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(54) **RECOMMENDATION METHOD FOR MOUNTING POSITION OF AIR TREATMENT MODULE, AND TERMINAL AND AIR CONDITIONER**

(57) Disclosed is a method for recommending an installation position for an air handling module which is applied to an air conditioner. The air conditioner is provided with at least one installation position configured to selectively install the air handling module, and the method includes the following steps: identifying a type of an air handling module to be installed (S10); determining a target installation position among idle installation positions according to the type of the air handling module to be installed (S20), in which the air handling module to be installed performs differently at different installation positions; and outputting prompt information of the target installation position (S30).

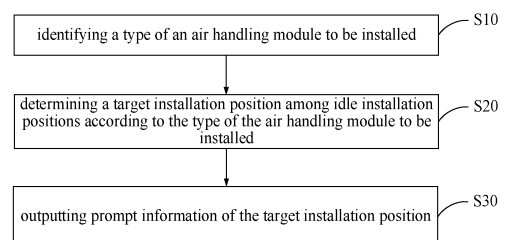


FIG. 2

EP 4 321 813 A1

Description

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to Chinese Patent Application No. 202110732977.2, filed on June 29, 2021, the entire contents of which are incorporated herein by reference.

TECHNICAL FIELD

[0002] The present application relates to the technical field of an air conditioner, and in particular to a method for recommending an installation position for an air handling module, a terminal, an air conditioner, and a storage medium.

BACKGROUND

[0003] With the improvement of production level, the air conditioner has become a common household appliance in our daily life. In some air conditioners, there are installation positions reserved for air handling components, and users can choose to replace the air handling components according to their needs to adjust the air handling effect of the air conditioner. The installation position of the air handling component will affect the performance of the air handling component itself or the adjustment performance of the air conditioner. However, at present, the installation position of the air handling component is randomly selected by users, resulting in that a better adjustment effect cannot be achieved when the air conditioner works.

[0004] It should be noted that, the above content is only used to help understand the technical problem solved by the present application, and do not represent that the above content belongs to existing art.

SUMMARY

[0005] The main purpose of the present application is to provide a method for recommending an installation position for an air handling module, a terminal, an air conditioner, and a storage medium, aiming to make the air conditioner have a better air handling effect in this state.

[0006] To achieve the above purpose, the present application provides a method for recommending an installation position for an air handling module which is provided for an air conditioner, the air conditioner is provided with at least one installation position, in which the air handling module is selectively installed, and the method comprises the following steps:

identifying a type of an air handling module to be installed;
determining a target installation position among idle installation positions according to the type of the air

handling module to be installed, in which the air handling module to be installed performs differently at different installation positions; and
outputting a prompt information of the target installation position.

[0007] In an embodiment, the step of determining the target installation position among the idle installation positions according to the type of the air handling module to be installed comprises:

determining a weighted value of each of the idle installation positions according to the type of the air handling module to be installed; and
determining the idle installation position with a highest weighted value as the target installation position, in which the weighted value of the installation position varies corresponding to different performances of the air handling module to be installed at different installation positions.

[0008] In an embodiment, the idle installation position that makes a performance of the air handling module to be installed higher corresponds to a higher weighted value; or
the idle installation position that makes a performance of an installed air handling module higher corresponds to a higher weighted value.

[0009] In an embodiment, the step of determining the weighted value of each of the idle installation positions according to the type of the air handling module to be installed comprises:

obtaining a type of an installed air handling module of the air conditioner and a corresponding installed position; and
determining the weighted value of each of the idle installation positions according to the followings: the type of the air handling module to be installed, the type of the installed air handling module and the installed position, in which an installation position that makes a performance of a function and/or a performance of a mode realized by a combination of the air handling module to be installed and the installed air handling module higher corresponds to a higher weighted value.

[0010] In an embodiment, the step of identifying the type of the air handling module to be installed comprises:

determining whether the idle installation positions exist in the air conditioner in response to receiving an identification information of the air handling module based on near field communication; and
identifying the type of the air handling module to be installed based on the identification information, in response to the idle installation positions existing in the air conditioner.

[0011] In an embodiment, the step of outputting the prompt information of the target installation position comprises at least one of the following steps:

controlling an indicator light at the target installation position to turn on;
 playing voice information of a location of the target installation position; and
 displaying location information of the target installation position.

[0012] In an embodiment, after controlling the indicator light at the target installation position to turn on, the method further comprises:

controlling the indicator light to turn off in response to detecting an insertion signal of the air handling module to be installed.

[0013] The present application further provides an air conditioner, the air conditioner comprises a memory, a processor and a recommendation program stored in the memory and executable by the processor, and the steps of the method for recommending the installation position for the air handling module as described above are implemented when the recommendation program is executed by the processor.

[0014] The present application further provides a terminal, the terminal comprises a memory, a processor and a recommendation program stored in the memory and executable by the processor, and the steps of the method for recommending the installation position for the air handling module as described above are implemented when the recommendation program is executed by the processor.

[0015] The present application further provides a storage medium, a recommendation program is stored in the storage medium, and the steps of the method for recommending the installation position for the air handling module as described above are implemented when the recommendation program is executed by a processor.

[0016] Based on the method for recommending the installation position for the air handling module, the terminal, the air conditioner, and the storage medium provided by the present application, before installing the air handling module in the air conditioner, the type of the air handling module to be installed is identified, the target installation position is determined in the idle installation positions according to the type of the air handling module to be installed, and the prompt information of the target installation position is output to prompt users about the installation position of the air handling module to be installed. Since the air handling module to be installed has different performance at different installation positions, it is possible to recommend a target installation position based on the current performance requirement of the air conditioner for the air handling module to be installed, which makes the air conditioner achieve a better adjustment effect when the air handling module to be installed is installed at the target installation position.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017]

FIG. 1 is a schematic view showing a hardware structure of an air conditioner involved in an embodiment of the present application.

FIG. 2 is a schematic flow diagram of a method for recommending an installation position for an air handling module according to an embodiment of the present application.

FIG. 3 is a schematic view of an air conditioner applying the method for recommending the installation position for the air handling module according to the present application.

FIG. 4 is a schematic flow diagram of a specified embodiment of step S20 in FIG. 2.

FIG. 5 is a schematic flow diagram of another specified embodiment of step S20 in FIG. 2.

[0018] The realization of the purposes, the functional features and the advantages of the present application will be further illustrated in conjunction with the embodiments and with reference to the accompanying drawings.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0019] It should be understood that the embodiments described herein are only used to describe the present application, and are not used to limit the present application.

[0020] In some air conditioners, there are installation positions reserved for air handling components, and users can choose to replace the air handling components according to their needs to adjust the air handling effect of air conditioner. For example, a dust removal module is installed onto the air conditioner to enable the air conditioner to have a dust removal function, or a humidification module is installed onto the air conditioner to enable the air conditioner to have a humidification function, or the dust removal module is replaced with a disinfection and sterilization module to enable the air conditioner to have a disinfection function. Since the air handling component is mainly used for air handling, the air handling component is typically placed in an air duct of the air conditioner considering the structure of the air conditioner. However, the position of the air handling component in the air duct will affect the performance of the air handling component itself or the adjustment performance of the air conditioner. Therefore, a reasonable installation of the air handling component can make the air conditioner achieve a better, and a more suitable adjustment effect in a current state.

[0021] Since the installation position of the air handling component is randomly selected by users at present, the present application proposes a recommendation method for the installation position, which enables the air conditioner to have a better handling effect when the air han-

dling component is running in the air conditioner. The technical solution according to an embodiment of the present application is: identifying a type of an air handling module to be installed; determining a target installation position in the idle installation positions according to the type of the air handling module to be installed, and the air handling module to be installed performs differently at different installation positions; and outputting prompt information of the target installation position.

[0022] In order to better understand the technical solution described above, exemplary embodiments of the present application will be illustrated in detail below with reference to the accompanying drawings. It should be understood that, although the drawings have shown some exemplary embodiments of the present application, the present application can be implemented in various forms and should not be limited to the embodiments described here. On the contrary, these embodiments are provided for a more thorough understanding of the present application and to fully convey the scope of the present application to those skilled in the art.

[0023] As one implementation, a hardware environment architecture involved in the method for recommending the installation position for the air handling module can be shown in FIG. 1.

[0024] Specifically, the hardware architecture involved in the method for recommending the installation position for the air handling module can comprise terminals such as mobile terminals and central control devices for the air conditioner (such as large screens), and these terminals communicate with the air conditioner. Alternatively, the hardware architecture involved in the method for recommending the installation position for the air handling module can also be an air conditioner with a processor.

[0025] As one implementation, the terminal comprises: a processor 101, such as a central processing unit (CPU); a memory 102, and a communication bus 103. The communication bus 103 is configured to realize connection communication between these components. The processor 102 is configured to call an application program to execute the recommendation process.

[0026] The memory 102 can be a high-speed random access memory (RAM) or a stable storage (non-volatile memory), such as a disk memory.

[0027] At least one installation position for installing the air handling module is provided on the air conditioner communicated with the terminal. The air handling module is detachably connected to the installation position, and users can choose to install the air handling module according to their needs.

[0028] It can be understood that in an embodiment, a recommendation program for implementing the recommendation process of the installation position of the air handling module is stored in the memory 102 of the air conditioner, when the processor 101 calls the recommendation program from the memory 102, the following operations are performed:

identifying a type of an air handling module to be installed;
determining a target installation position among the idle installation positions according to the type of the air handling module to be installed, and the air handling module to be installed performs differently at different installation positions; and
outputting prompt information of the target installation position.

[0029] Alternatively, in another embodiment, the recommendation program for implementing the recommendation process of the installation position of the air handling module is stored in the terminal, and when the processor 101 of the terminal calls the recommendation program from the memory 102, the following operations are performed:

identifying a type of an air handling module to be installed;
determining a target installation position among the idle installation positions according to the type of the air handling module to be installed, and the air handling module to be installed performs differently at different installation positions; and
outputting prompt information of the target installation position.

[0030] Alternatively, in further embodiment, the recommendation program for implementing the recommendation process of the installation position of the air handling module is stored in a computer-readable storage medium. When the storage medium is applied to a computer, the processor 101 of the computer can call the recommendation program from the storage medium and perform the following operations:

identifying a type of an air handling module to be installed;
determining a target installation position in the idle installation positions according to the type of the air handling module to be installed, and the air handling module to be installed performs differently at different installation positions; and
outputting prompt information of the target installation position.

[0031] Based on the above-described hardware architecture of the air conditioner, various embodiments of the method for recommending the installation position for the air handling module in the present application are proposed.

[0032] In an embodiment, referring to FIG. 2, the method for recommending the installation position for the air handling module proposed by this embodiment comprises the following steps:

step S10, identifying a type of an air handling module

to be installed;

step S20, determining a target installation position among the idle installation positions according to the type of the air handling module to be installed, and the air handling module to be installed performs differently at different installation positions; and
step S30, outputting prompt information of the target installation position.

[0033] The method for recommending the installation position for the air handling module in this embodiment can be performed on air conditioners or mobile terminals. The following is an explanation of an example performed on air conditioners.

[0034] The air conditioner in this embodiment is a modular air conditioner, and the air conditioner is provided with at least one installation position. The installation position is used for selectively installing the air handling module, and the air handling module is a module used for adjusting air. The air handling module comprises but is not limited to the following types of air handling modules, such as purification module, humidification module, negative ion module, formaldehyde removal module, filter module, odor removal module, disinfection and sterilization module, silent mode module, oxygen increasing module and so on.

[0035] When the air conditioner leaves factory, basic modes such as cooling, heating or humidification are pre-configured. Based on the installation position provided on an indoor unit (in a preferred embodiment, there are multiple installation positions), other air handling modules can be installed by users at any time to realize other modes. In this way, users can choose to purchase the air handling module or some of the air handling modules or not to purchase other air handling modules based on their current needs when purchasing the air conditioner, and multiple choices are provided to users. Since the air conditioner is only configured with a basic heat exchange mode, the cost of the air conditioner is low and the air conditioner is economical and affordable. However, based on the installation position, a new air handling module can be replaced at any time. Users can choose to upgrade the air conditioner at different time periods based on their economic capabilities or to replace the air handling module based on new users or new usage requirements of users. In this way, the air conditioner applicable to this embodiment provides users with low-cost and highly intelligent purchasing experience, which enables more economically weak users to use intelligent air conditioner while improving universality of air conditioners.

[0036] In an optional embodiment, users can input information about the air handling module to be installed to the air conditioner through language instructions, and the air conditioner identifies the type of the air handling module to be installed based on the language instructions.

[0037] Alternatively, in another optional embodiment,

users can input information about the air handling module to be installed through a remote controller or an input panel of the air conditioner, and the air conditioner identifies the type of the air handling module to be installed based on the information input by the remote controller or the input panel.

[0038] Alternatively, in a preferred embodiment, referring to FIG. 3, a near field communication area 11 is provided on the air conditioner 10. When users "touch" the near field communication area 11 with the air handling module to be installed, a communication between the air handling module to be installed and the air conditioner is realized, then identification information of the air handling module to be installed is automatically sent to the air conditioner 10, and the air conditioner identifies the type of the air handling module to be installed based on the identification information received through near field communication. Alternatively, when the air handling module to be installed is close to the near field communication area, the near field communication area directly reads the identification information on a tag of the air handling module to be installed, and then identifies the air handling module to be installed based on the identification information.

[0039] In an embodiment, a Radio Frequency Identification (RFID) reader is provided to the near field communication area 11, each air handling module is provided with a tag that can be read and identified by the RFID, and the tag is labeled with the type or other information of the air handling module. In an embodiment, the near field communication area 11 is provided on a door body 13 of the air conditioner 10 corresponding to the installation position 12.

[0040] After identifying the type of the air handling module to be installed, the air conditioner determines a target installation position based on preset mapping relationships between the types of air handling modules and the installation positions. The mapping relationships between the types of air handling modules and the target installation position can be established based on the performance of each type of air handling module in each installation position, and/or based on the influence of each type of air handling module on other air handling modules in each installation position.

[0041] In an embodiment, the corresponding handling performance of each air handling module when running in each installation position is tested, then the mapping relationships between an installation position having high performance and this type of air handling module are established, and then a target installation position of the air handling module to be installed is determined based on the mapping relationships after the air handling module to be installed is identified. Alternatively, the influence of each air handling module on the handling performance of other air handling modules when running at each installation position is tested, then the mapping relationships between the installation position improving the handling performance of other air handling modules and this

type of air handling module are established, and then a target installation position of the air handling module to be installed is determined based on the mapping relationships after the air handling module to be installed is identified. Alternatively, the influence of each air handling module on the performance of modes and/or functions that can be realized when running at each installation position is tested, and the mapping relationships between an installation position having high performance and this type of air handling module are established, and then a target installation position of the air handling module to be installed is determined based on the mapping relationship after the air handling module to be installed is identified.

[0042] The prompt information of the target installation position is output to prompt users to install the air handling module to be installed at the target installation position. Users can accurately install the air handling module to be installed at a position where the air conditioner has a better and more suitable adjustment effect based on the prompt information.

[0043] In an embodiment, the outputting method for the prompt information comprises but is not limited to at least one of the following:

(1) controlling an indicator light at the target installation position to turn on. That is, at least one indicator light is provided at a corresponding position of each installation position of the air conditioner, and as the indicator light turns on, it indicates that the corresponding installation position is the target installation position.

(2) playing voice information of a location of the target installation position. That is, the air conditioner has a player, the voice information comprises a location of the target installation position, and users are prompted about the installation position of the air handling module to be installed through voice broadcasting.

(3) displaying location information of the target installation position. That is, a display screen is provided on the air conditioner, and the display screen displays the location information of the target installation position. In an embodiment, the location information is dynamic location information, i.e., the target installation position is displayed through a dynamic display manner.

[0044] In an embodiment, after the step of controlling the indicator light at the target installation position to turn on, the step further comprises: controlling the indicator light to turn off in response to detecting an insertion signal of the air handling module to be installed. After users have installed the air handling module to be installed on the air conditioner, the indicator light is controlled to turn off to reduce resource waste.

[0045] There is a detection component provided at the installation position of the air conditioner for detecting

whether the air handling module has been installed at the installation position. When the detection component detects the air handling module, it outputs installation information of the air handling module to the air conditioner. Based on the installation information, the air conditioner can determine whether the air handling module to be installed has been installed, and whether the air handling module to be installed has been installed at the target installation position or other idle installation positions.

[0046] In an embodiment, the detection component can be a label recognizer that can specifically identify the type of the air handling module; or the detection component can be an electrical connection terminal, when the air handling module is inserted into the installation position, the electrical connection terminal realizes conduction based on the conductive terminal of the air handling module, forming a signal circuit to realize the identification to the air handling module.

[0047] In an embodiment, users can install the air handling module to be installed according to the prompt information of the target installation position, and can also install the air handling module to be installed at other idle installation positions. When users have installed the air handling module to be installed at other idle installation positions other than the target installation position, the difference between the performance corresponding to other idle installation positions and the performance corresponding to the target installation position is output for user's reference.

[0048] In this embodiment, before installing air handling modules in the air conditioner, by identifying the type of the air handling module to be installed, determining a target installation position in the idle installation positions according to the type of the air handling module to be installed, and then outputting prompt information of the target installation position, it is possible to prompt users for the installation position of the air handling module to be installed. Since the air handling module to be installed has different performance at different installation positions, this embodiment can recommend the target installation position based on the current performance requirements of the air conditioner for the air handling module to be installed, making the air conditioner achieve a better adjustment effect as the air handling module to be installed is installed at the target installation position.

[0049] In an embodiment, based on the above embodiments, an implementation of determining the target installation position is provided.

[0050] Referring to FIG. 4, in this embodiment, the step of determining the target installation position in the idle installation positions according to the type of the air handling module to be installed comprises:

[0051] step S21, determining a weighted value of each of the idle installation positions according to the type of the air handling module to be installed; and

[0052] step S22, determining an idle installation posi-

tion with a highest weighted value as the target installation position, and the weighted value of the installation position varies corresponding to different performances of the air handling module to be installed at different installation positions.

[0053] In this embodiment, different weighted values are assigned according to the performance achieved by the air handling module at each installation position, and the target installation position is determined by comparing the weighted value of each installation position.

[0054] In an embodiment, the weighted value can be searched based on a preset table. For example, in a test experiment, a weighted value is assigned corresponding to the performance that can be achieved by each type of air handling module installed at different installation positions, to form a table that relates the weighted values, the installation positions and the types of air handling modules. When the type of an air handling module is identified, the weighted value corresponding to each installation position is searched based on the table, and then an installation position with a high weighted value is determined as the target installation position.

[0055] In an embodiment, the weighted value can also be calculated based on a neural network model for weighted values. For example, based on a test experiment, each type of air handling module is installed at different installation positions to respectively obtain corresponding air handling performance. Each type of air handling module and its corresponding installation position, achieved performance, and the corresponding assigned weight values are input into the neural network model. Based on the relationships between the types of air handling modules, the installation positions, the performance and the weighted values, the neural network model for weighted values is formed after multiple trainings in the neural network model. During the use of the air conditioner, after the air handling module to be installed and the idle installation position are input to the neural network model for weighted values, the neural network model for weighted values outputs weighted value corresponding to each idle installation position, and then the target installation position of the air handling module to be installed is therefore determined based on the output weighted value.

[0056] In an embodiment, the weighted value of the installation position varies corresponding to different performances of the air handling module to be installed at different installation positions. The correlation between the performance that the air handling module can achieve based on the installation position and the weighted value of the installation position can be positive, such as the higher the performance, the higher the weighted value; the correlation between the performance that the air handling module can achieve based on the installation position and the weighted value of the installation position can also be not positive, such as the higher the performance, the weighted value could be either higher or lower, it can be determined specifically based on settings or

usage scenarios of the air conditioner.

[0057] In an embodiment, the installation position of the air handling module is determined based on the size of the performance. For example, an idle installation position that makes the performance of the air handling module to be installed higher corresponds to a higher weighted value. In this way, after the air handling module to be installed is installed at the target installation position, the performance achieved by the air handling module to be installed when running in the air conditioner is higher than the performance achieved at other installation positions. In an embodiment, the idle installation position that makes the performance of the air handling module to be installed higher can be an installation position having highest performance when no other air handling modules are installed in the air conditioner, and can also be an installation position having highest performance when other air conditioners are installed in the air conditioner.

[0058] In another embodiment, the installation position of the air handling module is determined based on the size of performance that is currently required by the air conditioner. For example, when it needs to improve the performance of an installed air handling module for the air conditioner, the idle installation position that makes the performance of the installed air handling module higher can be arranged to correspond to a higher weighted value (in some embodiments, the lower the performance of the air handling module to be installed, the higher the performance of the installed air handling module, at this time, the installation position that makes the performance of the air handling module to be installed lower corresponds to a higher weighted value; while in some other embodiments, the higher the performance of the air handling module to be installed, the higher the performance of the installed air handling module, at this time, the installation position that makes the performance of the air handling module to be installed higher corresponds to a higher weighted value). In this way, after the air handling module to be installed is installed at the target installation position, the performance achieved by the installed air handling module when running in the air conditioner is higher than the performance achieved when the air handling module to be installed is not installed.

[0059] In this embodiment, weighted values are assigned to each installation position based on the performance achieved by the air handling module at the installation position, and the target installation position for the air handling module to be installed is determined based on the size of the weighted value, which makes that the air handling module to be installed meet the performance requirement of the air conditioner for the air handling module to be installed after the air handling module to be installed is installed at the target installation position, and therefore improves the adjustment effect of the air conditioner.

[0060] In an embodiment, based on all the above embodiments, this embodiment provides another imple-

mentation for determining the target installation position.

[0061] Referring to FIG. 5, the step S20 comprises:

step S23, obtaining the type of the air handling module installed in the air conditioner and the corresponding installed position;
 step S24, determining the weighted value of each of the idle installation positions according to the type of the air handling module to be installed, the type of the installed air handling module and the installed position, and an installation position that makes the performance of a function and/or a mode realized by a combination of the air handling module to be installed and the installed air handling module higher corresponds to a higher weighted value; and
 step S22, determining an idle installation position with a highest weighted value as the target installation position.

[0062] It should be noted that, the function of the air handling module refers to the function that the air handling module itself possesses. For example, the corresponding function of a formaldehyde removal module is a formaldehyde removal function, and the corresponding function of a dust removal module is a dust removal function.

[0063] The mode refers to an operation method that has certain features and effects, such as new house mode, newly decorated mode, pregnant woman or confinement in childbirth mode, etc. The mode does not correspond one-to-one to the function of the air handling module. For example, the mode that the formaldehyde removal module realizes can be the new house mode, and the new house mode has a formaldehyde removal effect.

[0064] In an embodiment, the combination of air handling modules can realize a certain function or a certain mode. For example, the combination of three formaldehyde removal modules can achieve super formaldehyde removal and realize the newly decorated mode.

[0065] In the solution of the combination of air handling modules for air handling, positional relationships between air handling modules will affect the performance of the air handling modules. For example, the dust removal effect will be better in a circumstance that certain intervals are provided between dust removal modules; or in a scenario where the air is humidified after dust removal, the adjustment effect corresponding to the fresh air mode is better, and indoor air comfort is higher. Therefore, in order to further improve the adjustment effect of the air conditioner, this embodiment determines the target installation position of the air handling module to be installed based on the installed air handling module in the air conditioner and its corresponding installed position.

[0066] In an embodiment, the weighted value is assigned to each of the installation positions based on the size of the performance of the function and/or the mode

that are/is realized by the combination of the air handling modules (the performance size of the air handling module itself is not proportional to the size of the weighted value, when the performance of realized function and/or mode is high, the performance of the air handling module itself could be either low or high). Then the installation position with a high weighted value is determined as the target installation position, making the performance of the function and/or the mode realized by the combination of the air handling modules become the highest, and making the air conditioner achieve a better adjustment effect. That is, such arrangement makes the installation position that makes the performance of the function and/or the mode realized by the combination of the air handling module to be installed and the installed air handling module higher correspond to a higher weighted value.

[0067] In an embodiment, this embodiment is applied to a usage scenario where the air conditioner comprises at least one installed air handling module.

[0068] In an optional embodiment, this embodiment presets the mapping relationships between the weighted values of the air handling modules that realize different functions and/or modes at each installation position, and after the function and/or the mode realized by the air handling module to be installed and the installed air handling module are/is determined, the target installation position of the air handling module to be installed is determined based on the installed position and the mapping relationships between the weighted values of each installation position where air handling modules realizing the determined function and/or mode are located.

[0069] Alternatively, in another optional embodiment, the weighted value of each air handling module corresponding to the function and/or the mode at each installation position is calculated by providing a neural network model for functions and/or modes, the specific procedures are the same as the above embodiment shown in FIG. 4, and will not be repeated here.

[0070] In an embodiment, based on the function and/or the mode that the air conditioner is currently running, it is possible to determine either to perform the step of determining the weighted value of each idle installation position according to the type of the air handling module to be installed, the type of the installed air handling module and the installed position, or to perform the step of determining the weighted value of each idle installation position according to the type of the air handling module to be installed. For example, when the function and/or the mode that the air conditioner is currently running are/is the function and/or the mode realized by the air handling module to be installed and the installed air handling module, the weighted value of each idle installation position is determined according to the type of the air handling module to be installed, the type of the installed air handling module and the installed position, based on the performance level of the function and/or the mode, which makes the performance of the function and/or the mode improved. When the function and/or the mode that the

air conditioner is currently running are/is not the function and/or the mode realized by the air handling module to be installed and the installed air handling module, the weighted value of each idle installation position is determined according to the type of the air handling module to be installed, based on the performance level of the air handling module to be installed, which makes the air handling module to be installed run with better performance. This makes the air conditioner work with a better effect.

[0071] When installing air handling modules, this embodiment makes the function and/or the mode realized by the air handling modules achieve a better adjustment effect.

[0072] In an embodiment, based on all the above embodiments, the present application provides another embodiment of the recommendation method. The air conditioner has multiple installation positions, and when at least two air handling modules are installed at the installation positions, the air handling modules affect each other's handling capability, i.e., the positional relationship between air handling modules has a certain influence on the performance of the air handling modules (the influence may be either positive influence or negative influence). In view of this, this embodiment determines the target installation position of the air handling module to be installed based on the installation situation of air handling modules in the air conditioner, to further improve the handling effect of the air conditioner.

[0073] In an embodiment, the target installation position of the air handling module to be installed changes based on whether there is an installed air handling module in the air conditioner. That is, the corresponding target installation position when there is an installed air handling module in the air conditioner may be different from the corresponding target installation position when there is no installed air handling module in the air conditioner.

[0074] In an embodiment, the step of determining the target installation position in the idle installation positions according to the type of the air handling module to be installed comprises: obtaining installation information of the installed air handling module of the air conditioner; and determining the target installation position in each of the idle installation positions according to the type of the air handling module to be installed in response to having not obtained the installation information of the installed air handling module, as is the embodiment shown in FIG. 4.

[0075] When the installation information of the installed air handling module is obtained, the target installation position is determined in each of the idle installation positions according to the type of the air handling module to be installed, the type of the installed air handling module and its corresponding installed position. For example, there are mapping relationships between the combinations of air handling modules and their positions, based on this, the target installation position of the air handling module to be installed can be determined after the installed air handling module and its corresponding in-

stalled position are determined, as is the embodiment shown in FIG. 5.

[0076] This embodiment automatically chooses the installation method that matches better with the current state of the air conditioner based on the installation information of the air handling module in the air conditioner.

[0077] In an embodiment, based on all the above embodiments, the step of identifying the type of the air handling module to be installed comprises: determining whether an idle installation position exists in the air conditioner in response to receiving identification information of the air handling module based on near field communication, identifying the type of the air handling module to be installed based on the identification information, in response to that the idle installation position exists in the air conditioner; and outputting prompt information that installation positions are all occupied, in response to that there is no idle installation position in the air conditioner.

[0078] In this embodiment, when the near field communication area receives the identification information of the air handling module, it is firstly determined that whether there is the idle installation position in the air conditioner, if there is the idle installation position in the air conditioner, then the type of the air handling module to be installed is identified, and then the target installation position is determined; and if there is no idle installation position in the air conditioner, the prompt information that installation positions are all occupied is output.

[0079] In an embodiment, it is possible to output the installation position where a replaceable air handling module is located while outputting the prompt information that installation positions are all occupied to prompt users to replace the air handling module in that position. In an embodiment, the installation position where the replaceable air handling module is located can be determined based on the methods described in the above embodiments, and will not be repeated here.

[0080] It should be noted that, the above are only preferred embodiments of the present application and are not intended to limit the patent scope of the present application. Any equivalent structure or equivalent procedure transformation made by using the contents of the description and the accompanying drawings of the present application, or direct or indirect applications in other related technical fields, are all included in the scope of the present application.

Claims

1. A method for recommending an installation position for an air handling module, wherein the method is for an air conditioner, wherein the air conditioner is provided with at least one installation position, in which the air handling module is selectively installed, and the method comprises the following steps:

identifying a type of an air handling module to

- be installed;
determining a target installation position among idle installation positions according to the type of the air handling module to be installed, wherein the air handling module to be installed performs differently at different installation positions; and
outputting a prompt information of the target installation position.
2. The method for recommending the installation position for the air handling module according to claim 1, wherein the step of determining the target installation position among the idle installation positions according to the type of the air handling module to be installed comprises:
- determining a weighted value of each of the idle installation positions according to the type of the air handling module to be installed; and
determining the idle installation position with a highest weighted value as the target installation position, wherein the weighted value of the installation position varies corresponding to different performances of the air handling module to be installed at different installation positions.
3. The method for recommending the installation position for the air handling module according to claim 2, wherein the idle installation position that makes a performance of the air handling module to be installed higher corresponds to a higher weighted value; or the idle installation position that makes a performance of an installed air handling module higher corresponds to a higher weighted value.
4. The method for recommending the installation position for the air handling module according to claim 2, wherein the step of determining the weighted value of each of the idle installation positions according to the type of the air handling module to be installed comprises:
- obtaining a type of an installed air handling module of the air conditioner and a corresponding installed position; and
determining the weighted value of each of the idle installation positions according to the followings: the type of the air handling module to be installed, the type of the installed air handling module, and the installed position, wherein an installation position that makes a performance of a function and/or a performance of a mode realized by a combination of the air handling module to be installed and the installed air handling module higher corresponds to a higher weighted value.
5. The method for recommending the installation position for the air handling module according to claim 1, wherein the step of identifying the type of the air handling module to be installed comprises:
- determining whether the idle installation positions exist in the air conditioner in response to receiving an identification information of the air handling module based on near field communication; and
identifying the type of the air handling module to be installed based on the identification information, in response to the idle installation positions existing in the air conditioner.
6. The method for recommending the installation position for the air handling module according to claim 1, wherein the step of outputting the prompt information of the target installation position comprises at least one of the following steps:
- controlling an indicator light at the target installation position to turn on;
playing voice information of a location of the target installation position; and
displaying location information of the target installation position.
7. The method for recommending the installation position for the air handling module according to claim 6, wherein after controlling the indicator light at the target installation position to turn on, the method further comprises:
- controlling the indicator light to turn off in response to detecting an insertion signal of the air handling module to be installed.
8. An air conditioner, **characterized by** comprising a memory, a processor and a recommendation program stored in the memory and executable by the processor, wherein a step of a method for recommending an installation position for an air handling module according to any one of claims 1 to 7 is implemented when the recommendation program is executed by the processor.
9. A terminal, **characterized by** comprising a memory, a processor and a recommendation program stored in the memory and executable by the processor, wherein a step of a method for recommending an installation position for an air handling module according to any one of claims 1 to 7 is implemented when the recommendation program is executed by the processor.
10. A storage medium, **characterized in that** a recommendation program is stored in the storage medium, wherein a step of a method for recommending an

installation position for an air handling module according to any one of claims 1 to 7 is implemented when the recommendation program is executed by a processor.

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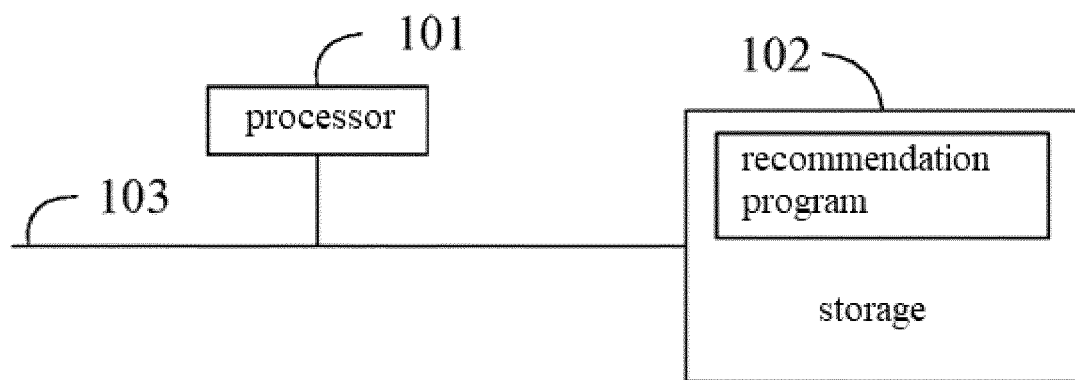


FIG. 1

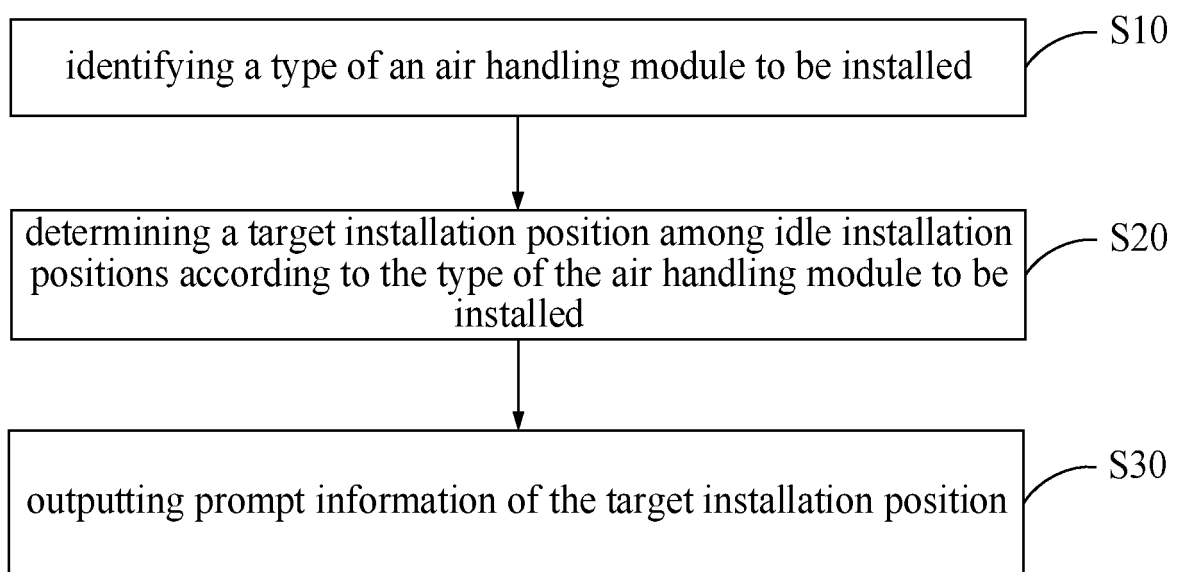


FIG. 2

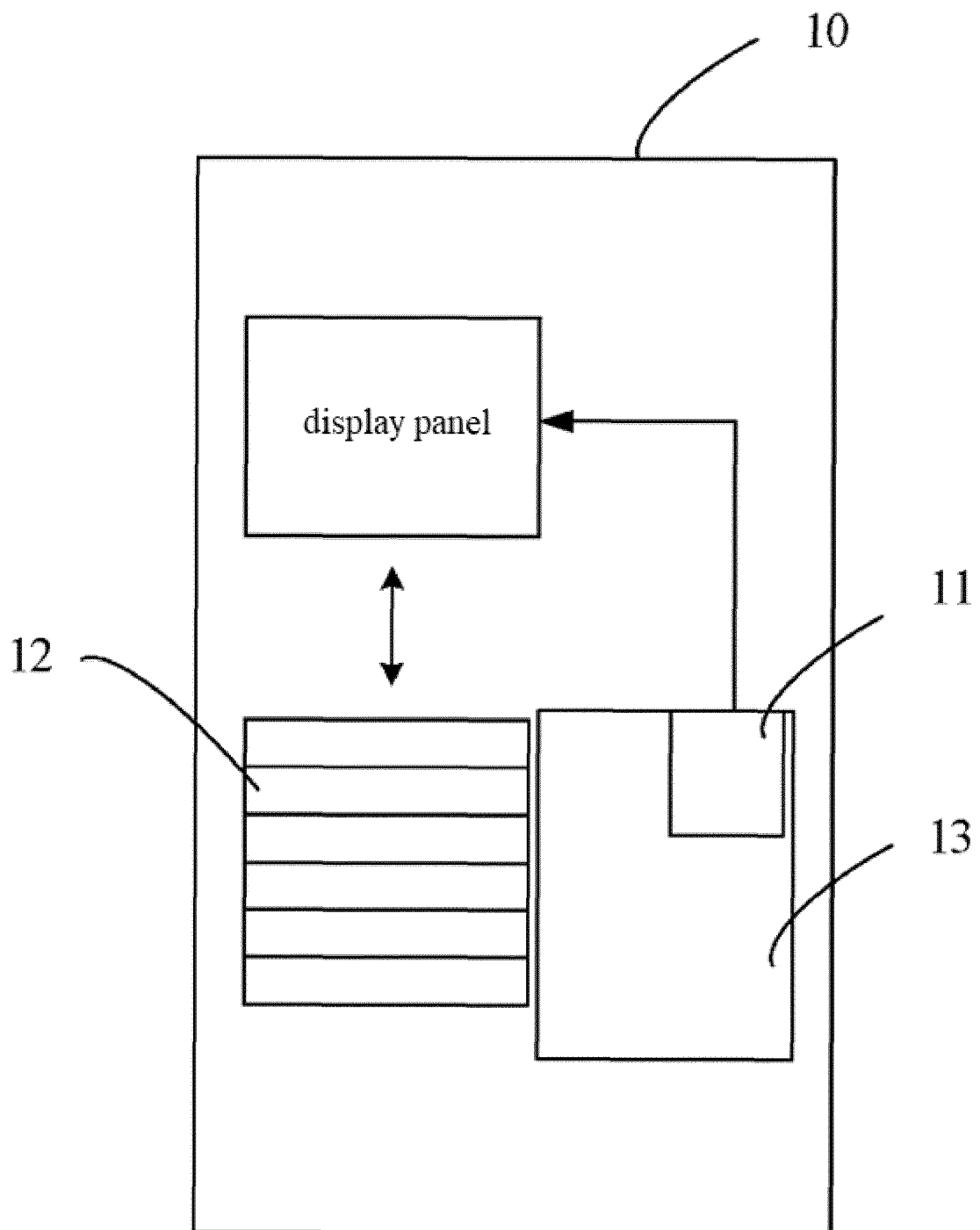


FIG. 3

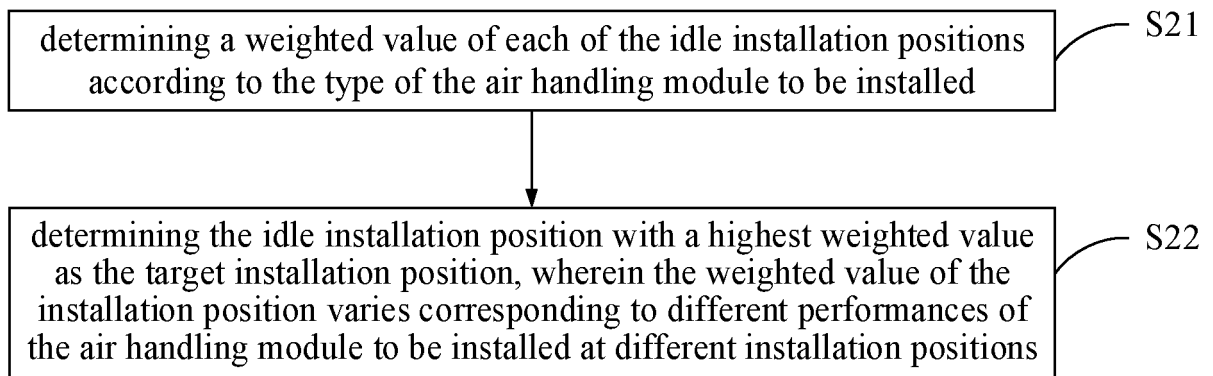


FIG. 4

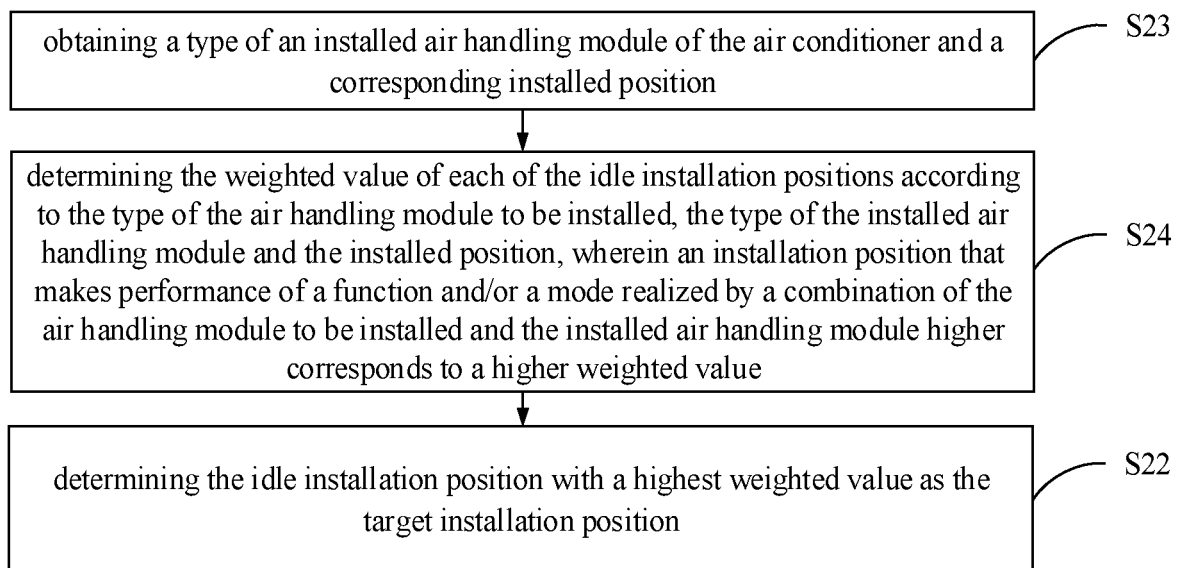


FIG. 5

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2021/126109

A. CLASSIFICATION OF SUBJECT MATTER F24F 11/49(2018.01)i; F24F 11/52(2018.01)i; F24F 11/64(2018.01)i According to International Patent Classification (IPC) or to both national classification and IPC																		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) F24F Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched																		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) DWPI, CJFD, CNABS, SIPOABS, CNTXT, USTXT, 美的, 海尔, 格力, 陈威丞, 翁锦联, 空调, 空气处理模块, 安装, 固定, 插, 位, 空闲, 候选, 备选, 选择, 备用, 推荐, 优先, 最优, 最好, 最大, 最小, 性能, 权重, 系数; MIDEA, MEDE, HIER, GREE, air, conditioner, process+, mount+, installat+, insert+, fix+, hold+, fasten+, position, location, idle, backup, select+, target+, recommed+, optim+, max+, highest, minimum, performance, cop, coefficient?, factor+																		
C. DOCUMENTS CONSIDERED TO BE RELEVANT <table border="1"> <thead> <tr> <th>Category*</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>Y</td> <td>CN 112113311 A (WUHAN REFRIGERATION EQUIPMENT CO., LTD. OF MIDEA GROUP et al.) 22 December 2020 (2020-12-22) description, paragraphs 0136-0226, and figures 1-12</td> <td>1-10</td> </tr> <tr> <td>Y</td> <td>CN 106570589 A (GUANGDONG MIDEA REFRIGERATION EQUIPMENT CO., LTD. et al.) 19 April 2017 (2017-04-19) description, paragraphs 0056-0085, and figures 1-8</td> <td>1-10</td> </tr> <tr> <td>A</td> <td>CN 101442750 A (DIGIMOC COMMUNICATION TECH (SHANGHAI) CO., LTD. et al.) 27 May 2009 (2009-05-27) entire document</td> <td>1-10</td> </tr> <tr> <td>A</td> <td>CN 112303821 A (WUHU MEIZHI AIR CONDITIONING EQUIPMENT CO., LTD. et al.) 02 February 2021 (2021-02-02) entire document</td> <td>1-10</td> </tr> <tr> <td>A</td> <td>CN 111651862 A (ZHUHAI GREE ELECTRIC APPLIANCES INC.) 11 September 2020 (2020-09-11) entire document</td> <td>1-10</td> </tr> </tbody> </table>	Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	Y	CN 112113311 A (WUHAN REFRIGERATION EQUIPMENT CO., LTD. OF MIDEA GROUP et al.) 22 December 2020 (2020-12-22) description, paragraphs 0136-0226, and figures 1-12	1-10	Y	CN 106570589 A (GUANGDONG MIDEA REFRIGERATION EQUIPMENT CO., LTD. et al.) 19 April 2017 (2017-04-19) description, paragraphs 0056-0085, and figures 1-8	1-10	A	CN 101442750 A (DIGIMOC COMMUNICATION TECH (SHANGHAI) CO., LTD. et al.) 27 May 2009 (2009-05-27) entire document	1-10	A	CN 112303821 A (WUHU MEIZHI AIR CONDITIONING EQUIPMENT CO., LTD. et al.) 02 February 2021 (2021-02-02) entire document	1-10	A	CN 111651862 A (ZHUHAI GREE ELECTRIC APPLIANCES INC.) 11 September 2020 (2020-09-11) entire document	1-10
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Date of the actual completion of the international search 04 March 2022	Date of mailing of the international search report 30 March 2022																	
Name and mailing address of the ISA/CN China National Intellectual Property Administration (ISA/CN) No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088, China Facsimile No. (86-10)62019451	Authorized officer Telephone No.																	

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2021/126109

C. DOCUMENTS CONSIDERED TO BE RELEVANT		
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Information on patent family members

International application No.

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Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN 112113311 A	22 December 2020	None	
CN 106570589 A	19 April 2017	None	
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CN 112303821 A	02 February 2021	None	
CN 111651862 A	11 September 2020	None	
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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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