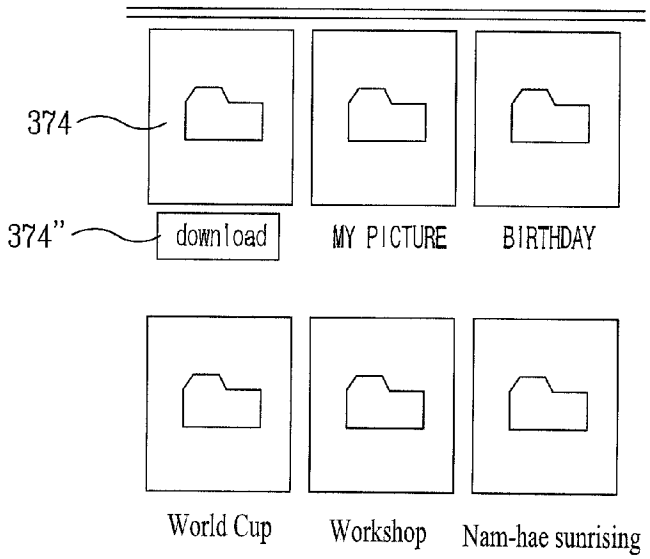
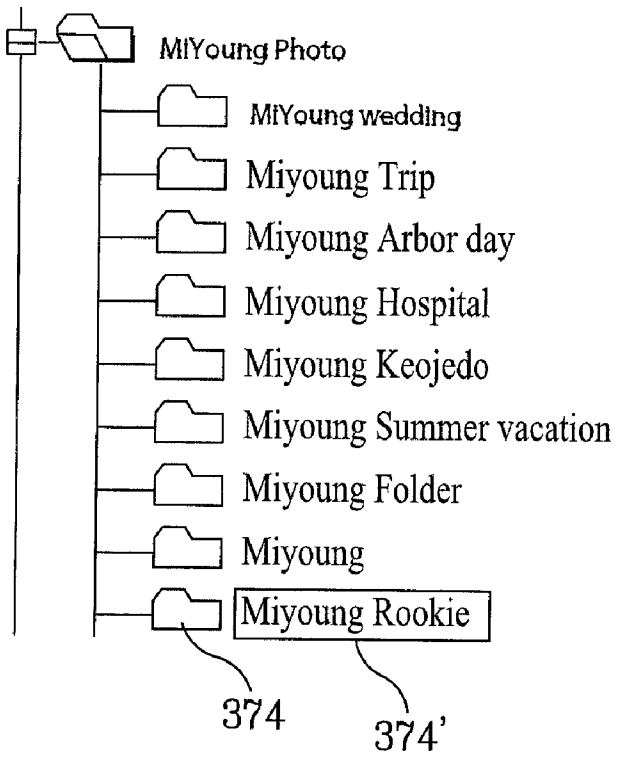


Photo retrieve
Partial selection
Total selection
UP
MY PICTURE
BIRTHDAY
67678440020
67678440010
67678440000
67678440009
67678440008
67678440007
67678440006
67678440005
67678440004
downloading...
Menu
selection
close
operation/stop
selection
plasma
(c)
Album
Album view
Environment setup
DOWNLOAD
Album view
operation/additional functions
selection
close
operation/stop
selection
plasma
(b)
Room Temp.
28°C
cooling
Target Temp.
25°C
operation/additional functions
Album
operation/stop
operation
plasma
(a)

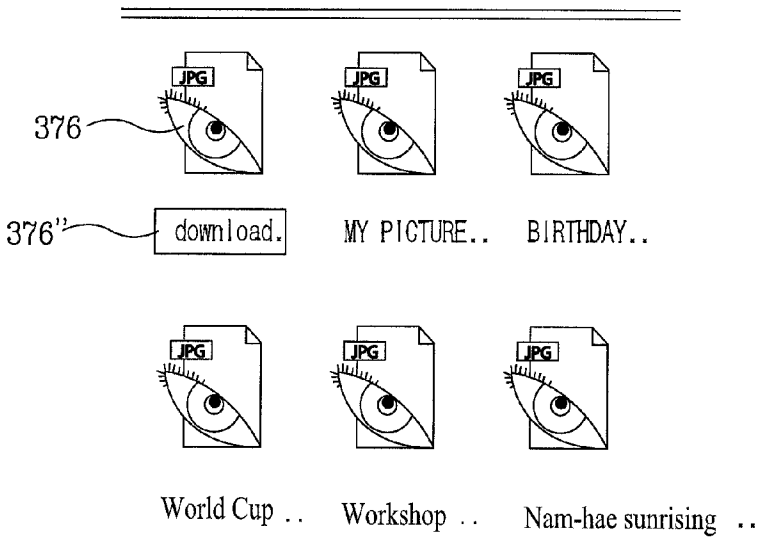
[Fig. 15]


374
374"
download
MY PICTURE
BIRTHDAY
World Cup
Workshop
Nam-hae sunrising

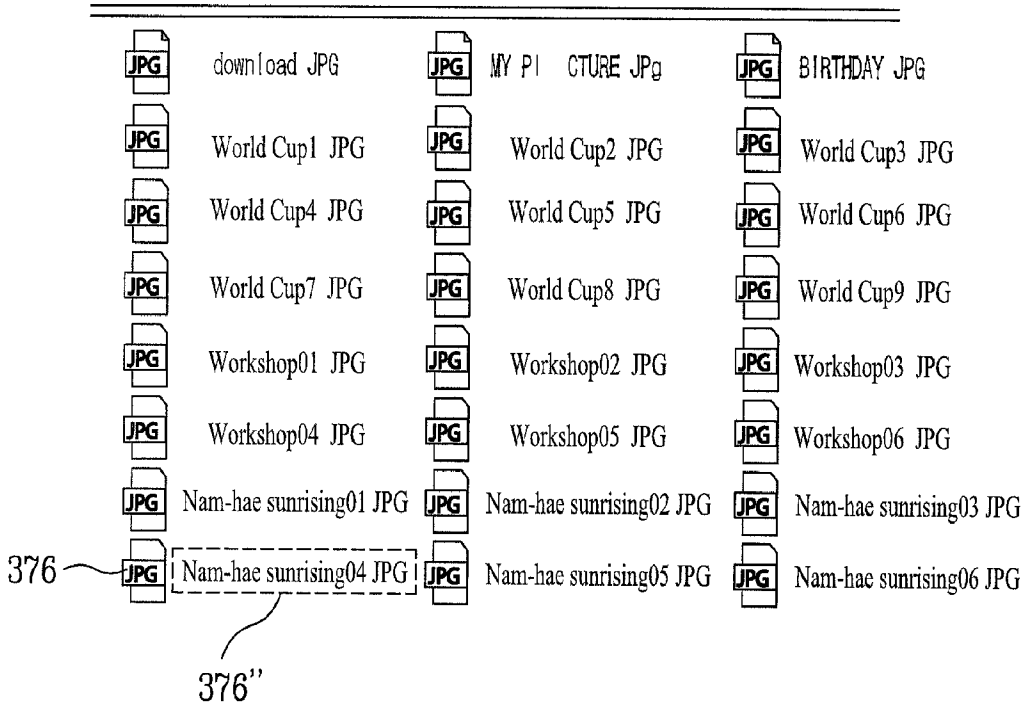
[Fig. 16]


MiYoung Photo
MiYoung wedding
Miyoung Trip
Miyoung Arbor day
Miyoung Hospital
Miyoung Keojedo
Miyoung Summer vacation
Miyoung Folder
Miyoung
Miyoung Rookie
374
374'

[Fig. 17]


376
376''
download.
MY PICTURE..
BIRTHDAY..
World Cup ..
Workshop ..
Nam-hae sunrising ..

[Fig. 18]

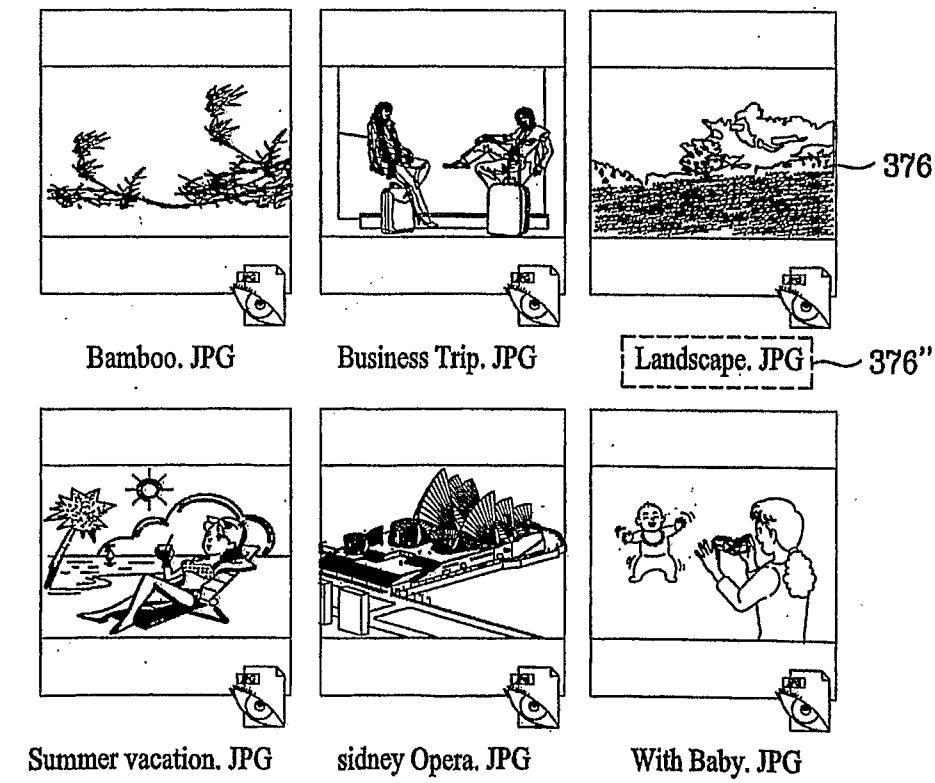

download JPG
MY PI CTURE JPg
BIRTHDAY JPG
World Cup1 JPG
World Cup2 JPG
World Cup3 JPG
World Cup4 JPG
World Cup5 JPG
World Cup6 JPG
World Cup7 JPG
World Cup8 JPG
World Cup9 JPG
Workshop01 JPG
Workshop02 JPG
Workshop03 JPG
Workshop04 JPG
Workshop05 JPG
Workshop06 JPG
Nam-hae sunrising01 JPG
Nam-hae sunrising02 JPG
Nam-hae sunrising03 JPG
376
Nam-hae sunrising04 JPG
Nam-hae sunrising05 JPG
Nam-hae sunrising06 JPG
376''

[Fig. 19]

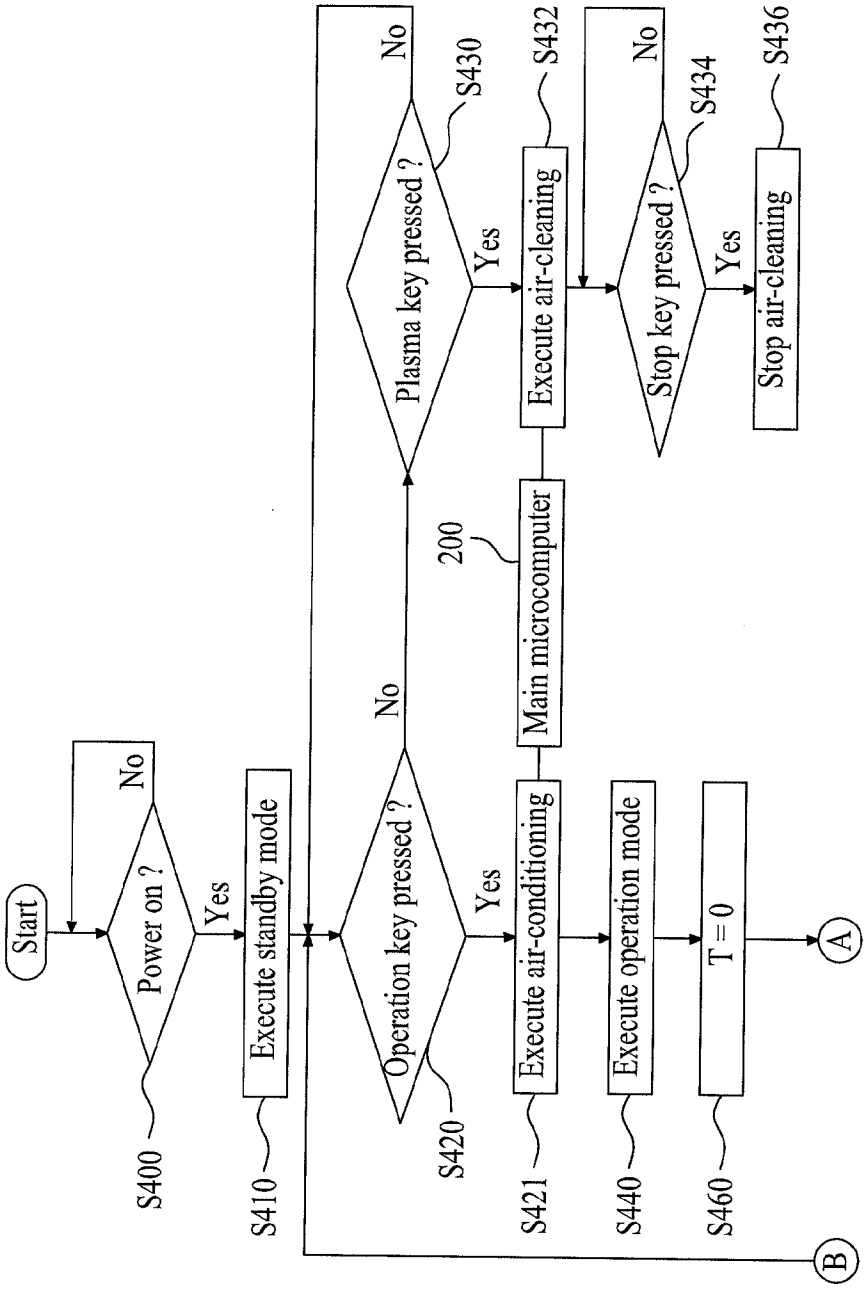
name △	size	kind	correction data
download JPG	322KB	JPG IMAGE	2005-025 PM 6:30
World Cup1 JPG	122KB	JPG IMAGE	2005-025 PM 6:30
World Cup4 JPG	142KB	JPG IMAGE	2005-025 PM 6:30
World Cup7 JPG	322KB	JPG IMAGE	2005-025 PM 6:30
Workshop01 JPG	423KB	JPG IMAGE	2005-025 PM 6:30
Workshop04 JPG	125KB	JPG IMAGE	2005-025 PM 6:30
Nam-hae sunrising01 JPG	342KB	JPG IMAGE	2005-025 PM 6:30
Nam-hae sunrising04 JPG	567KB	JPG IMAGE	2005-025 PM 6:30
Nam-hae sunrising44 JPG	234KB	JPG IMAGE	2005-025 PM 6:30
Nam-hae sunrising14 JPG	352KB	JPG IMAGE	2005-025 PM 6:30
Nam-hae sunrising22 JPG	742KB	JPG IMAGE	2005-025 PM 6:30
376 ~ Nam-hae sunrising11 JPG	231KB	JPG IMAGE	2005-025 PM 6:30

376"

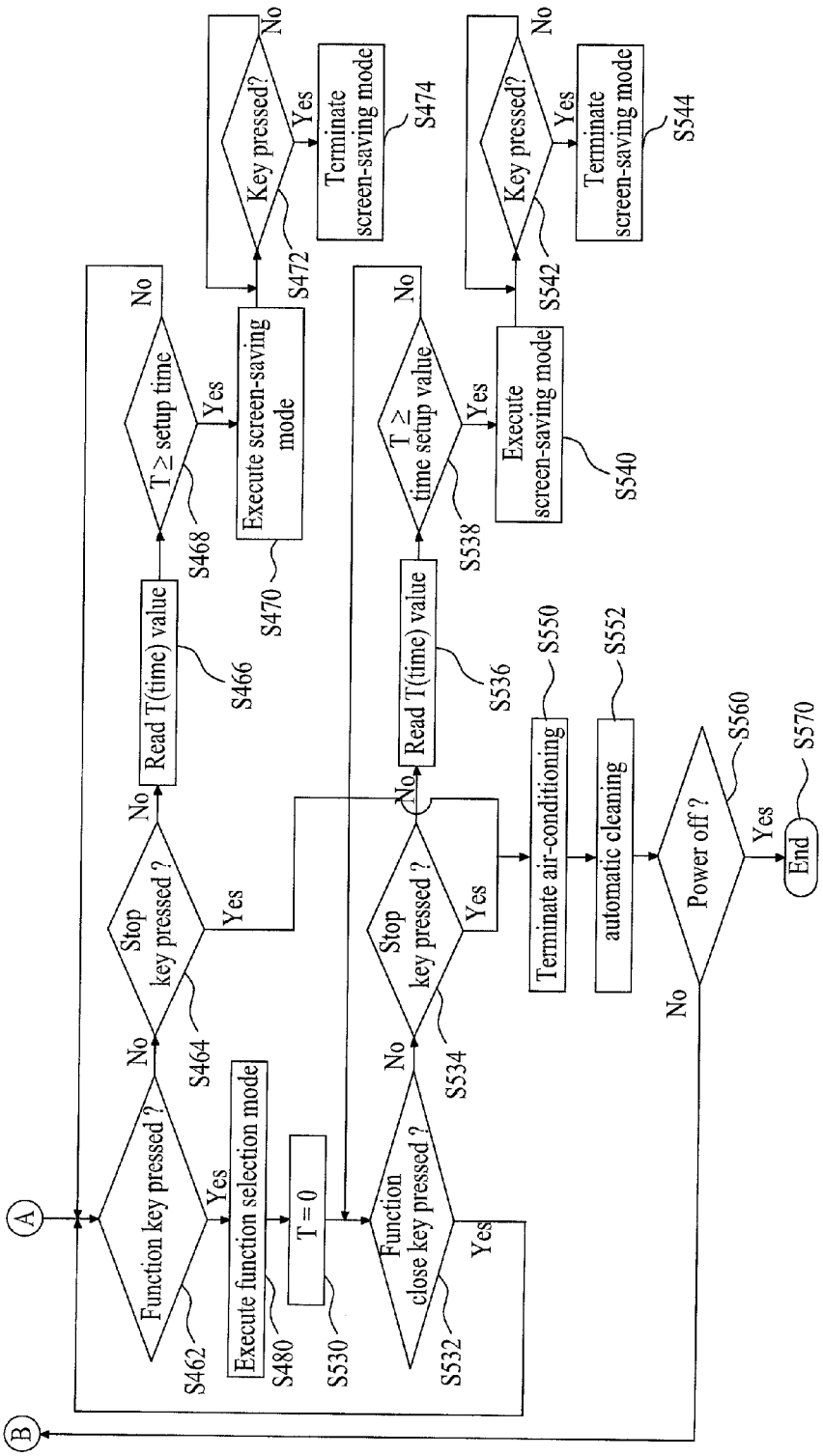
[Fig. 20]



[Fig. 21]


Start
Power on ?
No
Yes
S400
Execute standby mode
S410
Operation key pressed ?
No
Yes
S420
Plasma key pressed ?
No
Yes
S430
200
Main microcomputer
Execute air-conditioning
S421
Execute air-cleaning
S432
Execute operation mode
S440
Stop key pressed ?
No
Yes
S434
T = 0
S460
Stop air-cleaning
S436
A
B

[Fig. 22]


A
B
Function key pressed ?
S462
Yes
No
Execute function selection mode
S480
T = 0
S530
Stop key pressed ?
S464
Yes
No
Read T(time) value
S466
T ≥ setup time
S468
Yes
No
Execute screen-saving mode
S470
Key pressed?
S472
Yes
No
Terminate screen-saving mode
S474
Function close key pressed ?
S532
Yes
No
Stop key pressed ?
S534
Yes
No
Read T(time) value
S536
T ≥ time setup value
S538
Yes
No
Execute screen-saving mode
S540
Key pressed?
S542
Yes
No
Terminate screen-saving mode
S544
Terminate air-conditioning
S550
automatic cleaning
S552
Power off ?
S560
Yes
No
End
S570