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(19) **United States**(12) **Patent Application Publication****Park et al.**(10) **Pub. No.: US 2005/0109047 A1**(43) **Pub. Date: May 26, 2005**(54) **AIR CONDITIONER HAVING AN  
ENHANCED USER PERCEPTION****Publication Classification**(51) **Int. Cl.<sup>7</sup> ..... F25B 49/00**(52) **U.S. Cl. .... 62/125; 62/126**(76) **Inventors: Jung Mee Park, Busan-si (KR); Sung  
Jin Hwang, Changwon-si (KR); Ju Ho  
Ock, Masan-si (KR)**(57) **ABSTRACT**

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An air conditioner is provided. A predetermined character and/or its applied character image are/is displayed on a display window of the air conditioner. The character and/or the character image are/is changed depending on the operational states of the air conditioner, so that the user perceives the operational state of the air conditioner more conveniently. The air conditioner has advantages in that the user can perceive the operational state of the air conditioner more conveniently, the user can be stimulated to purchase the product, and a use term of the air conditioner can be extended.

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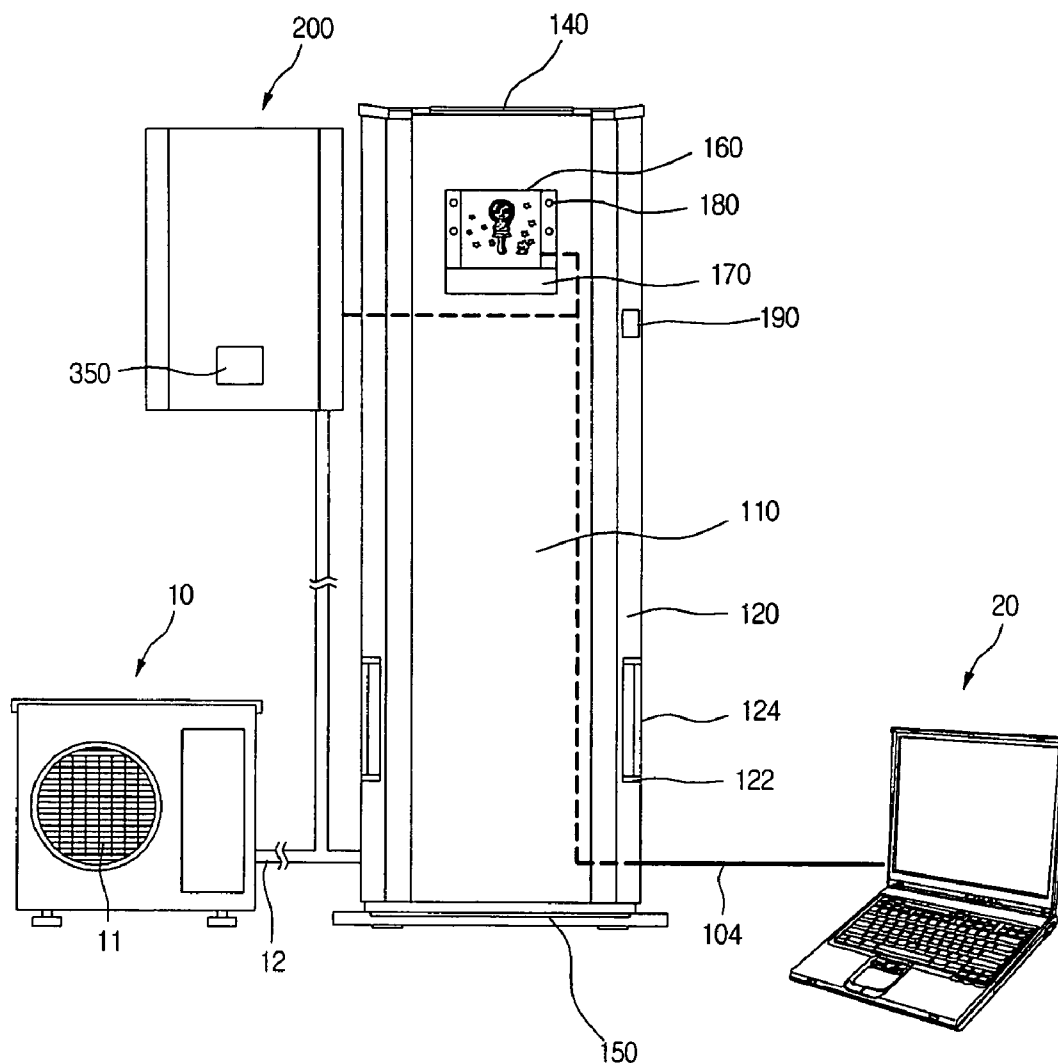


Fig. 1

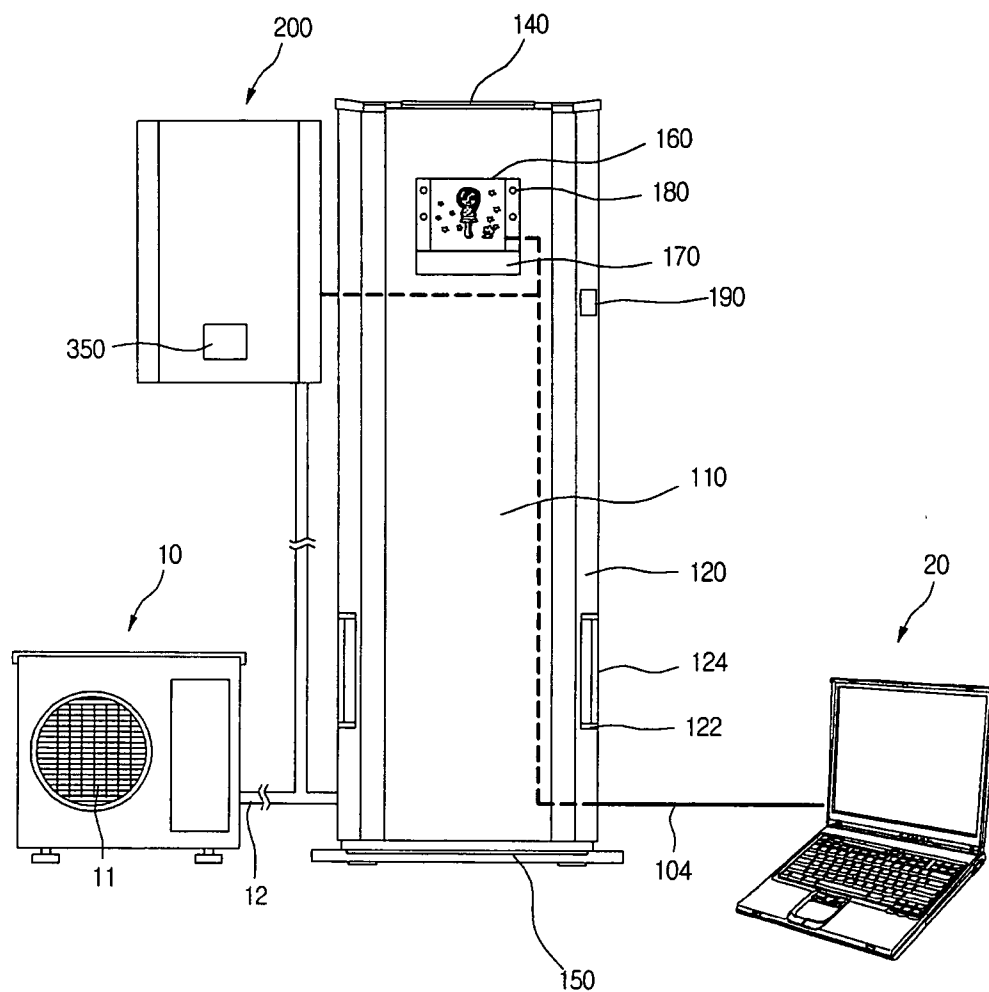


Fig. 2

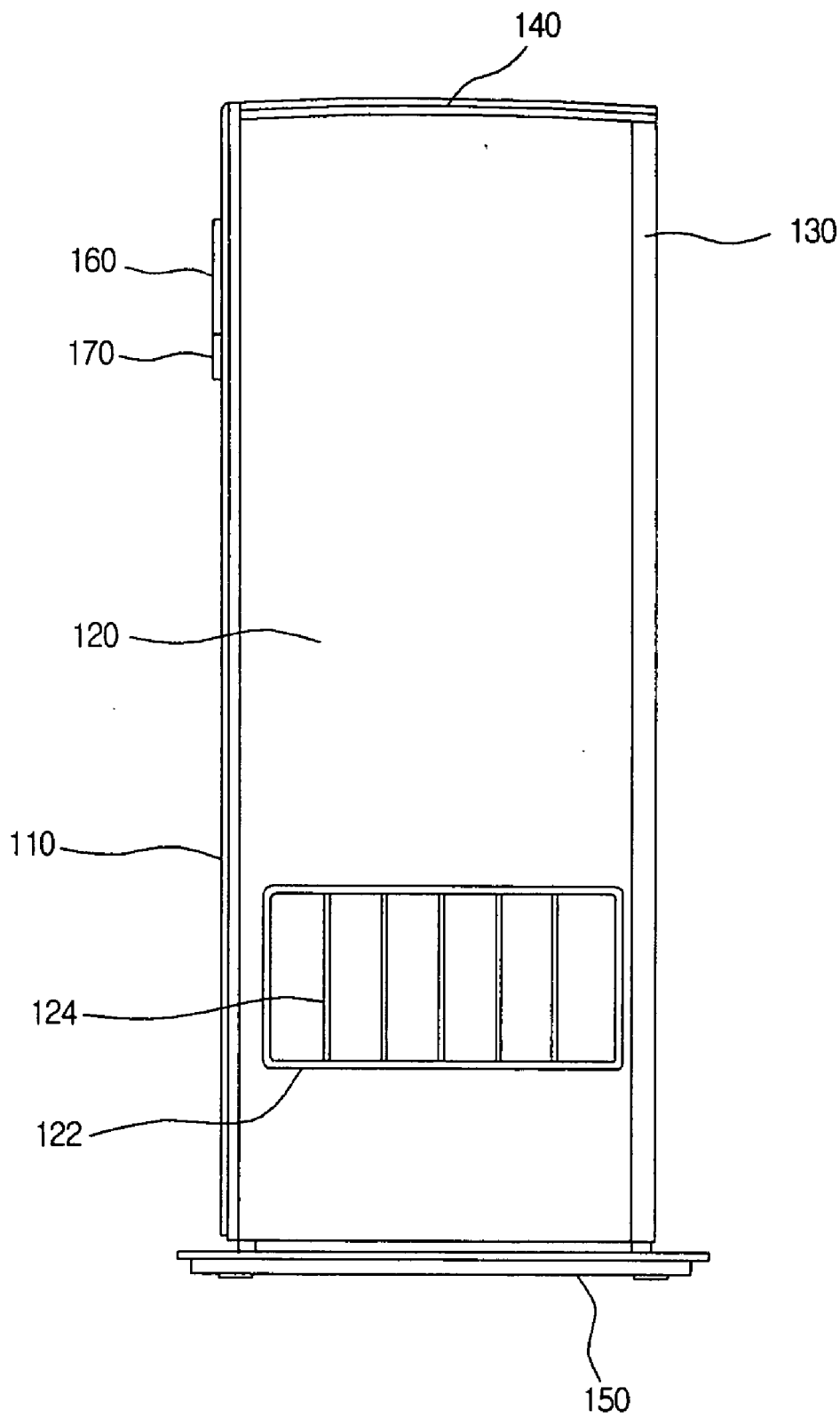


Fig. 3

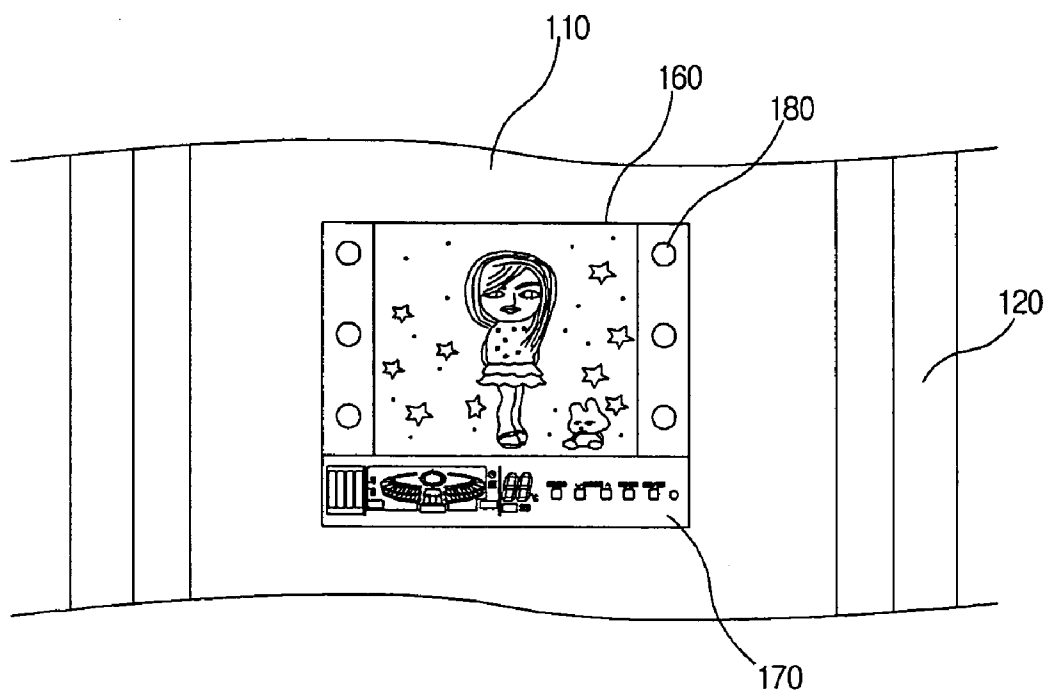


Fig. 4

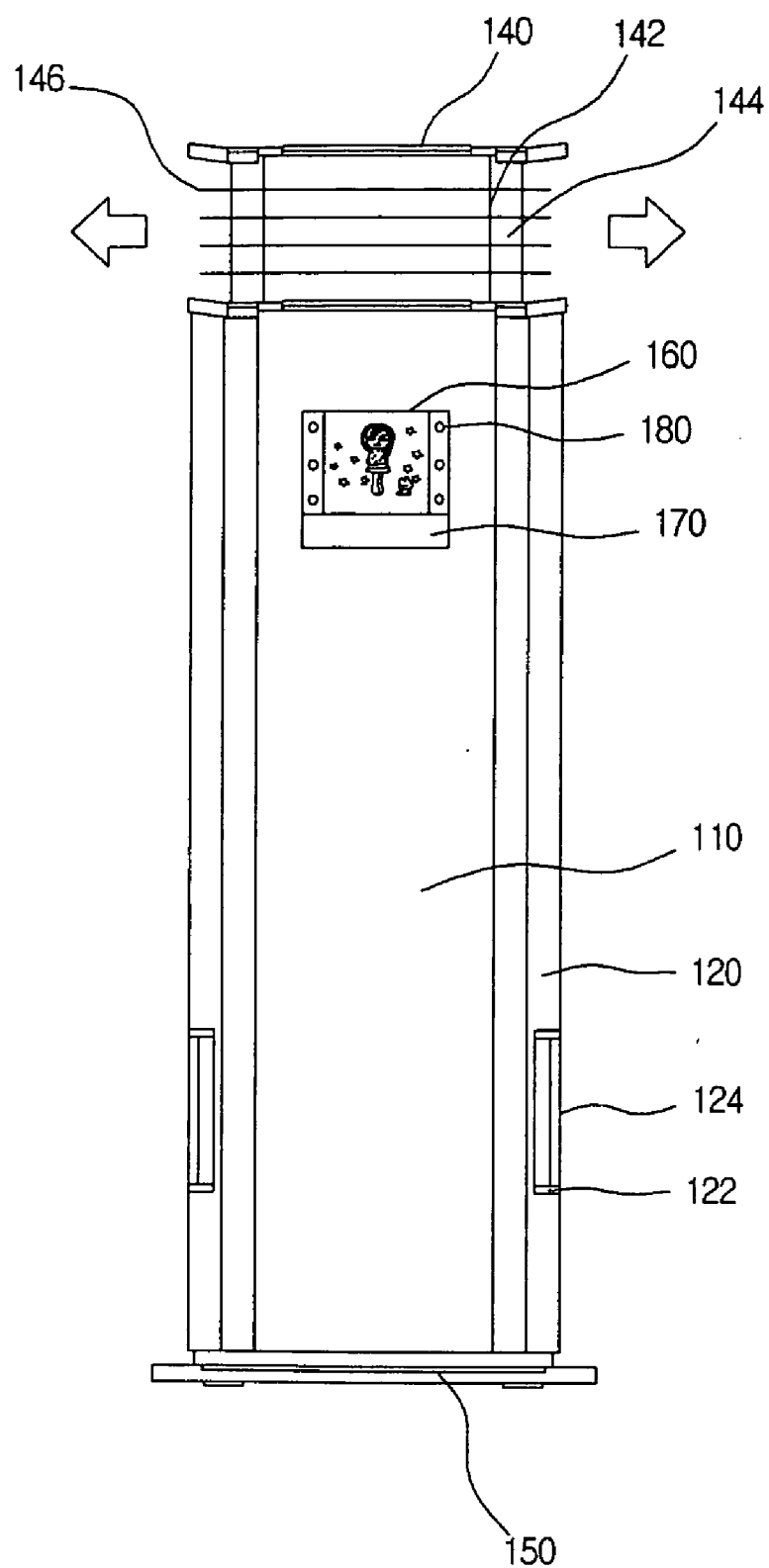


Fig. 5

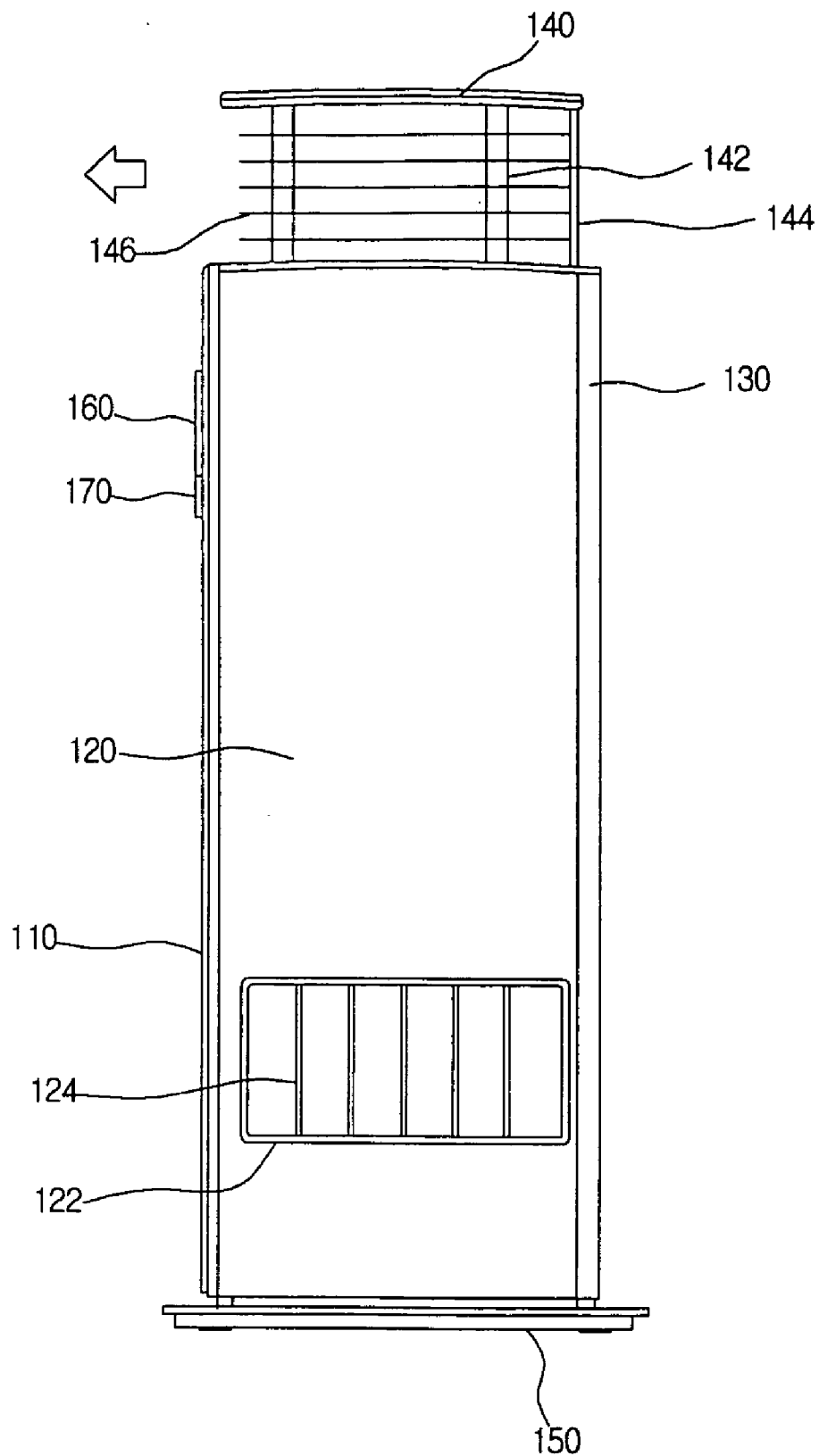


Fig. 6

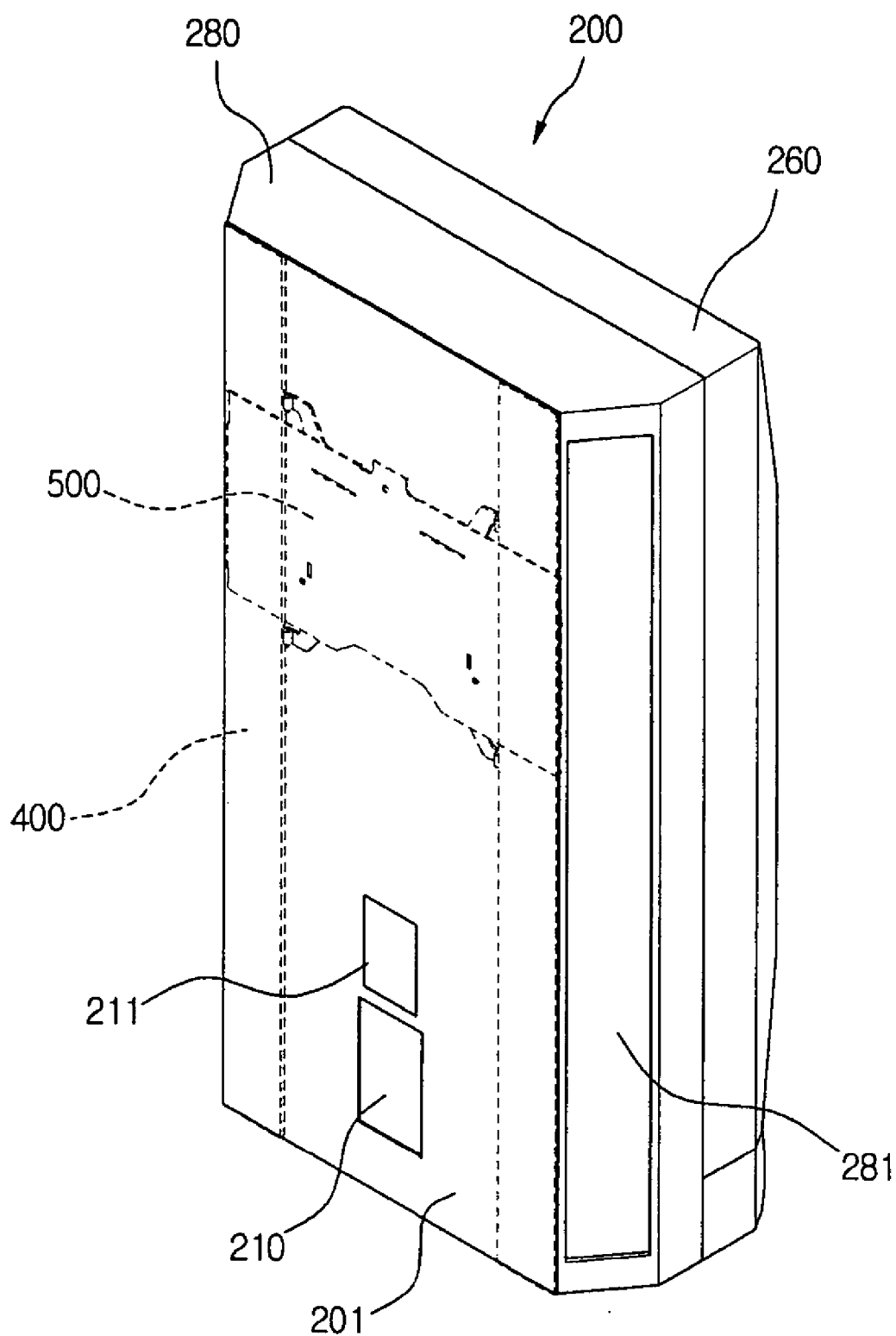


Fig. 7

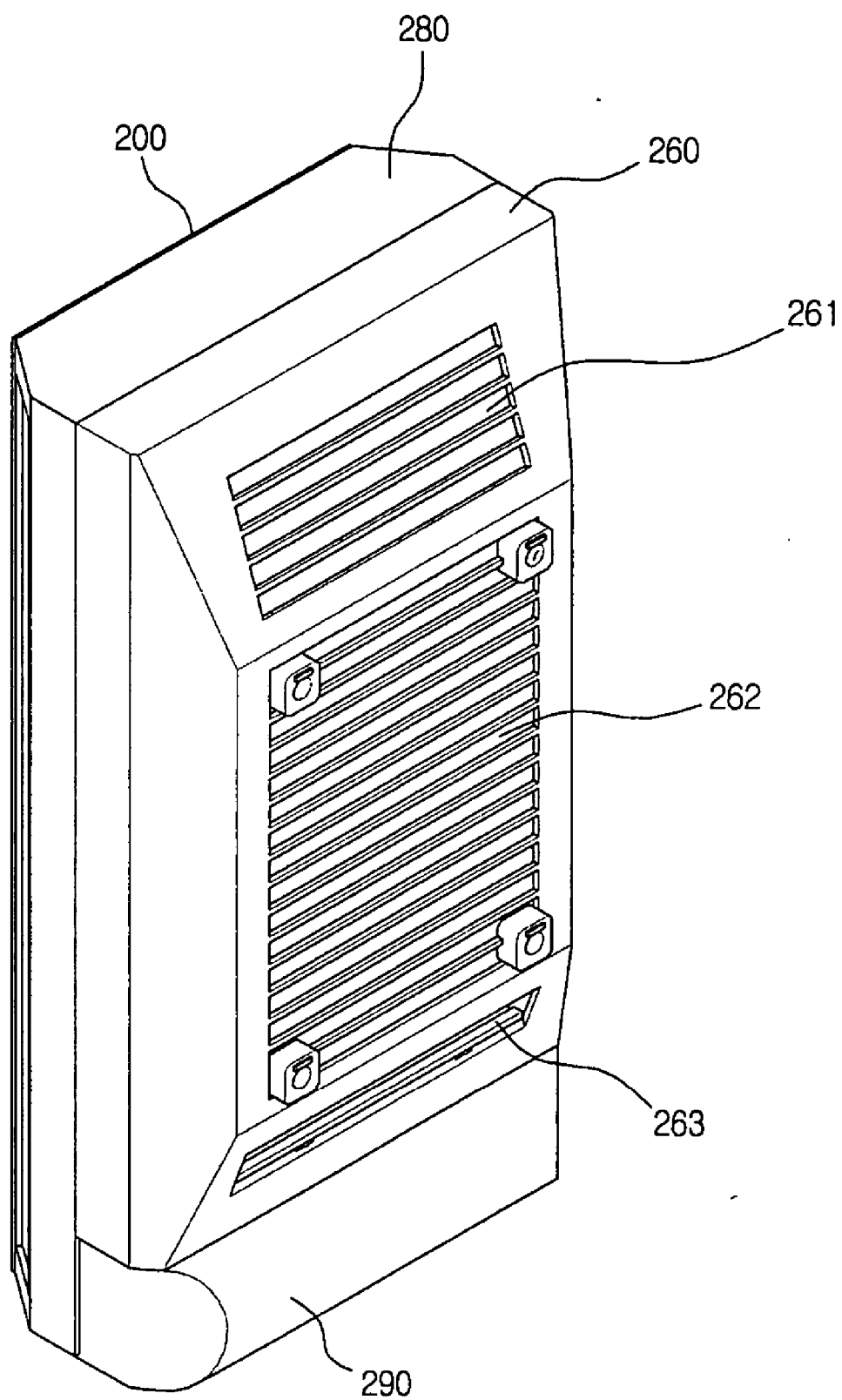


Fig. 8

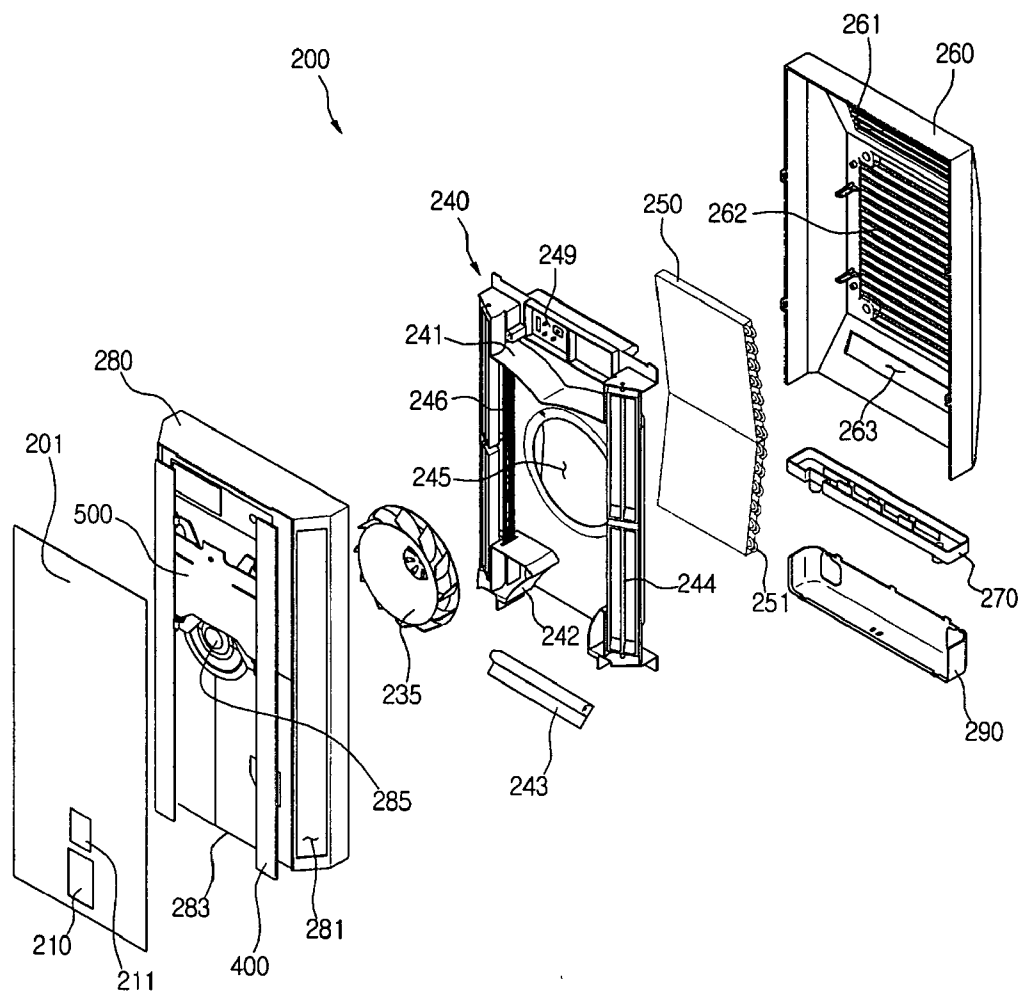


Fig. 9

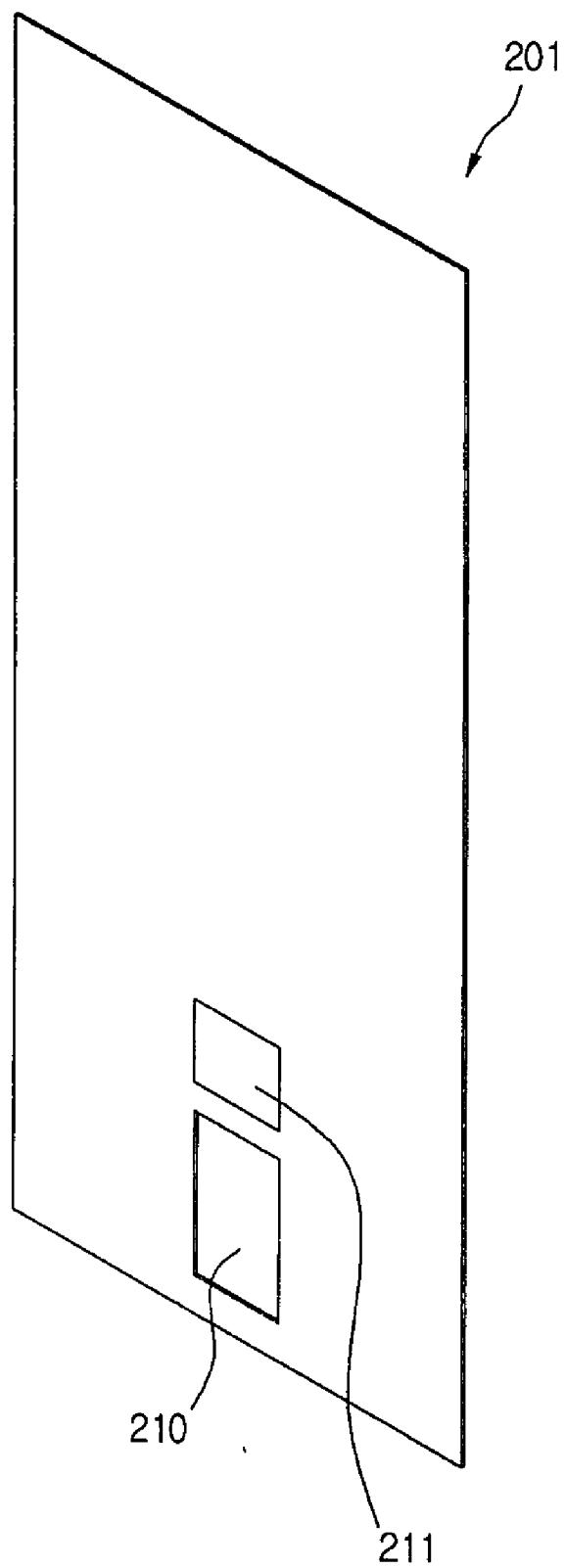


Fig. 10

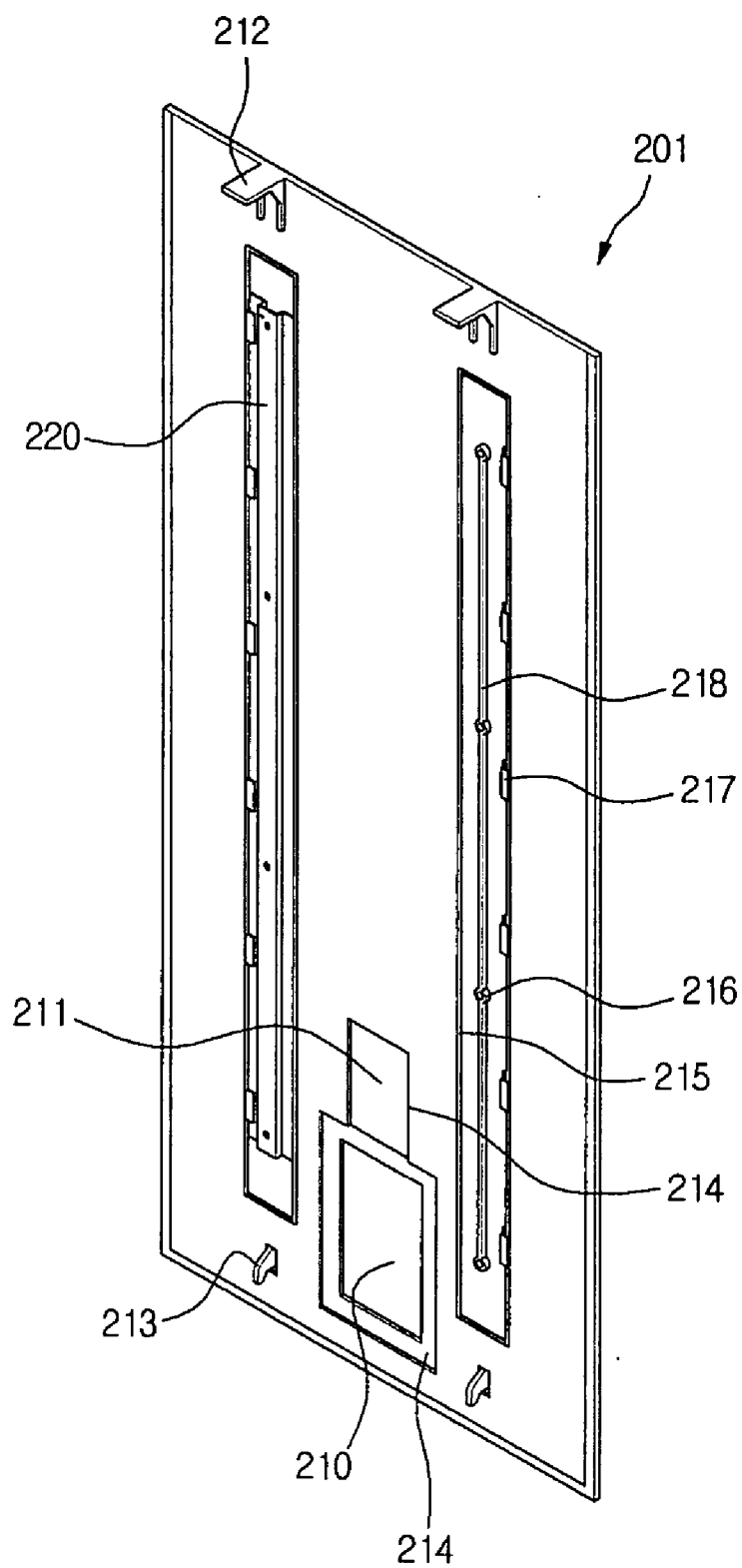


Fig. 11

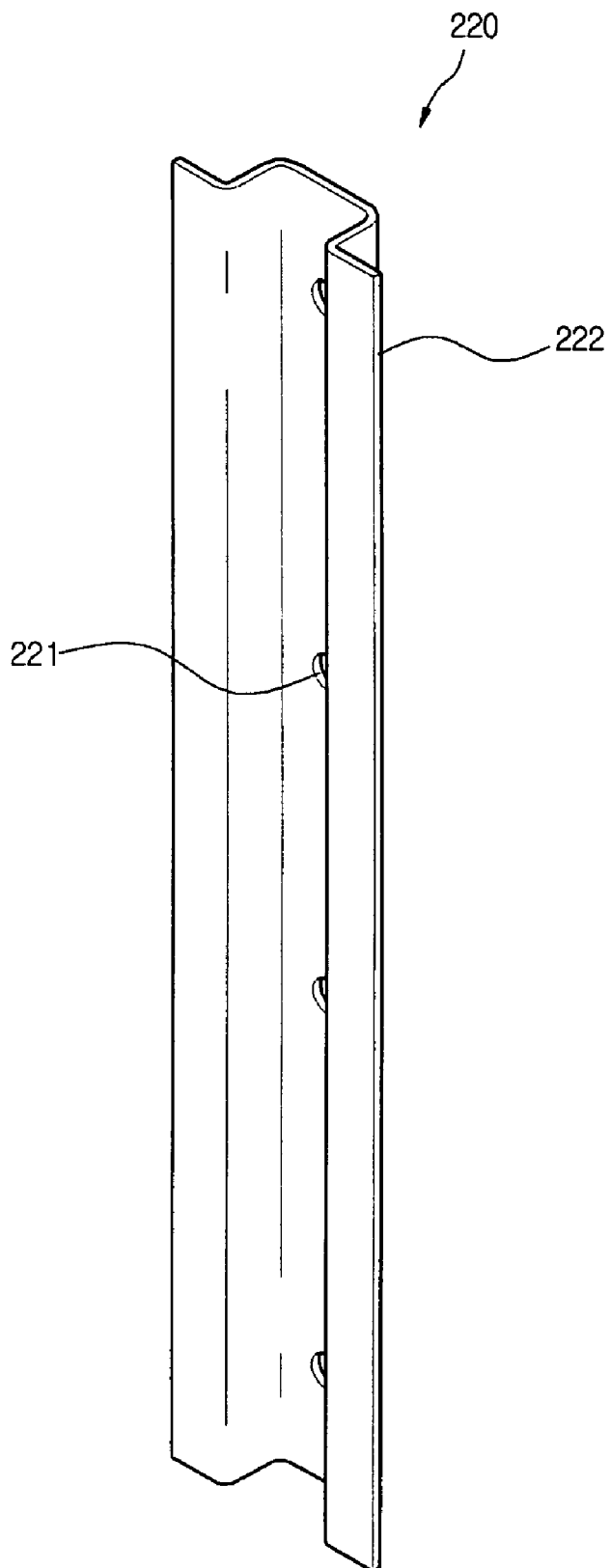


Fig. 12

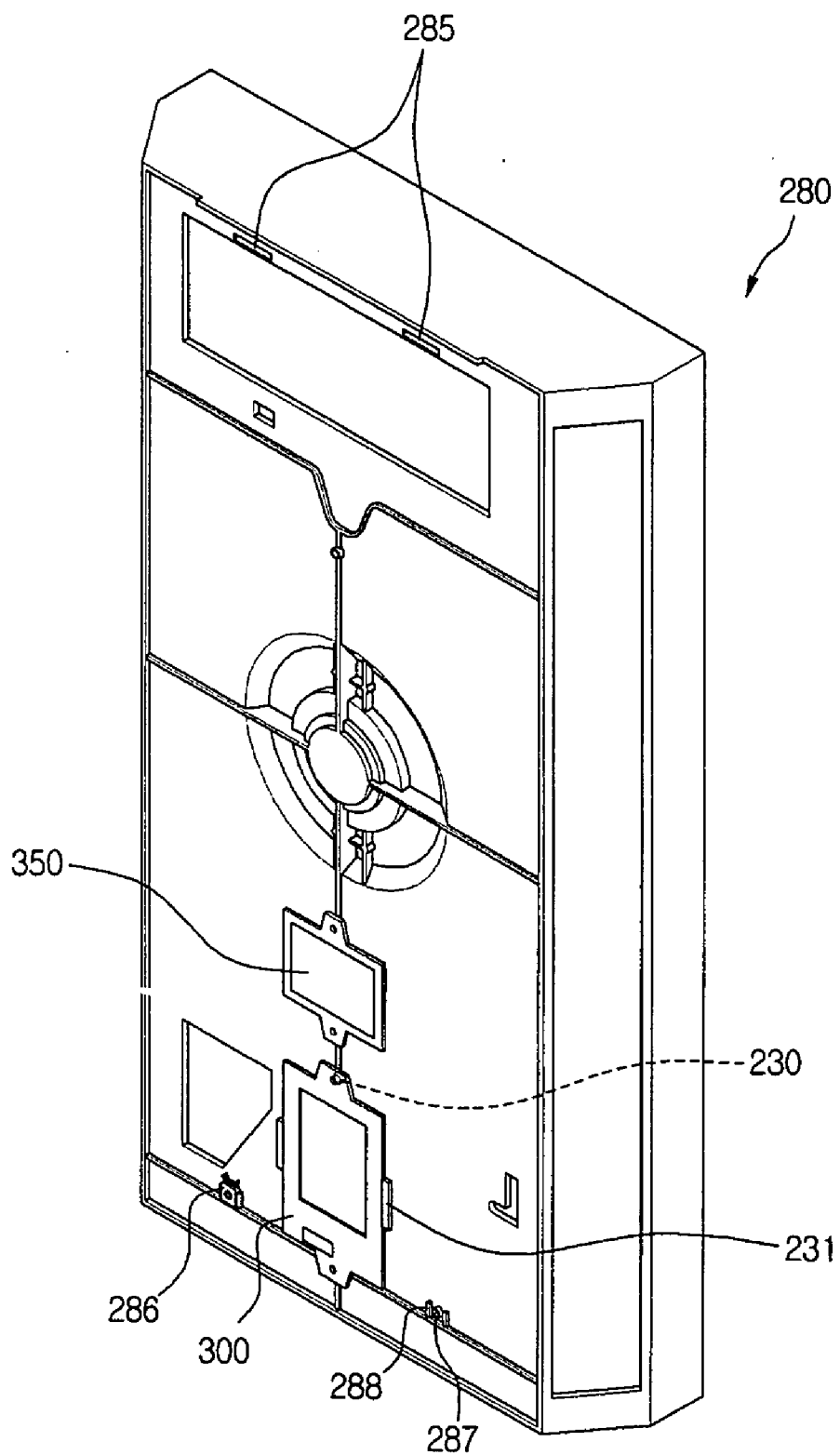


Fig. 13

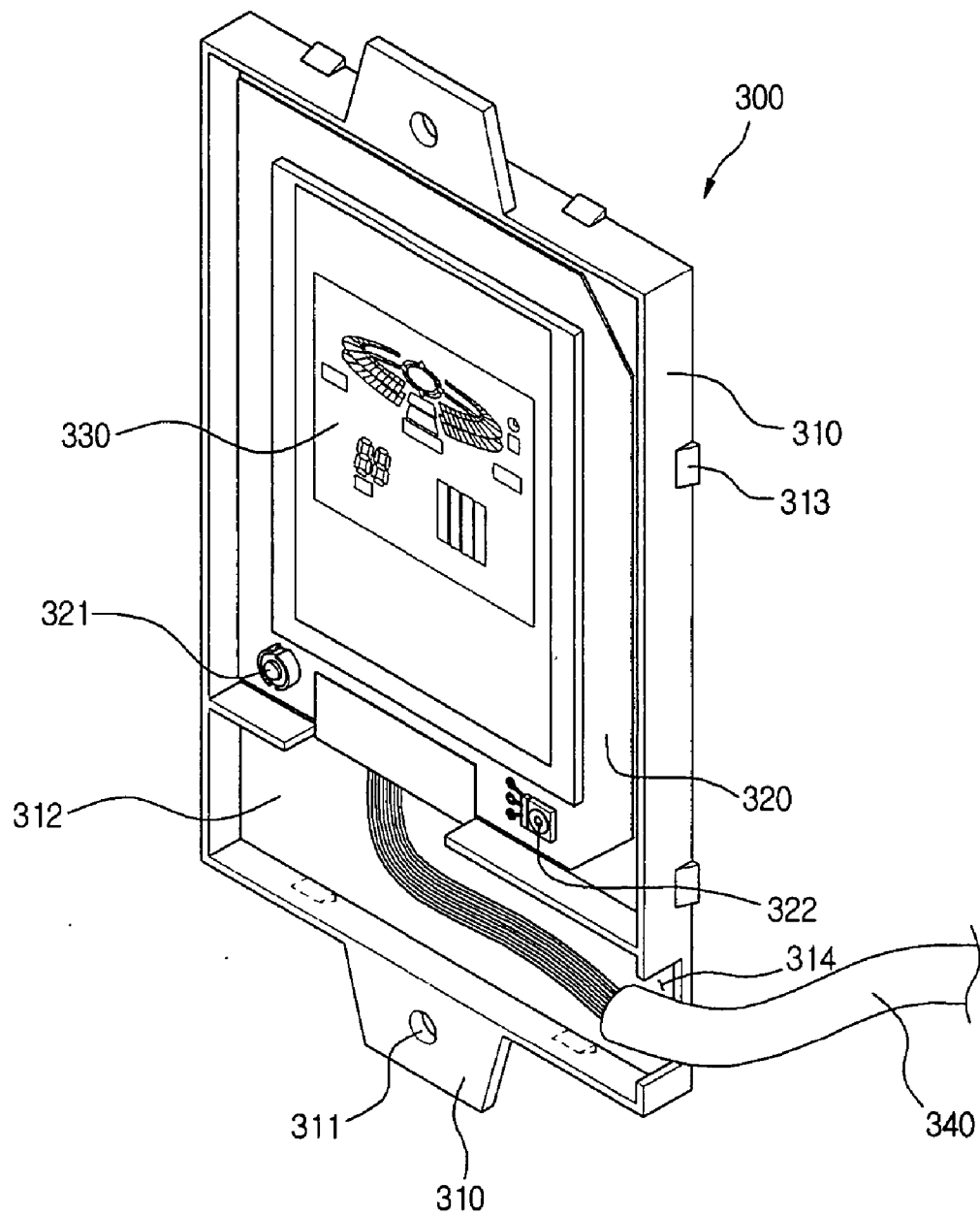


Fig. 14

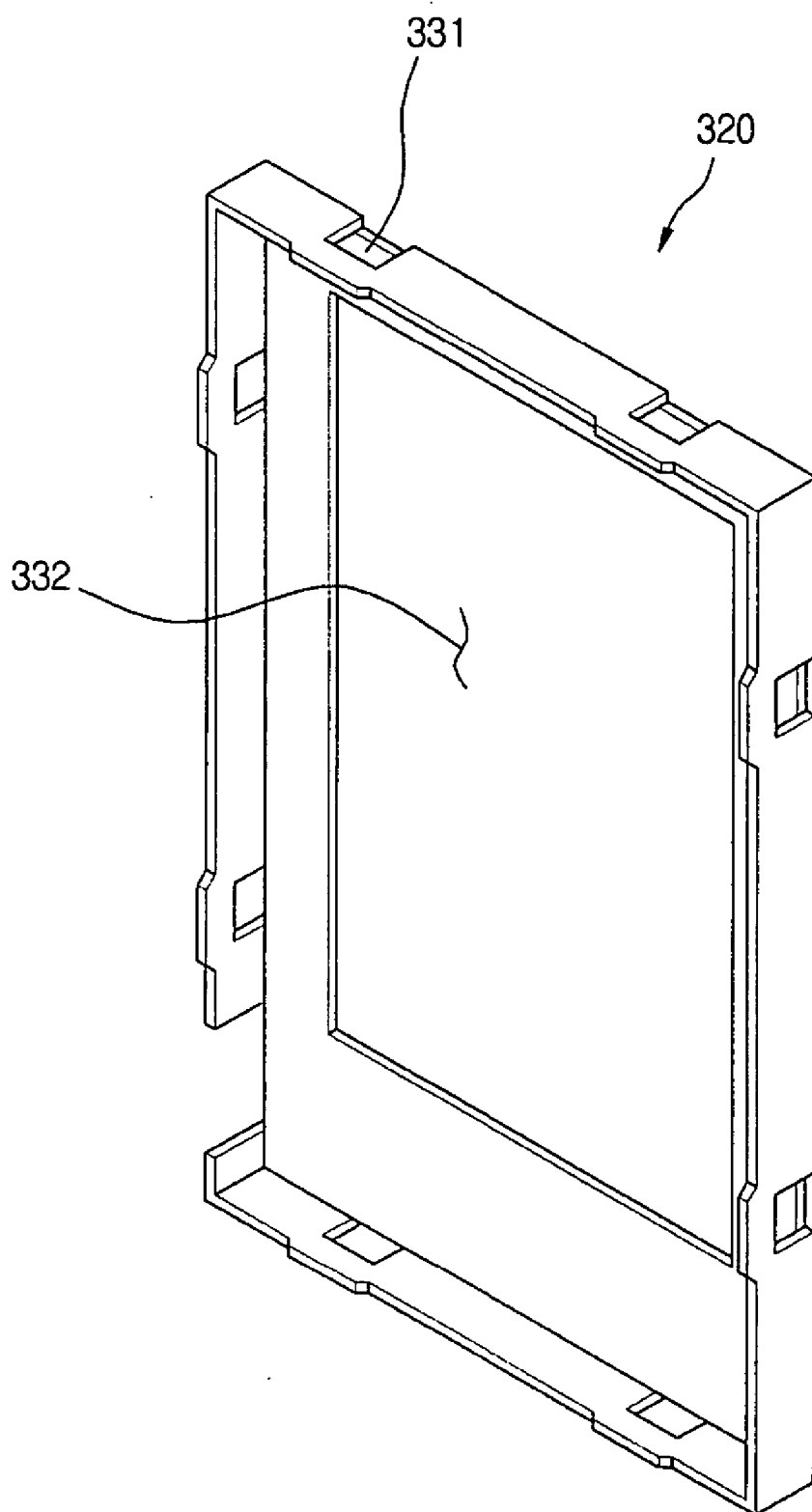


Fig. 15

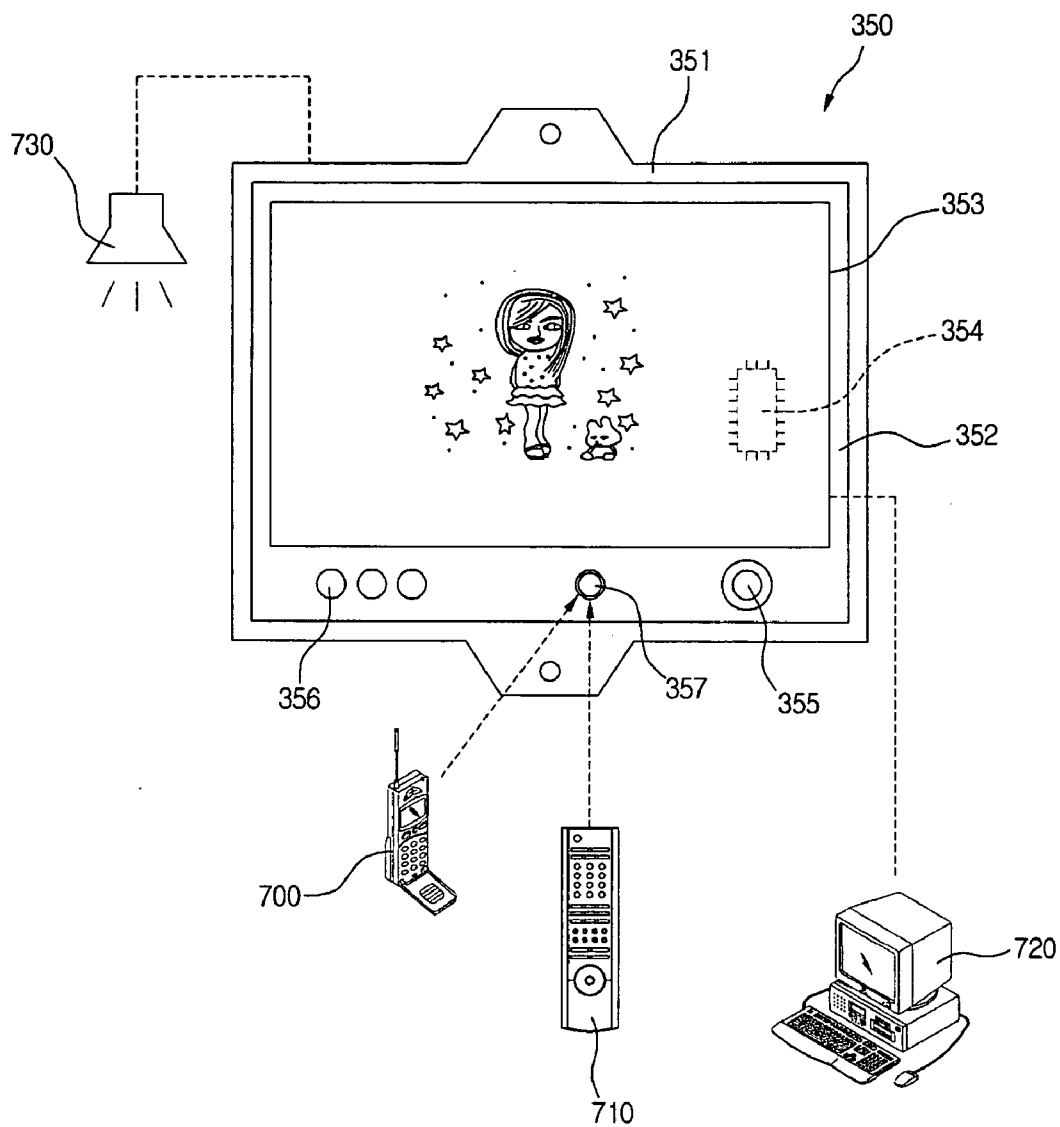


Fig. 16

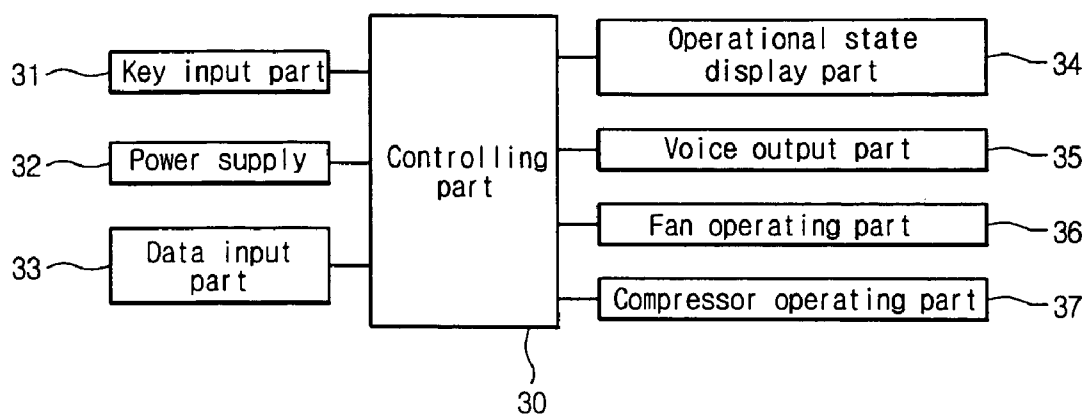


Fig. 17

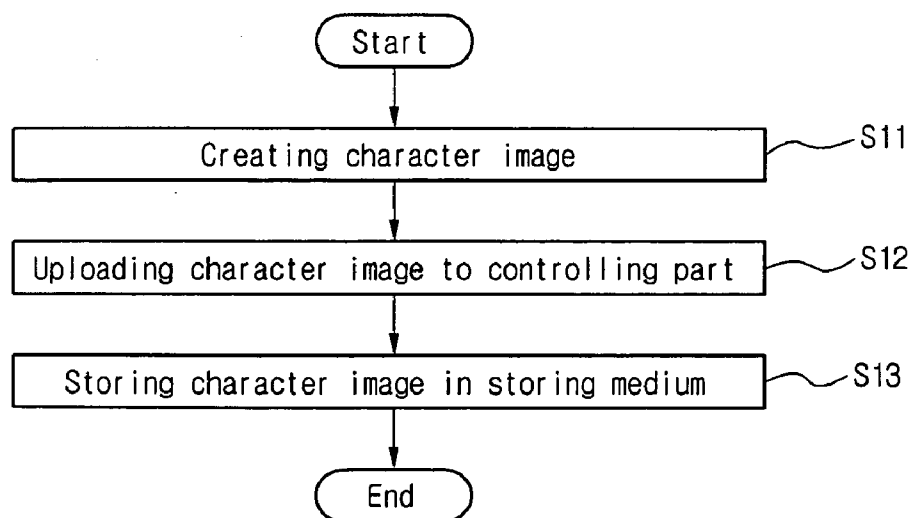


Fig. 18

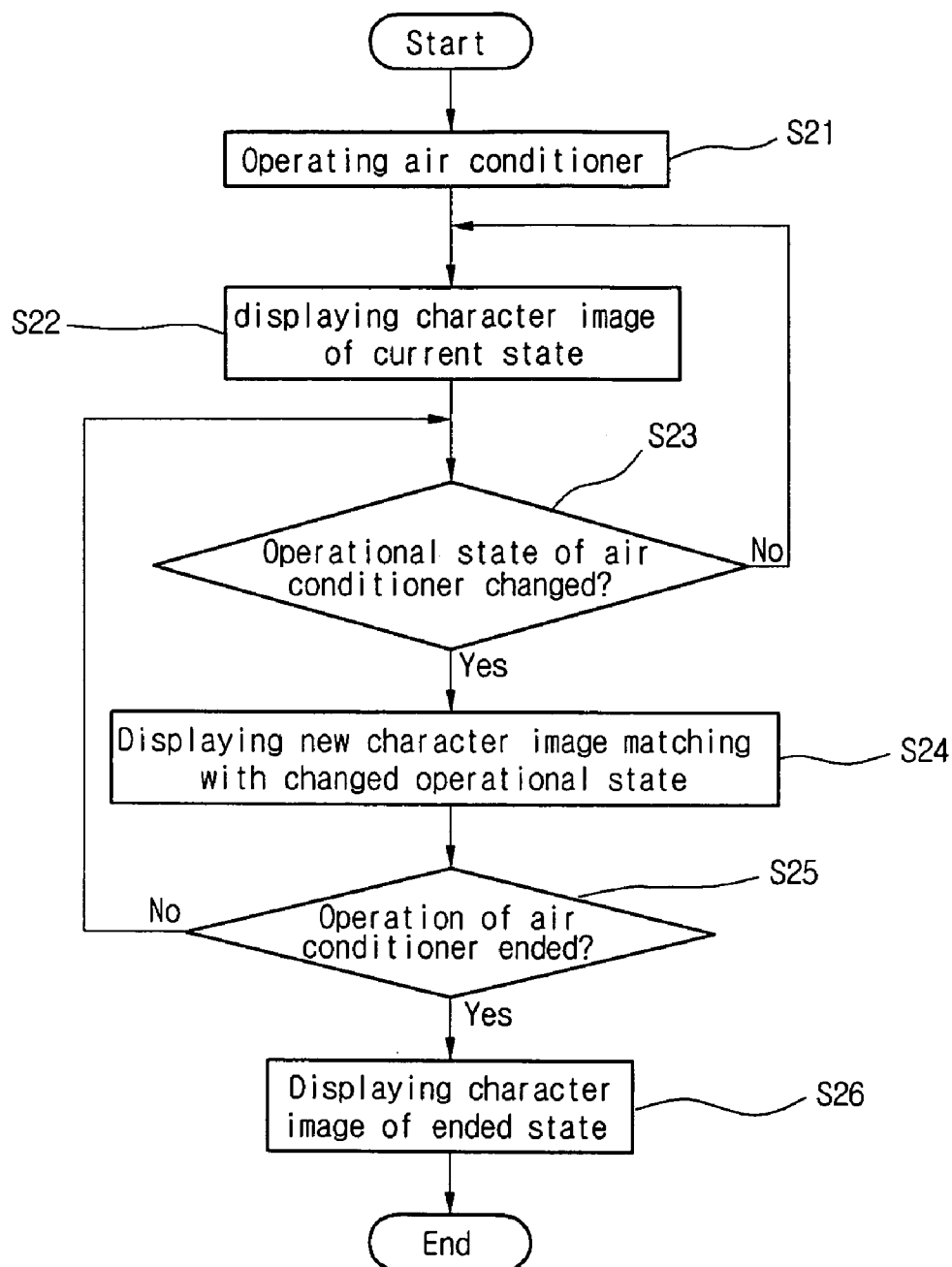


Fig. 19

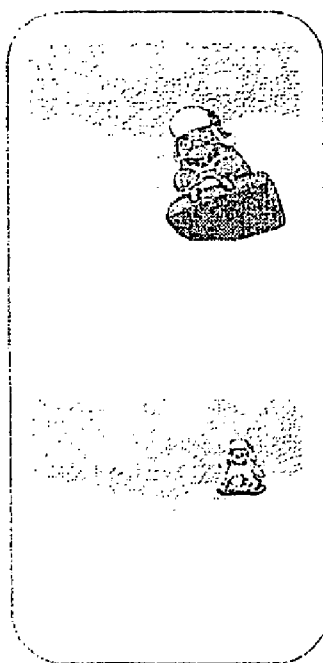


Fig. 20



Fig. 2 1

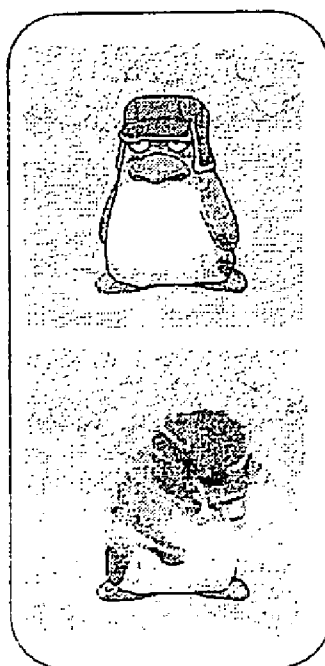


Fig. 2 2

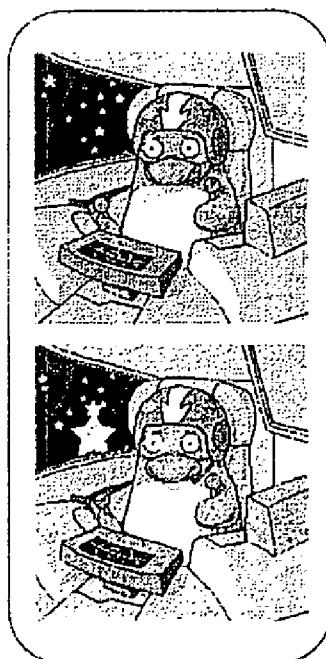


Fig. 2 3

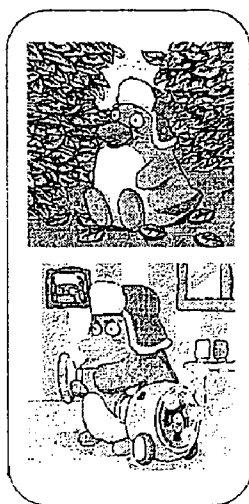


Fig. 2 4

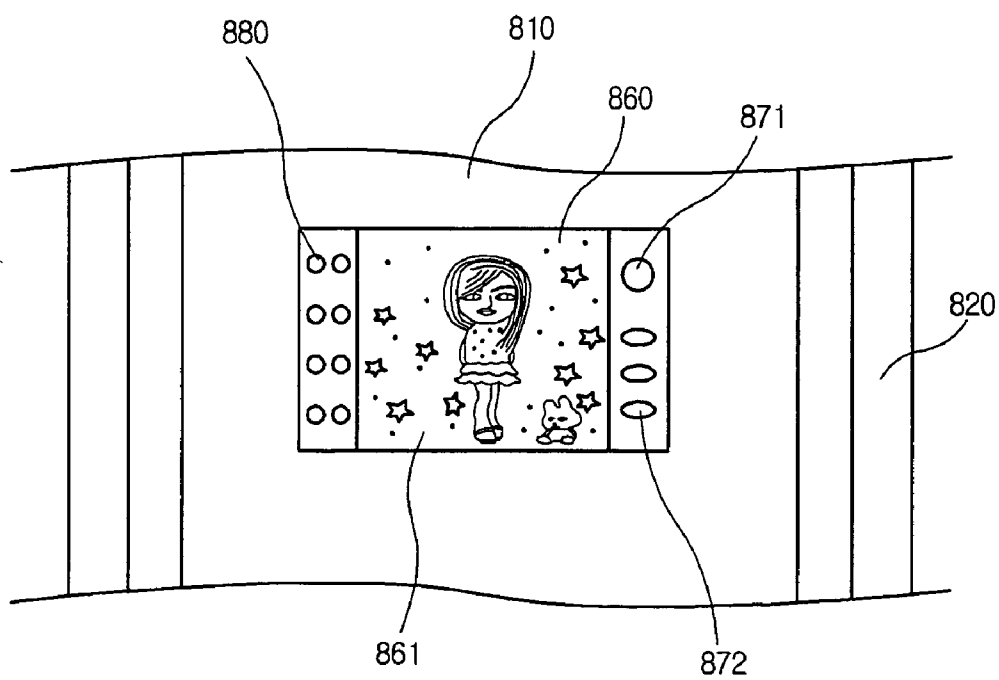
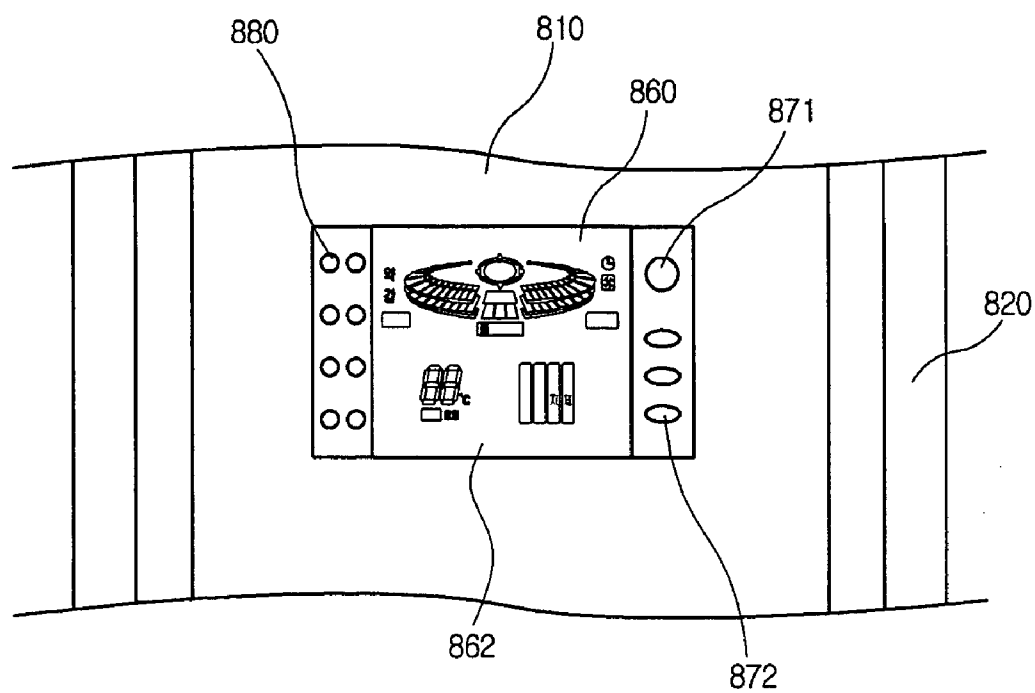


Fig. 25



## AIR CONDITIONER HAVING AN ENHANCED USER PERCEPTION

### TECHNICAL FIELD

[0001] The present invention relates to an air conditioner, and more particularly, to an air conditioner capable of enhancing a user's perception. The air conditioner includes a display window at one side, so that an image adapted for the air conditioner or a character image having a user's high preference is displayed on the display window. Also, a manipulation operation of the air conditioner is more convenient through a change of the character image. Specifically, the present invention relates to an air conditioner which can suitably display the character image depending on an operational state, thereby enhancing a user's perception.

### BACKGROUND ART

[0002] An air conditioner that is generally used at home includes a manipulation part, a display window on which an operational state of the air conditioner is displayed, and a driver part having a plurality of equipments suitable for a characteristic of the air conditioner. The display window is configured to simply display the operational state of the air conditioner with digit, arrow, shade, display of liquid crystal display (LCD), and so on. Because the display window which allows a user to observe the operational state of the air conditioner is constructed too simply, the user cannot observe the operational state of the air conditioner at a glance. In other words, the user must look at digits or arrows near the air conditioner.

[0003] Specifically, among home appliances, the air conditioner is installed in an indoor space or wall of an office or house so as to heat or cool its interior. The air conditioner includes a compressor, a condenser, an expansion valve and an evaporator and performs a series of a refrigeration cycle. Generally, the air conditioner has a plurality of operational states, such as a dehumidifying state, a cooling state, and a rapid cooling state. However, the user must approach the indoor unit of the air conditioner so as to identify the operational state of the air conditioner. Even if a display window is installed in an indoor unit, the user must look at an arrow or appellation of the operational state near the indoor unit. Also, the complex operational state of the air conditioner can be perceived through digits, letters, arrows, symbols, and so on.

[0004] As described above, the conventional air conditioner has drawbacks in that freshness and animation are lack because temperature, humidity and operational states are displayed in a static manner.

[0005] Also, an image displayed on the display window is predefined in a manufacturing step and cannot be changed. Therefore, the user is liable to be tired of the image and tends to purchase a new air conditioner, thereby reducing a use term of the air conditioner.

[0006] Meanwhile, a virtual reality using the Internet connected through networks has been recently in the spotlight. In such a virtual reality, individuals feel satisfied on the Internet using their own characters as the other selves. A variety of contents industries associated with them are growing. These characters are called "AVATA". Up to the present, the use of the AVATA is limited to the virtual space, which is connected through the Internet.

[0007] Technical Problem

[0008] An object of the present invention is to provide an air conditioner having an enhanced user perception, in which a display window on which a character is displayed is provided at one side of the air conditioner, thereby improving a user's preference.

[0009] Also, an object of the present invention is to provide an air conditioner having an enhanced user perception, in which a character image displayed on a display window is changed depending on an operational state of the air conditioner, so that a user can perceive the operational state more conveniently. In order to enhance the user perception much more, the operational state of the air conditioner can be displayed in a voice.

[0010] Also, an object of the present invention is to provide an air conditioner, which can enhance a user satisfaction much more by making a whole set of characters, which are displayed on a display window, changeable depending on a user's preference. A use term is also extended.

[0011] Further, an object of the present invention is to provide an air conditioner, which can enhance a convenience in use of the air conditioner much more by implementing several kinds of display arrangement depending on a user's preference.

[0012] Further, an object of the present invention is to provide an air conditioner having an enhanced user perception, in which a display window disposed at a front side of the air conditioner can be stably fixed to increase a readability of the display window.

[0013] Further, an object of the present invention is to provide an air conditioner having an enhanced user perception, in which a display window can be assembled more conveniently and simply and a manufacturing process can be performed more conveniently.

[0014] Technical Solution

[0015] In order to achieve the above objects, there is provided an air conditioner having an enhanced user perception, which includes: a panel forming an appearance of either side of the air conditioner; and a display window including a display part formed on the panel, for displaying a specific character and/or a character image of the character, and/or a state display part for displaying an operational state of the air conditioner as a symbol.

[0016] In another aspect of the present invention, an air conditioner having an enhanced user perception includes: a panel forming an appearance of either side of a air conditioner; a display window including a display part formed on the panel, for displaying a specific character and/or a character image of the character, and/or a state display part for displaying an operational state of the air conditioner as a symbol; and means for selecting a display state of the display window.

[0017] In a further another aspect of the present invention, an air conditioner having an enhanced user perception includes: a front panel formed on a front side of an appearance of the air conditioner; a display window formed at a predetermined position of the front panel, for selectively displaying a character image display and a state display, the

character image display being varied depending on an operational state of the air conditioner, the state display displaying an operational state of the air conditioner as a symbol; and a selection button formed adjacent to the display window, for selecting a display state of the display window.

#### [0018] Advantageous Effects

[0019] According to the present invention, a user's own character image can be displayed on an air conditioner, so that the will to purchase the product and a user's satisfaction are increased.

[0020] Also, a character can be changed depending on a user's preference, thereby satisfying the user greater. In addition, since the character can be changed conveniently, a user's convenience is improved.

[0021] Also, an action of a character displayed on an air conditioner can be visibly changed in various shapes, depending on characteristics of operational states of the air conditioner. Therefore, the operational state of the air conditioner can be easily perceived. Due to a voice output part, the operational state can be perceived more reliably. Further, a user can be greatly satisfied by recording his or her favorite person's voice for the voice output.

[0022] Further, in such a recent environment that a design of an air conditioner tends to have a strong influence on a selection of an air condition, a user's satisfaction and convenience in use of the product can be enhanced much more by uploading a user's favorite character image.

[0023] Further, since a display window of an air conditioner can be mounted reliably and stably, a process required for mounting the display window is simplified and the number of necessary parts is reduced. The user can correctly check a displayed state of the display window without regard to a use state of the air conditioner.

#### DESCRIPTION OF DRAWINGS

[0024] Embodiments of the present invention will be fully understood with reference to the accompanying drawings.

[0025] FIG. 1 is a view illustrating a use state of an air conditioner according to the present invention;

[0026] FIG. 2 is a side view of a first indoor unit according to the present invention;

[0027] FIG. 3 is a partial enlarged view of a front panel according to the present invention;

[0028] FIG. 4 is a front view illustrating an operation of an air conditioner according to the present invention;

[0029] FIG. 5 is a side view illustrating an operation of an air conditioner according to the present invention;

[0030] FIG. 6 is a front perspective view of a second indoor unit according to the present invention;

[0031] FIG. 7 is a rear perspective view of a second indoor unit according to the present invention;

[0032] FIG. 8 is an exploded perspective view of a second indoor unit according to the present invention;

[0033] FIG. 9 is a front view illustrating a front panel of a second indoor unit according to the present invention;

[0034] FIG. 10 is a rear view of a front panel according to the present invention;

[0035] FIG. 11 is a perspective view illustrating a shape reinforcement member of a second indoor unit according to the present invention;

[0036] FIG. 12 is a front perspective view of a front frame according to the present invention;

[0037] FIG. 13 is a front view of a state display part according to the present invention;

[0038] FIG. 14 is a perspective view illustrating a top case of a state display part according to the present invention;

[0039] FIG. 15 is a view illustrating an operation of a display part according to the present invention;

[0040] FIG. 16 is a block diagram of an air conditioner according to the present invention, illustrating a control state of the air conditioner;

[0041] FIG. 17 is a flow chart illustrating a character image upload mode of an air conditioner according to the present invention;

[0042] FIG. 18 is a flowchart illustrating a character image display mode of an air conditioner according to the present invention;

[0043] FIG. 19 is an exemplary view of a character image displayed in a start/stop mode of an air conditioner;

[0044] FIG. 20 is an exemplary view of a character image displayed in a cooling operation mode of an air conditioner;

[0045] FIG. 21 is an exemplary view of a character image displayed in a dehumidifying operation mode of an air conditioner;

[0046] FIG. 22 is an exemplary view of a character image displayed in an artificial intelligence operation mode of an air conditioner;

[0047] FIG. 23 is an exemplary view of a character image displayed in a plasma cleaning operation mode of an air conditioner;

[0048] FIG. 24 is a view of a character image displayed on a display part according to a second embodiment of the present invention; and

[0049] FIG. 25 is a view of an operational state of an air conditioner, which is displayed on a display part.

#### BEST MODE

[0050] The preferred embodiments of the present invention will be described in detail with reference to the accompanying drawings. While the present invention will be particularly shown and described with reference to exemplary embodiments thereof, it will be understood by those of ordinary skill in the art that various changes in form and details may be made therein without departing from the spirit and scope of the present invention of the present invention as defined by the following claims. Although an air conditioner is exemplarily described herein, the present invention can be applied to other home appliances.

#### First Embodiment

[0051] FIG. 1 is a view illustrating a use state of an air conditioner according to the present invention.

[0052] Referring to **FIG. 1**, an air conditioner according to the present invention includes a first indoor unit installed in an interior of a building, a second indoor unit **200** installed in a different space spaced apart from the first indoor unit **100**, an outdoor unit **10** communicating with the indoor units **100** and **200** through a refrigerant pipe **12**, and a data input part **20** for controlling display windows of the indoor units **100** and **200**.

[0053] Also, the data input part **20** is connected with the indoor units **100** and **200** through a cable **104**. The outdoor unit **10** includes an outdoor fan **11** for performing a heat exchange with respect to a refrigerant. The data input part **20** may be a computer that is widely used at home. At least one of the cable **104**, a network and a wireless communication network can be applied to the computer **20**.

[0054] Also, the indoor units **100** and **200** include display parts **160** and **350** on which at least character image is displayed. A variety of character images can be applied depending on kinds of the air conditioner. For example, a penguin image can be applied to an air conditioner and a duck image can be applied to a cooker. The character images may be previously stored in a storage medium provided inside the air conditioner, or may be directly inputted through the data input part **20** by a user. The character image is so large that the user can look the character image from a long distance and perceive the shape of the character image. The character may be an animal-shaped image. Except for the animal-shaped image, a mascot-like image whose meaning is perceivable may be used.

[0055] Further, each of the display parts **160** and **350** can further include a state display window for accurately display an operational state of the air conditioner with a numerical value or arrow, as well as the character image.

[0056] Further, although one outdoor unit and two indoor units are exemplarily shown in this embodiment, the present invention can also be applied when one indoor unit is used. This is also included within the spirit and scope of the present invention. Among the above indoor units, the first indoor unit **100** is a floor standing type indoor unit and the second indoor unit **200** is a wall mount type indoor unit. Since a plurality of indoor units are installed in separated indoor spaces, the heating/cooling can be perfectly achieved with regard to a overall indoor area.

[0057] An operation of the air conditioner constructed as above will now be described in brief. First, a refrigerant to which a heat exchange is performed by the outdoor unit **10** flows through the pipe **12** to the indoor units **100** and **200**, and the heating/cooling operation performed by the indoor units can be easily understood. Predetermined character images are displayed on the display parts **160** and **350** of the air conditioner. The character images may be an image that is previously stored in a storage medium provided inside the air conditioner, or an image that is arbitrarily inputted through the data input part by the user.

[0058] Also, the character images displayed on the display parts **160** and **350** may be an equal character but different image representing a corresponding operational state, depending on the operational states of the air conditioner. The character images may also be a still picture.

[0059] Since the character images are displayed in the above manner, the user can conveniently perceive the opera-

tional state of the air conditioner, and the convenience in use of the air conditioner and the product image can be improved much more.

[0060] **FIG. 2** is a side view of the first indoor unit **100** according to the present invention.

[0061] Referring to **FIGS. 1 and 2**, the first indoor unit **100** includes a front panel **110** elongated up and down to form a front appearance, a side panel **120** forming a side appearance, a rear panel **130** forming a rear appearance, an upper panel **140** forming an upper appearance, and a base pan **150** forming a bottom surface.

[0062] A user interface part disposed adjacent to the display part **160** will be described in detail. The display part **160** is disposed at an upper center of the front panel **110**. A set character image is displayed on the display part **160**. The display part **160** includes a liquid crystal display (LCD) and/or a light emitting device (LED). The character image may be an AVATA or any other images.

[0063] The LCD is a display device to which an operation of liquid crystal (LC) is applied. The liquid crystal will now be described in detail. Liquid crystal molecule is an intermediary substance between a liquid state and a solid state. The liquid crystal molecule is called an an-isotropic liquid, because the molecular arrangement is regular in a certain direction, while the molecular arrangement is irregular in a different direction and the liquid crystal is optically in a crystal state. The liquid crystal that is an organic molecule having liquidity like a liquid is regularly arranged like a crystal. The LCD displays an image using a property that the molecular arrangement is changed due to an external electric field. The LCD has characteristics of slimness, light weight and low power consumption regardless of a screen size. Therefore, the LCD can be conveniently installed in the air conditioner having a narrow space. Also, the LCD can reproduce full colors using red, green and blue colors. Therefore, a colorful character image can be implemented without troubles. Since an operation principle of the LCD and a color reproducing method of a back light have been well known, their detailed descriptions will be omitted. Further, since the LED reproduces the red, green and blue colors through a light emitting semiconductor device, it can act as a display device and may be adapted for a large screen. Since the LCD can reproduce various colors, a user's aesthetic sense and preference to the product are enhanced much more.

[0064] The character image can be displayed in various shapes, and various AVATAs can be displayed depending on the operational states of the air conditioner. Specifically, the AVATA is used to exhibit the otherself of a specific individual on the virtual space. A specific character is disposed in various poses, locations, backgrounds and features without any change in the subject of the character. Therefore, it is useful to show various features to the user. For example, when the air conditioner is turned on, the character appears and greets with a bright smile. While the air conditioner is operating, the character acts variously depending on the operation modes. In other words, in a "cooling operation", the character plays ball with a penguin, and in a "dehumidifying operation", the character squeezes water from the clothes. Further, the character is different depending on a current temperature. For example, if the current temperature is higher than a desired temperature, the character perspires

profusely, and if the current temperature is lower than the desired temperature, the character shrinks with cold. At this time, it is preferable to use the same character.

[0065] Also, the first indoor unit **100** is configured to inform the current operational state and temperature of the air conditioner with voice, in addition to the character image. In detail, the current state and operational state of the air conditioner are informed through a speaker in a human voice under a control of a controller (not shown), for example, “This air conditioner is now in the cooling operation”, “A current temperature is 26 degrees”, or “A current air flow is strong”. The information can be expressed corresponding to the shape of AVATA or separately without association with it. For this purpose, a storage medium and/or microphone for a recording function are/is provided inside the first indoor unit **100**. The user can record his or her own voice or replace the set voice with a separately recorded sound. Therefore, the operational state of the air conditioner is informed with the user’s own voice or a separate melody. Of course, the voice can be stored through the data input part **20**.

[0066] Also, the LCD of the display part **160** is set to a power saving mode in operation. If the operation of the air conditioner is stopped, the AVATA displayed on the display part **160** greets and disappears.

[0067] A receiving unit is further provided inside the first indoor unit **100** so as to download the AVATA through a direct connection or wireless connection with an external unit. The AVATA can be downloaded via the Internet, a line telephone and a cellular phone.

[0068] The data input part **20** is connected to the indoor units **100** and **200**. The data input part **20** is connected to the indoor units **100** and **200** through the cable **104**, and more particularly, to the controller for controlling the display part **160**. Thus, the user can directly create or program desired character on the computer **20** and upload it to the controller. In addition, the user can download it through the communication networks, such as the Internet or the telephone. In other words, the user can access the Internet through the computer **20**, download the character provided from a corresponding website, and upload it to the controller. Also, the user can download the character through a mobile equipment such as a cellular phone and transmit it to the controllers of the indoor units **100** and **200**.

[0069] A state display part **170** is further provided in a lower portion of the display part **160**. The state display part **170** displays the operational state of the air conditioner with diagrams, letters and numerical values. Like the display part **160**, the state display part **170** can be configured with an LCD or LED. Also, a plurality of manipulation buttons **180** are provided on both sides of the display part **160**. The operation of the air conditioner can be set using the manipulation buttons **180**. Further, the manipulation buttons are used to set or modify the display part **160**. Of course, the air conditioner can be operated by a remote controller.

[0070] FIG. 3 is a partial enlarged view of the front panel of the air conditioner according to the present invention. A construction of the display part **160** will be fully understood with reference to FIG. 3.

[0071] A functional operation of the air conditioner will now be described in brief. An inlet port **122** is formed at the

side panel **120** providing a side appearance of the first indoor unit **100**. An air is introduced from an indoor space through the inlet port **122**. An inlet grill **124** is further installed in an outer side of the inlet port **122**. An air filter (not shown) for filtering foreign substance contained in the introduced air is further provided in an inner side of the inlet grill **124**.

[0072] The upper panel **140** moves up and down. In other words, the upper panel **140** is supported by a supporter **142**, which is provided in right and left sides and front and rear sides, and moves upwards. At the rear side, a rear blocking plate **144** slides from an upper end of the first indoor unit **100** and is protruded upwards. A plurality of outlet ribs **146** are formed in right and left sides of the supporter **142**. The outlet ribs **146** are formed up and down spaced apart from each other by a predetermined interval. The outlet ribs **146** guide a discharge direction, so that the air discharged from the inside of the first indoor unit **100** upwards can be discharged in a front or side direction.

[0073] Also, a heat exchanger (not shown) is installed inside the first indoor unit **100**, allowing a heat exchange between the air introduced through the inlet port **122** and the refrigerant flowing through the first indoor unit **100**. A blowing fan (not shown) and a motor (not shown) are embedded. The blowing fan forcibly blows the air so as to again discharge the air, which is introduced through the inlet port **122**, to the indoor space through the upper end of the first indoor unit **100**. The motor produces a rotational power to the blowing fan.

[0074] In addition, the outdoor unit **10** performs a refrigeration cycle of the air conditioner together with the indoor units **100** and **200**. Although not shown, a plurality of parts, such as a compressor for compressing the refrigerant and an outdoor heat exchanger for performing a heat exchange, are embedded in the inside of the outdoor unit **10**.

[0075] FIGS. 4 and 5 are a front view and a side view illustrating an operation of the air conditioner according to the present invention, respectively.

[0076] An operation of the air conditioner, specifically the first indoor unit **100**, will be described with reference to FIGS. 4 and 5. First, a case when the air conditioner operates in a cooling mode will be described below.

[0077] The air conditioner is driven using the remote controller or by pressing the manipulation button **180**. If the air conditioner begins to operate, the air of the indoor space is introduced into the first indoor unit **100** through the inlet port **122**. The air filter (not shown) filters foreign substance from the introduced air. The heat exchanger (not shown) provided inside the first indoor unit **100** performs a heat exchanger between the air and the refrigerant, thereby reducing the temperature. At this time, the heat exchanger provided inside the first indoor unit **100** acts as the evaporator. Therefore, the air introduced from the indoor space is deprived of heat by the refrigerant flowing through the heat exchanger, thereby reducing the temperature. The cooled air is introduced into the blowing fan (not shown). The blowing fan (not shown) forcibly blows the air upwards and discharges it into the indoor space.

[0078] Meanwhile, when the air conditioner operates, the upper panel **140** moves upwards. Accordingly, the outlet rib **146** provided in the supporter **142** is exposed externally. The air which is forcibly blown upwards by the blowing fan

collides with a bottom surface of the upper panel **140** and circles in a lateral direction. The rear blocking plate **144** is integrally formed at the rear end of the upper panel **140**. The rear blocking plate **144** slides upwards together with the upper panel **140** and is exposed. Therefore, the air discharged upwards is not discharged in a rear direction but discharged a front or side direction. At this time, the air is discharged toward the indoor space in such a state that the discharge direction is adjusted by the outlet rib **146**. As a result, the air discharged into the indoor space is a cooled air, whose heat is exchanged by the heat exchanger. Therefore, a cool air is supplied to the indoor space and thus a cooling operation is achieved.

[0079] Meanwhile, like the first indoor unit **100**, a heat exchange is also performed in the outdoor unit **10**. In other words, when the air conditioner operates in the cooling mode, the heat exchanger of the first indoor unit **100** acts as the evaporator, while the heat exchanger of the outdoor unit **10** acts as the condenser. Accordingly, the temperature of the external air introduced into the outdoor unit **10** is increased and then discharged into the outside. In this manner, the cooling operation is performed in the first indoor unit **100** and the heating operation is performed. As a whole, one refrigeration cycle is achieved.

[0080] When the air conditioner operates in the cooling mode, the display part **160** is also turned on so that various AVATAs appear and inform the operational states of the air conditioner. For example, when the air conditioner is initially turned on, the set AVATA appears and greets with a bright smile. In the cooling mode, an image that the AVATA plays ball with a penguin in the South Pole can be displayed. Of course, if the user sets other character, other shape can be displayed. If the cooling operation is still necessary because the current temperature does not reach the set temperature, an image that the AVATA perspires profusely can be displayed.

[0081] Also, while the air conditioner operates, the operational state can be informed in the voice, except that the character is displayed on the display part **160**. For example, when the air conditioner operates in the cooling mode, a message of "this air conditioner is now in the cooling operation" is outputted through the speaker **190**. If the user inputs a recorded voice or melody, a corresponding message may be outputted.

[0082] A case when the air conditioner operates in the heating mode will now be described.

[0083] Like the cooling mode, a heat exchange is performed with respect to the indoor air introduced through the inlet port **122** of the first indoor unit **100**. Then, the air is again discharged into the indoor space through the upper end of the first indoor unit **100**. At this time, the refrigeration cycle is reversibly performed. Therefore, the heat exchanger embedded in the first indoor unit **100** acts as the condenser, so that the temperature of the introduced indoor air rises. As described above, when the air conditioner is turned on, the display part **160** is also turned on to display the greeting AVATA. If the user selects the heating mode, the set image of the AVATA is displayed. For example, an image that the AVATA bathes in the sea can be displayed. Also, various images can be displayed depending on the programs set by the user.

[0084] Simultaneously, a message of "this air conditioner is now in the heating operation" is outputted through the

speaker **190**. Such a message can also be variously changed depending on the user's setup.

[0085] Also, if the current temperature is lower than the desired temperature, an image that the character shrinks with cold can be displayed.

[0086] If the user turns off the air conditioner, the AVATA greets cutely and disappears. In this manner, the heating operation of the air conditioner can be ended.

[0087] Meanwhile, if the user does not like the character image and voice from the display part **160** or if the user wants to use his or her own character image and voice, the program can be downloaded using the communication equipment, such as the Internet or cellular phone, or can directly input it.

[0088] FIGS. **6** to **15** are views illustrating the construction and operation of the second indoor unit in the air conditioner according to the present invention. The second indoor unit is the wall mount type and has a small size, so that an installation space for the display part is small and an air discharge space is narrow. Therefore, an additional structure for mounting the display part is required. Thus, the second indoor unit must be formed in a specific structure, which can meet such requirements.

[0089] FIGS. **6** and **7** are a front perspective view and a rear perspective view of the second indoor unit according to the present invention, respectively.

[0090] Referring to FIGS. **6** and **7**, the second indoor unit **200** according to the present invention includes: a front panel **201** forming a front surface of the second indoor unit **200**; a front frame **280** into which the front panel **201** is fitted to thereby form a front cover, in which the front frame **280** has outlet ports **281** on both sides; an outlet opening/closing unit **500** mounted between the front frame **280** and the front panel **201**; an outlet door **400** connected to the outlet opening/closing unit **500**, for opening/closing the outlet port **281**; a base **260** connected to the front frame **280** to thereby form a rear cover; and a pipe cover **290** formed in a lower side of the second indoor unit, for receiving a variety of pipes.

[0091] In detail, the outlet port for discharging the introduced indoor air is formed at a predetermined position of the front frame **280**, and the inlet port for introducing the indoor air is formed at a predetermined position of the base **260**. In other words, an upper inlet port **261** is formed at an upper inclination surface of the base **260** and a central inlet port **262** is formed at a central surface of the base **260**. It is apparent that an additional inlet port can be formed on both sides of the inclination surface of the base **260**. A mesh-type grill is formed at the inlet ports **261** and **262**, so that impurities contained in the air introduced into the second indoor unit **200** are primarily filtered.

[0092] Also, a filter insertion hole **263** may be further formed at a lower side of the base **260** so as to re-filter fine foreign substances contained in the indoor air, which is primarily filtered by the inlet grill formed between the upper inlet port **261** and the central inlet port **262**.

[0093] Further, a display window **210** for displaying the character image and an operation display window **211** for displaying the operational state of the air conditioner are formed at predetermined positions of the front panel **201**.

Thus, the user can be conveniently informed of the operational state of the overall air conditioner including the second indoor unit **200**. Like the first indoor unit **100**, the user's perception and convenience can be enhanced much more by displaying the character image on the display windows.

[0094] A flow of the air introduced into the second indoor unit **200** will now be described in detail. The air introduced into the second indoor unit **200** is introduced through at least one or more inlet ports **261** and **262** and the filter insertion hole **263**, which are formed at one side of the base **260**, and then, it is discharged through at least one outlet port **281**, which is formed at one side of the front frame **280**.

[0095] FIG. 8 is an exploded perspective view of the second indoor unit according to the present invention.

[0096] Referring to FIG. 8, the second indoor unit **200** of the air conditioner according to the present invention includes: a front panel **201** forming a front appearance of the second indoor unit **200**; a front frame **280** in which the front panel is fitted to thereby form a front surface; a blowing fan **235** formed at a rear side of the front frame **280**, for introducing the indoor air; an orifice **240** formed at a rear side of the blowing fan **235**, for guiding the direction of the air introduced by the rotation of the blowing fan; a heat exchanger **250** formed at a rear side of the orifice **240**, for contacting with the introduced air to thereby decrease the temperature of the introduced air; and a base **260** formed at a rear side of the heat exchanger **250** and connected to the front frame **280**.

[0097] Also, an outlet opening/closing unit **500** is provided between the front panel **210** and the front frame **280** so as to open/close the outlet port **281**. The second indoor unit can be assembled in order of the front panel **201**, the front frame **280**, the blowing fan **235**, the orifice **240**, the heat exchanger **250** and the base **260**.

[0098] In detail, the orifice **240** includes: an air guide hole **245** for guiding the introduced air toward the blowing fan **235**; an upper air guide **241** formed at an upper side so as to guide the indoor air introduced through the air guide hole **245** toward both sides; a lower air guide **242** formed at a lower side so as to guide downwards the indoor air introduced through the air guide **245**; and a lower outlet door **243** for dispersedly discharging the air guided by the lower air guide **242** toward the interior.

[0099] In addition, a motor for rotating the blowing fan **235** and an electronic component part **249** for controlling the driving of electronic components are further provided at an upper space between the front frame **280** and the orifice **240**. A drain pan **270** is further provided at a lower side of the heat exchanger **250** so as to gather a condensate water formed on the surface of the heat exchanger **250**.

[0100] Further, a pipe cover **290** for receiving a variety of pipes connected with the drain pan **270** and the second indoor unit **200** is provided at a lower side of the drain pan **270**. In this manner, the second indoor unit of the air conditioner according to the present invention is provided.

[0101] A function and operation of the respective parts will now be described.

[0102] First, the front panel **201** is attached to the front surface of the second indoor unit **200**, thereby forming an

outer appearance of the second indoor unit elegantly. Windows **210** and **211** are formed at one side of the front panel **201** so as to display the operation and/or operational state of the second indoor unit **200**. In order to make the appearance of the second indoor unit look neat and beautiful, finishing materials may be used or a design is added. A detailed description of the front panel **201** will be described later.

[0103] Also, the front panel **201** is attached to the front frame **280** and a framework of the front frame **280** can be inclined at a predetermined angle. a side outlet port **281** and a lower outlet port **283** can be formed in at least one side of the framework so as to discharge the air, which is introduced into the second indoor unit **200** and cooled through the heat exchanger **250**. The front panel **201** can be fixedly attached to the front frame **280**. A hinge can be provided at one side so as to make the front panel **201** movable right and/or left, and the outlet port can be formed at the front side of the second indoor unit **200**.

[0104] In addition, the blowing fan **235** is rotated by the motor attached to a rear side of the front frame **280**, so that the indoor air is introduced inside the second indoor unit **200**. At least one blowing fan **235** can be installed depending on size and use of the second indoor unit **200**.

[0105] The orifice **240** functions to guide a flow of the air introduced toward the blowing fan **235**. A flowing direction of the air introduced through the guide hole **245** is determined by the air guides **241** and **242** and the air is discharged through the outlet ports **281** and **263**. The air guide **241** can be formed in various shapes depending on the direction and number of the outlet port.

[0106] Further, a wind direction controller **244** and a safety net **246** are further provided. The wind direction controller **244** is attached to both sides of the orifice **240** and is rotating at a predetermined angle, thereby controlling the direction of the discharged cool air. The safety net **246** protects the user or children from the blowing fan **235** when they touches it.

[0107] The heat exchanger **250** includes a heat exchange pipe, which is curved several times. A low temperature and low pressure refrigerant passing through an expander flows through the heat exchange pipe **251**. Therefore, the air introduced into the second indoor unit **200** is deprived of heat while passing the heat exchanger **250**, and thus becomes a low temperature state. During this process, moisture contained in the introduced air is cooled and thus condensed on the surface of the heat exchanger **250**. A cooling effect becomes more excellent as an area of the heat exchanger **250** is wider. Therefore, the heat exchanger **250** can be formed in a flat rectangular shape or inclined at a predetermined angle. The drain pan **270** is formed at a lower side of the heat exchanger **250** so as to gather a condensate water formed on the surface of the heat exchanger **250** and prevent the condensate water from being leaked from the second indoor unit **200**.

[0108] Also, the base **260** includes: an upper inlet port **261** formed at an upper side, for introducing the indoor air; and a central inlet port **262** formed at a central portion of the base **260**. The shape and number of the inlet port can be freely selected depending on a volume and shape of the second indoor unit. A grill is formed at the inlet ports **261** and **262**, with spaced apart by a predetermined interval and crossed

with each other. Therefore, impurities contained in the indoor air introduced into the second indoor unit **200** are primarily filtered. A filter insertion hole **263** may be formed at one side of the base **260**. A filter (not shown) for filtering impurities, such as dirt, contained in the introduced air, is inserted into the filter insertion hole **263**. It is preferable that impurities is prevented from being attached to the surface of the heat exchanger **250** by inserting the filter between the base **260** and the heat exchanger **250**. The filter insertion hole **263** may be an inlet port for the indoor air.

[0109] In addition, the second indoor unit **200** can be freely installed at the corner of the wall by making the framework of the base **260** inclined at a predetermined angle. It is apparent that the inlet port can be formed at the sides. Also, it is apparent that a locking hole or locking groove can be formed at an edge of the base **260**, so that the second indoor unit **200** can be attached.

[0110] FIGS. 9 and 10 are a front view and a rear view of the front panel of the second indoor unit, respectively.

[0111] Referring to FIGS. 9 and 10, the front panel **201** according to the present invention corresponds to the front surface of the second indoor unit and can be painted with various colors. The front panel **201** can be decorated with pictures or photographs. The front panel **201** includes a transparent operation display window **211** through which the screen displayed on the state display part of the second indoor unit **200** is shown, and a transparent display window **210** through which a screen displaying the character image is shown.

[0112] Also, the front panel **201** includes: a front frame coupling rib **216** protruded at a rear upper side with a predetermined length and connected to the front frame **280**; and a front frame coupling protrusion **213** protruded at a rear lower side with a predetermined length and curved and extended downwards. In detail, the front frame coupling rib **216** is inserted into a front panel fitting groove (**285**, in FIG. 12) formed at an upper side of the front frame **280**. The front frame coupling protrusion **213** is inserted into the front panel fixing member (**286**, in FIG. 12) mounted on a lower side of the front frame **280**. In this manner, the front panel **201** can be fitted into the front frame **280**.

[0113] Further, at least one shape reinforcing member **220** is attached vertically so as to maintain the shape of the front panel **201** and make the front panel **201** tolerable to an external force. In detail, since the front panel **201** is thin, it is easily bent and susceptible to a damage due to an external impact. Accordingly, as shown, the shape reinforcing member (refer to FIG. 9) is additionally attached. The shape reinforcing member **220** will be described later.

[0114] In order to insert the side of the shape reinforcing member **220** into a rear side of the front panel **201**, at least one shape reinforcing member insertion rib **217** is formed along the side of the shape reinforcing member **220**. In detail, the insertion rib **217** is formed at a height corresponding to a thickness of the shape reinforcing member **220**. Also, the insertion rib **217** is bent horizontally from an upper end and with a predetermined length, thereby fixing an upper surface of the shape reinforcing member **220**.

[0115] In addition, a shape reinforcing member guide rib **215** is formed at an opposite side to the insertion rib **217** and

with the same length as the shape reinforcing member **220** so as to support the side of the shape reinforcing member **220**.

[0116] Further, at least one shape reinforcing member coupling boss **216** is formed between the insertion rib **217** and the guide rib **215** so as to insert a coupling member connected to the shape reinforcing member **220**. The coupling boss **216** is formed on a line of a shape reinforcing support rib **218** and with the same interval. The shape reinforcing support rib **218** is formed with the same height as the central portion of the shape reinforcing member **220**. In detail, the support rib **218** functions to support the central portion of the shape reinforcing member **220**.

[0117] Further, a display receiving surface **214** for receiving a state display part and a display part, which will be described later, is formed at a lower side of the front panel **201**. Transparent windows **210** and **211** are formed to allow the user to view the screen displayed on the display part.

[0118] FIG. 11 is a perspective view of a shape reinforcing member of the second indoor unit according to the present invention.

[0119] Referring to FIG. 11, the shape reinforcing member **220** according to the present invention is mounted to prevent the front panel **201** from being bent or to protect the front panel **201** from an external impact. Therefore, preferably, the shape reinforcing member **220** is made of metal or plastics maintaining a predetermined strength. Also, the shape reinforcing member **220** is raised in its center to a predetermined height and has on both ends a fitting part **222** bent horizontally, so that it may be stuck on the rear side of the front panel **201**. A vertical cross section of the shape reinforcing member **220** is of a vertical step structure on its center as shown in the drawing, whereby the front panel **201** can endure impact applied from the outside.

[0120] Also, the fitting part **222** is fit in the shape reinforcing member insertion rib **217** formed on the rear side of the front panel **201**. Also, at least one coupling member penetrating groove **221** for receiving a coupling member inserted into the shape reinforcing member coupling boss **216** is formed at the position that corresponds to the shape reinforcing member coupling boss **216** on the center of the shape reinforcing member **220**.

[0121] FIG. 12 is a front perspective view of the front frame **201** according to the present invention. Referring to FIG. 12, the front frame **280** into which the front panel **201** of the present invention is fitted has in its periphery a front panel fitting groove **285** for receiving the front frame coupling rib **212** formed on the upper side of the front panel **201**.

[0122] Also, the front panel fixing member **286** for receiving the front frame coupling protrusion **213** formed on the lower end of the front panel **201** is formed on the lower end of the front frame. More specifically, the front panel fixing member **286** is inserted into the coupling boss **287** formed protruded on the front frame **280**. Also, both sides of the front panel fixing member **266** are supported and fixed by a supporting rib **288** extended horizontally on the lower side of the front frame.

[0123] Also, a state display part **300** for displaying an operational state of the second indoor unit **200** is settled on

the lower side of the front frame **280**, and a display part **350** for displaying a character image so that an operational state of the second indoor unit **200** may be easily recognized by a user is settled on the upper part of the state display part **300**. Also, the state display part **300** is settled on a state display part mounting boss **230** formed on the front frame **280** and joined by a coupling member, and both sides of the state display part **300** are supported by a state display supporting rib **231**. Also, a groove instead of the state display part mounting boss **230** may be formed so that a coupling member may be inserted. Also, the display part **350** may be mounted on the front frame **280** in the same manner as the state display part **300** is mounted.

[0124] FIG. 13 is a front view of the state display part according to the present invention and FIG. 14 is a perspective view showing an upper case of the state display part.

[0125] Referring to FIGS. 13 and 14, the state display part of the present invention is protected by a lower case **310** and an upper case **320**. Also, a PCB (Printed Circuit Board) (not shown) on which an electric circuit of the state display part is formed is settled in the inside of the lower case **310**. Also, an LCD (Liquid Crystal Display) window **330** for displaying an operational state of the second indoor unit is settled on the upper side of the PCB **320**. Also, the PCB and the LCD window **330** are mutually connected, so that a signal and information provided from the PCB **320** is transferred to the LCD window **330** and a user can visually check an operational state.

[0126] Also, an operation button **321** by which a user can manually operate and a receiving part **322** through which a user can control the operational state using a remote controller are formed on the lower side of the PCB.

[0127] Also, the lower case **310** has a wire settling part **312** at the lower side of the PCB, and a wire **340** connected from the PCB is put in the inside of the wire settling part **312**. Also, a wire passing groove **314** through which the wire **340** passes is formed on the lateral side of the wire settling part **312**.

[0128] Also, a coupling part **311** extended with a predetermined length and a coupling groove **311** penetrated on a predetermined position of the coupling part are provided on the upper side and/or the lower side of the lower case **310**. More specifically, a coupling member is inserted in a passing-through manner into the coupling groove **311** and the state display part mounting boss **230** formed on the front frame **280**. Also, at least one hook **313** for joining to the upper case **320** are formed on the outer periphery of the lower case **310**.

[0129] Also, at least one hook insertion hole **331** for inserting into the upper side of the lower case **310** and receiving the hook **313** on the outer periphery is formed on the upper case **320**. Also, an LCD window settling hole **332** to which the LCD window **330** is fit is provided to the central part.

[0130] In the meantime, the LCD window **330** displays the operational state of the second indoor unit **200**, and more specifically, displays an amount of cool air discharged from the second indoor unit **200**, an indoor temperature and humidity, and an operation time. Also, the state display part **300** receives a radio wave sent through a remote controller

by a user, to display relevant information on the LCD window **330** in a digital manner, depending on the changing operational state. More specifically, the displaying manner may be realized by a number and may also be realized by an equalizer manner.

[0131] FIG. 15 is a view showing an operation of the display part according to the present invention. Referring to FIG. 15, the display part **350** of the present invention outputs a character image desired by a user or stored in advance in a storage medium of the apparatus. The display part **350** formed on the second indoor unit **200** may output an image realized in the same operation manner as the character image displayed on the display part **160**.

[0132] More specifically, the display part **350** may include: a case **351**; a PCB **352** settled on the inside of the case **351**; an LCD window **353** settled on the upper part of the PCB **352**; an operation button **355** formed on the lower end of the PCB **352** so that not only a user may manually operate the display part **350** and but also the operational state of the second indoor unit **200** may be automatically run depending on a set environment; and a wireless receiving part **357** for receiving an operation signal transmitted through a remote controller **710** by a user and receiving an AVATA-transmitting signal sent through a mobile means **700** such as a cellular phone by a user. Also, a selection button **356** for setting or selecting a plurality of kinds of AVATAs, is additionally provided. Also, the display part **350** is connected with a data inputting apparatus **720** as exemplified by a computer, so that various kinds of characters can be downloaded through the Internet.

[0133] Also, the display part **350** can be programmed in such a way that a current operational state of the indoor unit and a temperature may be announced in a voice at the same time a character may be displayed on the LCD window **353**. Also, the voice is configured to guide the operational state of the second indoor unit **200** in a human voice through a speaker **730** connected with the controller.

[0134] Also, a memory chip **354** of a predetermined capacity, capable of receiving and storing the AVATA character sent by a user, may be built in the PCB **352**. More specifically, various kinds of character images existing in form of an electronic file may be downloaded through the data inputting apparatus **720** connected with the controlling part of the air conditioner or the display part **350**, and may be stored in the memory chip **354**.

[0135] Also, the character downloaded through the mobile means **700** such as a cellular phone by a user, may be received in a radio way by the receiving part **357** and stored in the memory chip **354**. Further, a user may produce, in person, a character image of a proper shape using the data inputting apparatus **720** and store the same in the memory chip **354**. As a result, for a means by which a user can input/store/select a character, more than one among a selection button **356** of an air conditioner itself, a remote controller **710**, a data inputting apparatus **720**, a mobile means **700**, can be selectively used.

[0136] Also, in case the second indoor unit **200** is connected and controlled as described above by the data inputting apparatus **720** and/or the mobile means **700**, the operational state of the air conditioner can be controlled from a remotely located area. Therefore, a user can control the air

conditioner system including the second indoor unit **200** to operate through the Internet while a user is out, and control the operation of the second indoor unit **200** using a wireless telephone. Also, a user can use the display part **350** for an Internet screen as well as a means for showing the operational state of the second indoor unit **200**, by connecting the display part **350** with the Internet. In other words, the Internet screen is displayed by pressing the selection button **356** of the display part **350**, so that the display part **350** can be used as a means for watching a news.

[0137] In the meantime, as described above, it will be obvious to those skilled in the art that the apparatus for controlling the operational state of the second indoor unit **200** through the Internet and the wireless communication means, can be mounted on the state display part **300**. Also, it will be apparent from the spirit of the present invention that the joining manner of the state display part **300** can be applied, in the same way, to the manner in which the display part **350** is settled on the case and joined to the front frame **280**.

[0138] The operational state of the display part will now be described in the following.

[0139] On the first place, if a user transmits an operation signal by pressing, in person, the operation button **355** or through the remote controller **710** and the receiving part **357** receives the operation signal, the second indoor unit **200** operates. Also, the moment the second indoor unit **200** operates, a power source is applied to the display part **350** and a specific character image stored in advance or input by a user, is displayed. For example, it is possible to have a character that have been sleeping wakes up. Also, simultaneously, it is possible to inform the operation of the second indoor unit **200** with a voice through the speaker **730** connected with the display part **350**. Also, the voice may be downloaded through the mobile means **700** or the data inputting apparatus **720**, or recorded and stored in the memory chip **354** by a user in person.

[0140] Also, while an amount of air, an indoor temperature, humidity, an operation time are displayed on the state display part **300**, the character may perform a proper gesture depending on an amount of air, an indoor temperature, humidity, or a voice informing such information may be announced through the speaker **730**. For example, a user can set in such a way that if a present temperature is below the proper temperature programmed in advance, the character may perform a gesture shivering with cold, and simultaneously, a guiding message informing that the indoor temperature is too low may be announced through the speaker. Also, if the second indoor unit **200** is turned off, the character may perform a gesture falling asleep and a guiding message informing that the operation of the second indoor unit **200** is stopped may be announced through the speaker **730**.

[0141] Also, a user may arbitrarily select the kind of the AVATA using the selection button **356**.

[0142] FIG. 16 is a block diagram explaining a control state of the air conditioner according to the present invention.

[0143] Referring to FIG. 16, there are provided a key inputting part **31** with which a control state of the air conditioner is operated by a user; a power source part **32** for

applying a power source to the air conditioner; an data inputting apparatus **33** for inputting a specific character and a plurality of character images using the character, to the air conditioner; a controlling part **30** where a control state of the air conditioner is stored in a storing medium formed in the inside of the air conditioner and for controlling the operation of the air conditioner using the input information; an operational state display part **34** on which at least character image is displayed under the control of the controlling part **30**; a voice outputting part **35** for outputting the operational state of the air conditioner in a voice under the control of the controlling part **30**; a fan operating part **36** for controlling the operational state of the outdoor unit and/or the indoor unit, under the control of the controlling part **30**; and a compressor operating part **37** for circulating a coolant.

[0144] More specifically, the key inputting part **31**, which is a part with which a user operates the operational state of the air conditioner, may be at least one selected among a remote controller of the air conditioner, a button formed on the appearance of the apparatus, a computer system connected through wiring/wireless network. Also, the data inputting part **33** is a device for generating or downloading a character and a plurality of character images where the specific character appears and transferring the same to the controlling part **30**. For such a data inputting part **33**, at least one among a computer, a mobile means, a remote controller, may be used.

[0145] Also, the operational state display part **34** formed on the air conditioner, preferably, a predetermined outer side of the indoor unit, is a part through which the operational state of the air conditioner may be displayed to a user in an easy and simple manner with the character image displayed. Preferably, the operational state display part **34** is realized by the LCD so that a user may recognize the character image in a convenient and beautiful manner.

[0146] By displaying, as describe above, the character image on the operational state display part **34**, a user can recognize the operational state of the air conditioner in a more easy and convenient manner. Particularly, since a shape of the character image changes depending on the operational state of the air conditioner, a user can recognize the operational state of the air conditioner in even more easy and convenient manner.

[0147] Also, the voice outputting part **35**, which is a part for outputting the operational state of the air conditioner in form of a voice, can output the operational state of the air conditioner in form of a voice depending on a user's desire.

[0148] Also, the fan operating part **36** and the compressor operating part **37**, which are apparatus for circulating a coolant in the inside of the cooling cycle to get a coolant to pass through processes of compression, condensation, expansion, and evaporation in accordance with the operational state by a user, are on/off-controlled by the controlling part **30** depending on the operational state and the indoor temperature of the air conditioner.

[0149] The operation of the air conditioner will be briefly described with reference to the block diagram of the described air conditioner system. The air conditioner system of the present invention can be operated in three modes. A first mode is a character image uploading mode for uploading a character image into the controlling part **30** in the

inside of the air conditioner using the data inputting part 33. A second mode is a character image display mode where the air conditioner system is operated by operation of the key inputting part 31 by a user and the character image is displayed on the operational state display part 34. A third mode is a character and a character image selecting mode for selecting a set of character images related to a specific character.

[0150] As described above, by making the kind of the character image changed depending on the operational state of the air conditioner, the recognition of a user can be convenient even more. Also, since a specific character is selected in accordance with a taste of a user and a specific set of character images can be selected among a plurality of character images where the character is used, a user can display a character fit for a user's taste, on the air conditioner in a convenient manner. For an extreme example, a user's picture may be displayed.

[0151] In the meantime, the character and the character image selecting mode is easily performed by cooperative operation of the key inputting part 31 and the controlling part 30. More specifically, after the process for selecting a character is performed, a specific character image is selected among a plurality of character images related to the selected character, for each operational state of the air conditioner. Of course, if a user desires, a specific character needs not to be used in a related set, for each operational state of the air conditioner, and other character image where other character is used, may be set for each operational state of the air conditioner.

[0152] Therefore, the character image uploading mode and the character image display mode will be described in detail in the following.

[0153] FIG. 17 is a flowchart explaining the character image uploading mode according to the spirit of the present invention.

[0154] Referring to FIG. 17, a user obtains a character and/or a character image by downloading through a network or by producing, in person, the character image (S11). For the process in which the character is generated, any type of method such as wiring/wireless network and a producing by a user, may be used without limitations. Of course, when the air conditioner is brought to the market, a plurality of characters, a plurality of character images where a pose, a background, a position, and a movement are different for each character, may be stored in a set in the storing medium in the inside of the controlling part 30.

[0155] Afterwards, a user uploads the generated character image to the controlling part 30 through the data inputting part 33 (S12). The uploading process can be easily performed through a LAN (Local Area Network) and wiring/wireless Internet. The character and the character image uploaded in this manner, are stored in the storing medium of the controlling part 30 (S13), and upon calling by a user, one set of character images to which a specific character is applied, is called and used in the air conditioner.

[0156] FIG. 18 is a flowchart explaining the character image display mode of the air conditioner to which the spirit of the present invention is applied.

[0157] Referring to FIG. 18, the operation of the air conditioner is started by an input or reservation setting of a

user (S21). If the operation of the air conditioner is started, one set of character images selected in advance by a user is called and a character image appropriate for a present state, initial operation of the air conditioner, is displayed on the operational state display part 34 on the first place (S22). If a selected character is absent at the present point of time, selection of a character may be automatically requested on the first place, or one set of character images designated from the time of manufacturing of the air conditioner, may be called.

[0158] Afterwards, it is judged whether the operational state of the air conditioner is changed while the operation of the air conditioner is continuously performed (S23). If the operational state of the air conditioner is changed, a new character image appropriated for the changed operational state of the air conditioner among the called one set of character images, is automatically displayed in accordance with the changed operational state of the air conditioner (S24). If the operational state of the air conditioner is not changed, the character image of the present state is continuously displayed.

[0159] If the operation of the air conditioner is ended while the new changed character image is displayed, a character image of ended state is displayed (S26) and the operation of the air conditioner is ended. However, if the operation of the air conditioner is not ended, the process is moved to the step of judging a change of the operational state of the air conditioner (S23), and the process for changing the character image is repeated until the air conditioner is ended.

[0160] In case a user sets a specific character image in advance, for each operational state of the air conditioner, in performing the character image display mode as described above, not only the character image included in one set related to a single character but also another character image where another character is used, may be displayed for each operational state of the air conditioner in accordance with a taste of a user.

[0161] With a Whini, character that will be set in advance in the storing medium of the product, taken as an example, changing of the character image according to the gesture, the pose, the position, and the background will be described in the following.

[0162] FIG. 19 shows a character image displayed in the start/stop mode of the operation of the air conditioner.

[0163] Referring to FIG. 19, upon starting of the operation, the character image moving from the lower side to the upper side is displayed. On the contrary, upon ending of the operation, the character image moving from the character image on the upper side to the character image on the lower side, is displayed on the operational state display part 34.

[0164] FIG. 20 shows a character image displayed in the cooling operation mode of the air conditioner. Referring to FIG. 20, upon the general cooling operation, the character image on the upper side is displayed and upon a power cooling operation, the character image on the lower side is displayed.

[0165] FIG. 21 shows a character image displayed in the dehumidifying operation mode of the air conditioner. Refer-

ring to **FIG. 21**, upon the dehumidifying operation mode, the character images on the upper side and on the lower side are alternately displayed.

[0166] **FIG. 22** shows a character image displayed in the artificial intelligence operation mode of the air conditioner. Referring to **FIG. 22**, upon the artificial intelligence operation mode, the character images on the upper side and on the lower side are alternately displayed.

[0167] **FIG. 23** shows a character image displayed in the plasma clean operation mode of the air conditioner. Referring to **FIG. 23**, upon the plasma clean operation mode, the character images on the upper side and on the lower side are alternately displayed.

[0168] As shown in the character images exemplified by **FIGS. 19 to 23**, even under the state that the same character appears as a major character, the character image displayed on the operational state display part **34** is varied in detail in accordance with the change of the operational state of the air conditioner. Since the displayed character is changed in this manner, a user can check the operational state of the air conditioner in a more easy manner. Also, by the display parts **160** and **350** formed on the front of the air conditioner, the air conditioner can be quality-enhanced and a taste of a user can be satisfied even more.

[0169] Further, in case the character and the character image are set differently for each operational state of the air conditioner according to a taste of a user, there is a strong point that even the same air conditioner can be used for a long time as if it were a new apparatus.

#### Second Embodiment

[0170] The second embodiment of the present invention is the same in most part as the first embodiment. Only difference is that the display parts **160** and **350** on which at least a character image is displayed and the state display parts **170** and **300** on which the operational state of the air conditioner is displayed with a number or an arrow, are not formed separately but one or both two are displayed on a single LCD window by a selection of a user.

[0171] More specifically, in the first embodiment, the display parts **160** and **350**, and the state display parts **170** and **300** are separately formed on both the first indoor unit **100** and the second indoor unit **200**. However, in that case, since the wide area on the front side of the indoor unit is occupied, it is not preferable in viewpoints of costs and use. Therefore, there is provided a method where a state that a character image is selectively displayed on a single display part by a selection of a user (for example, the display part of the first embodiment), or a state that the operational state of the air conditioner is displayed with letters (for example, the state display part of the first embodiment), are selectively displayed or both state are all displayed with use of the characteristics of the LCD where various screen configuration is possible.

[0172] **FIGS. 24 and 25** show the operational state of the display part. **FIG. 24** shows that the character image is displayed on the display part and **FIG. 25** shows the operational state of the air conditioner is displayed on the display part.

[0173] Referring to **FIGS. 24 and 25**, there are provided a front panel **810** formed on a front of the air conditioner; a

side panel **820** formed on the side of the air conditioner; a display window **860** formed on the front panel **810**; an operation button **880** formed on one side of the display window **860**, for operating the operational state of the air conditioner; a selection button **871** formed on the other side of the display window **860**, for switching a screen displayed on the display window **860**, into a display part where a character image is displayed or a state display part where the operational state of the air conditioner is displayed with letters; and a character setting button **872** for selecting the kind of a character or the kind of a character image. Also, for the display window **860**, the LCD is preferably used as the first embodiment.

[0174] For other parts of the present embodiment, the descriptions made for the first embodiment are quoted. Particularly, the selection button **871** will be described in detail. By a number of times the selection button **871** is pressed, the display window **860** operates as the display part **861** where the character image is displayed (refer to **FIG. 24**) or operates as the state display part **862** where the operational state of the air conditioner is displayed with letters (refer to **FIG. 25**). Of course, it will be easily estimated that both the display part **861** and the state display part **862** can be all displayed.

[0175] Also, it is possible to have a specific kind of characters and a specific kind of character images selected if the character setting button **872** is pressed. Also, in case a plurality of character setting buttons **872** is provided, a button for selecting a character and a button for selecting a character image can be separately provided, for each kind of buttons. Particularly, though not described in the first embodiment, the character setting button **872** will be easily realized also in the first embodiment. Also, if the character setting button **872** is not provided, the kind of the character and the kind of the character image may be easily selected together with the gesture input from the data inputting part **33**.

#### [0176] Mode for Invention

[0177] The present invention is characterized in that a predetermined display window is realized on the front of the air conditioner and a character image in which a predetermined character image is used, is displayed on the display window. Also, the present invention is characterized in that a user can use the air conditioner in a more convenient manner thanks to the character and the character image related to the character.

[0178] Within the range satisfying the above characteristics, the air conditioner capable of improving the user's recognizability according to the present invention, can have various form in its embodiments.

[0179] On the first place, in case two indoor units are not used but a single indoor unit is used in a single outdoor unit, an effect that a user's convenience is improved can be obtained by realizing, on the single indoor unit, a display window on which a character and/or a character image is displayed.

[0180] Also, the spirit of the present invention can be applied not only to the air conditioner that has been described by the detailed embodiment, but also to other electronic appliances such as a cooking apparatus and a refrigerator, with change in its form in a convenient manner.

At this time, with the character maintained as it is, the operational state of the air conditioner can be displayed by changing a pose, a position, a background, and a behavior of the character.

[0181] Also, even though the apparatus and/or method for inputting, selecting, or setting a character and a character image may be changed depending on detail use conditions, such changes will not influence on realization of the spirit of the present invention.

[0182] Also, for the character image displayed on the display part, not only the character image where the character is used, but also a character of a representative shape may be constantly displayed regardless of the operational state of the air conditioner. In case of the air conditioner, it will be preferable that a character that can emphasize coolness such as a penguin is selected.

[0183] It will be apparent to those skilled in the art that various modifications and variations can be made in the present invention. 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.

#### Industrial Applicability

[0184] According to the spirit of the present invention, a character image understandable as the relevant operational state depending on the operational state of the air conditioner, is displayed on one side of the air conditioner, so that a user can understand the operational state of the air conditioner in a convenient manner, without looking at the state display part displayed with letters.

[0185] Also, the present invention uses a character of a beautiful design besides the state display part displayed with letters of the conventional stiff image, thereby possibly obtaining more better visual effect. Accordingly, a user's taste can be promoted even more.

[0186] Also, according to the present invention, a user can produce, in person, a character desired by a user, obtain various characters and character images where the character is used through various communication media, store in the storing medium in the inside of the air conditioner, and use the same. Therefore, since a user who makes use of the air conditioner can newly display a new character and/or a new character image at any time when a user desires or is tired of the existing character, the present invention has an effect that a user can use the air conditioner for a more longer time and a user can use the air conditioner as if it were a newly purchased apparatus at any time when a user desires.

[0187] Also, the present invention additionally includes a voice outputting part for displaying the operation of the air conditioner, so that a voice message is properly output for each operational state of the air conditioner. Therefore, there is a strong point that a remotely located user or even the blind can use the air conditioner in a more convenient manner.

[0188] Also, in case the same character is used for the entire items of the electronic appliances manufactured by a single company, the character as a trademark can enhance a brand image of the manufacturing company and in case the

character is used for an advertising means, the character can function as a means for obtaining advertisement profit.

1. An air conditioner having an enhanced user perception, comprising:

a panel forming an appearance of either side of the air conditioner; and

a display window including a display part formed on the panel, for displaying a specific character and/or a character image of the character, and/or a state display part for displaying an operational state of the air conditioner as a symbol.

2. The air conditioner of claim 1, wherein the display window is a single window.

3. The air conditioner of claim 1, wherein the character and/or the character image is varied depending on an operational state of the air conditioner.

4. The air conditioner of claim 1, further comprising a speaker for displaying an operational state of the air conditioner as sound and/or voice.

5. The air conditioner of claim 1, wherein the character and/or the character image is designated to correspond to a specific operational state of the air conditioner.

6. The air conditioner of claim 1, wherein the character and/or the character image is transmitted from an external device and is stored in the air conditioner.

7. The air conditioner of claim 1, further comprising a selection button for changing a display state of the display window.

8. The air conditioner of claim 1, wherein the display window is an LCD.

9. The air conditioner of claim 1, wherein the panel is a front panel formed at a front side of the air conditioner.

10. The air conditioner of claim 1, wherein the character and/or the character image is transmitted to the air conditioner by a separate mobile means.

11. The air conditioner of claim 1, wherein the character and/or the character image is transmitted to the air conditioner by a computer connected by a network.

12. The air conditioner of claim 1, wherein the air conditioner comprises a single outdoor unit and two or more indoor units.

13. The air conditioner of claim 1, further comprising a character selection button formed adjacent to the display window, for selecting the character and/or the character image.

14. The air conditioner of claim 1, wherein the display part or the state display part is selectively displayed on the display window.

15. The air conditioner of claim 1, wherein the character and/or the character image displayed on the display part is varied depending on an operational state of the air conditioner.

16. The air conditioner of claim 1, wherein the character image is one set of various character images realized by which in an identical character, a scene, a position, a pose and an action of the character are varied.

17. An air conditioner having an enhanced user perception, comprising:

a panel forming an appearance of either side of a air conditioner;

a display window including a display part formed on the panel, for displaying a specific character and/or a

character image of the character, and/or a state display part for displaying an operational state of the air conditioner as a symbol; and

means for selecting a display state of the display window.

**18.** The air conditioner of claim 17, wherein the selecting means is a selection button formed at a predetermined position on an outer surface of the air conditioner.

**19.** The air conditioner of claim 17, wherein the selecting means is a selection button formed on a remote controller.

**20.** The air conditioner of claim 17, wherein the air conditioner comprises a single outdoor unit and two indoor units connected to the single outdoor unit.

**21.** The air conditioner of claim 17, wherein the character and/or the character image is stored in a storage medium, inside the air conditioner when the air conditioner is manufactured.

**22.** An air conditioner having an enhanced user perception, comprising:

a front panel formed on a front side of an appearance of the air conditioner;

a display window formed at a predetermined position of the front panel, for selectively displaying a character image display and a state display, the character image display being varied depending on an operational state of the air conditioner, the state display displaying an operational state of the air conditioner as a symbol; and

a selection button formed adjacent to the display window, for selecting a display state of the display window.

**23.** The air conditioner of claim 22, wherein the character image is one set of various character images realized by which in an identical character, a scene, a position, a pose and an action of the character are varied.

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