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(54) **AIR CONDITIONER, AND CONTROL METHOD AND DEVICE THEREFOR**

(57) Disclosed is a method for controlling an air conditioner. The air conditioner includes an indoor unit which includes a housing having an air outlet, an air outlet passage formed in the housing and communicated with the air outlet; and a first air guiding plate comprising a plurality of air dispersing holes and rotatably mounted at a lower side of the air outlet through a rotating shaft to allow to open or cover the air outlet by rotation; and a second air guiding plate mounted in the air outlet passage. The method includes: acquiring an indoor environmental hu-

midity under a breezeless mode; determining an air shielding position of the first air guiding plate according to the indoor environmental humidity; and controlling the first air guiding plate to rotate to the air shielding position. Further disclosed are a control device of an air conditioner, an air conditioner and a computer readable storage medium. Water condensation can be prevented of air conditioning, while ensuring user's demand for breezeless feeling.

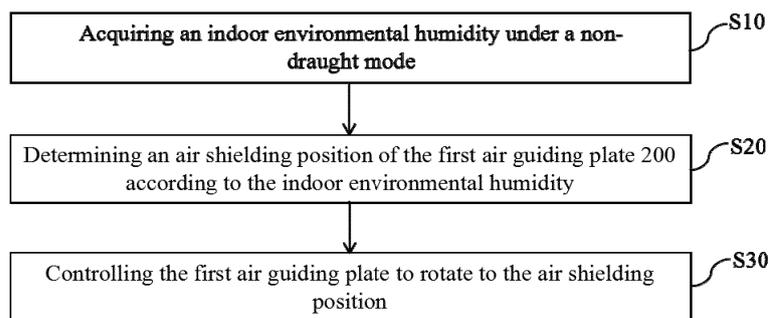


Fig. 3

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Description**TECHNICAL FIELD**

[0001] The present disclosure relates to the technical field of air conditioners, in particular to a method for controlling an air conditioner, a device of controlling an air conditioner and an air conditioner.

BACKGROUND

[0002] With the improvement of human daily life, the demands has been increasing respect to the comfortability of an air conditioner. With regards to the existing air conditioners, in order to prevent the air flow from blowing directly to the user and realize the breezeless feeling, air dispersing holes are typically provided on the air guiding plate at the air outlet as an air shielding structure to reduce the air out-flowing volume out from the air outlet, disperse the air flow and reduce the air speed at the air outlet.

[0003] However, in some cases, the air shielding position of the air guiding plate will not adapt with the indoor environmental humidity in the breezeless mode of the air conditioners. When the humidity is relatively high, and the air out flowing volume at the air guiding plate is insufficient, humid and hot air tends to accumulate on the outer side of the air guiding plate, resulting in water condensation and even blockage of air dispersing holes and negative outcome the air out-flowing of the air conditioner.

[0004] The aforementioned is assistant in understanding the technical solution of the present disclosure, and does not necessarily admit that the aforementioned constitutes the prior art.

SUMMARY

[0005] The present disclosure is mainly to provide a method for controlling an air conditioner, which aims to meet the demands of users for a breezeless feeling while preventing water condensation generated by the air conditioner.

[0006] In order to achieve the aforementioned object, the present disclosure provides a method for controlling an air conditioner. The air conditioner includes an indoor unit, in which the indoor unit includes a housing including an air outlet, and an air outlet passage formed in the housing and communicated with the air outlet; and a first air guiding plate comprising a plurality of air dispersing holes and rotatably mounted at a lower side of the air outlet through a rotating shaft to allow to open or cover the air outlet by rotation; and a second air guiding plate mounted in the air outlet passage, in which the first air guiding plate is provided with a plurality of air dispersing holes; the housing is internally provided with an air outlet passage communicated with the air outlet, in which the method includes:

acquiring an indoor environmental humidity under a breezeless mode;
determining an air shielding position of the first air guiding plate according to the indoor environmental humidity; and
controlling the first air guiding plate to rotate to the air shielding position.

[0007] Optionally, the operation of determining an air shielding position of the first air guiding plate according to the indoor environmental humidity, includes:

determining a humidity range in which the indoor environment humidity is positioned; and
determining the air shielding position according to the humidity range.

[0008] Optionally, the operation of determining an air shielding position of the first air guiding plate according to the indoor environmental humidity, includes:

matching the indoor environmental humidity with a plurality of preset humidities; and
in response to a determination that the indoor environmental humidity is matched with one of the preset humidities, taking a preset air shielding position corresponding to the matched preset humidity as the air shielding position of the first air guiding plate.

[0009] Optionally, the operation of determining a humidity range in which the indoor environment humidity is positioned, includes:

determining whether the indoor environment humidity is less than or equal to a first preset humidity;
if yes, determining the indoor environmental humidity to be in a first preset humidity range;
if no, determining whether the indoor environment humidity is greater than or equal to a second preset humidity;
in response to a determination that the indoor environmental humidity is greater than or equal to a second preset humidity, determining the indoor environmental humidity to be in a second preset humidity range; and
the operation of determining the air shielding position according to the humidity range, includes:
in response to a determination that the indoor environmental humidity is located in a first preset humidity range, determining the air shielding position at a first position;
in response to a determination that the indoor environmental humidity is located in a second preset humidity range, determining the air shielding position at a second position.

[0010] In which, the air outlet area of the air conditioner corresponding to the first position is smaller than the air

outlet area of the air conditioner corresponding to the second position.

[0011] Optionally, the air outlet area corresponding to the air shielding position is increased with an increase of humidity.

[0012] Optionally, when the air outlet is covered by the first air guiding plate, a plane where an upper edge of the first air guiding plate and the rotating shaft are located is defined as a reference plane; when the first air guiding plate is opened to allow the air outlet, the plane where the upper edge of the first air guiding plate and the rotating shaft are located is defined as a moving plane, the included angle α is defined between the moving plane and the reference plane, and the included angle α corresponding to the second position is no less than 25° and no more than 35°.

[0013] Optionally, an interval distance M is defined between the upper edge of the first air guiding plate and the upper edge of the air outlet, and M corresponding to the second position is no less than 40mm and no more than 60mm.

[0014] Optionally, an interval distance N is defined between a lower edge of the first air guiding plate and a lower edge of the air outlet, and N corresponding to the second position is no less than 15mm and no more than 35mm.

[0015] Optionally, the operation of controlling the first air guiding plate to rotate to the air shielding position, includes:

controlling the first air guiding plate to rotate to the air shielding position, and controlling a current air guiding position of the second air guiding plate unchanged.

[0016] Optionally, after the operation of determining an air shielding position of the first air guiding plate according to the indoor environmental humidity, the control method further includes:

determining a rotating angle of the second air guiding plate according to the determined air shielding position, and controlling an air out-blowing direction of the air conditioner to be far away from a user through the second air guiding plate.

[0017] Optionally, in response to a determination that the air shielding position is the first position, the air outlet is covered by the first air guiding plate.

[0018] Optionally, before the operation of acquiring an indoor environmental humidity under a breezeless mode, the method further includes:

controlling the first air guiding plate to rotate to the second position, in response to receive an instruction to open the breezeless mode.

[0019] In addition, in order to achieve the aforementioned object, the present disclosure further propose an air conditioner control device, which includes a memory, a processor, and a computer program stored on the memory and executable by the processor, in which the computer program when executed by the processor implements the following operations:

acquiring an indoor environmental humidity under a breezeless mode;

determining an air shielding position of the first air guiding plate according to the indoor environmental humidity; and

controlling the first air guiding plate to rotate to the air shielding position.

[0020] In addition, in order to achieve the aforementioned object, the present disclosure further propose an air conditioner, in which the air conditioner includes an air conditioner control device, which includes a memory, a processor, and a computer program stored on the memory and executable by the processor, in which the computer program when executed by the processor implements the following operations:

acquiring an indoor environmental humidity under a breezeless mode;

determining an air shielding position of the first air guiding plate according to the indoor environmental humidity; and

controlling the first air guiding plate to rotate to the air shielding position.

[0021] According to the method for controlling the air conditioner provided by the embodiments of the present disclosure, in response to a breezeless mode, the indoor environmental temperature is acquired; the air shielding position of the first air guiding plate is determined according to the indoor environmental temperature, and the first air guiding plate is controlled to rotate to the determined air shielding position, so that the first air guiding plate can rotate to the air shielding position which is suitable for the indoor environmental humidity in the breezeless mode, and water condensation generated by the air conditioner is prevented with the user demands for breezeless feeling ensured..

BRIEF DESCRIPTION OF THE DRAWINGS

[0022]

Fig. 1 is a schematic structural diagram of an air conditioner in an embodiment of the present disclosure; Fig. 2 is a schematic diagram of a hardware structure in an operating environment of a method for controlling an air conditioner in an embodiment of the present disclosure;

Fig. 3 is a first flow chart of a method for controlling an air conditioner according to an embodiment of the present disclosure;

Fig. 4 is a second flow chart of a method for controlling an air conditioner according to an embodiment of the present disclosure;

Fig. 5 is a third flow chart of a method for controlling an air conditioner according to an embodiment of the present disclosure.

[0023] The implementation, functional characteristics and advantages of the present application will be further described with reference to the attached drawings in combination with embodiments.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0024] It should be understood that the specific embodiments described herein are only for illustrative purpose and are not intended to limit the present application.

[0025] The main solution of the embodiments of the present disclosure is as follows: acquiring indoor environmental humidity under a breezeless mode of the air conditioner; determining the air shielding position of the first air guiding plate 200 according to the indoor environmental humidity; and controlling the first air guiding plate 200 to rotate to the air shielding position. In which, the air conditioner includes an indoor unit 1, which further includes a housing 100 having an air outlet 110, a first air guiding plate 200 and a second air guiding plate 700, in which the first air guiding plate 200 is provided with a plurality of air dispersing holes 210 and is rotatably mounted at the lower side of the air outlet 110 through a rotating shaft 300; an air outlet passage 111 communicated with the air outlet 110 is arranged in the housing 100; and the second air guiding plate is provided in the air outlet 111 to rotatably open or cover the air outlet 110.

[0026] Due to the prior art, the air shielding position of the air guiding plate will not adapt with the indoor environmental humidity in the breezeless mode of the air conditioners. However, when the humidity is large, humid air on the outer side of the first air guiding plate 200 tends to accumulate, resulting in water condensation.

[0027] The present disclosure proposes a solution, which enables the position of the first air guiding plate 200 of the air conditioner to change with humidity, thereby meeting the user demands for a breezeless feeling and preventing water condensation.

[0028] In the embodiments of the present disclosure, the operation terminal of the air conditioner control method is specifically an air conditioner. As shown in Fig. 1, the air conditioner includes an indoor unit 1, which includes a housing 100 having an air outlet 110, a first air guiding plate 200 and a second air guiding plate 700. The first air guiding plate 200 is provided with a plurality of air dispersing holes 210 and is rotatably installed at the lower side of the air outlet 110 through a rotating shaft 300, to open or cover the air outlet 110 by rotation. The housing 100 is internally provided with an air outlet passage 111 communicating with the air outlet 110, and the second air guiding plate 700 is rotatably mounted in the air outlet passage 111. Specifically, the air conditioner is a wall-mounted air conditioner, and the indoor unit 1 is installed on the indoor wall.

[0029] When cooling function is on with respect to the air conditioner, and the air conditioner is in the normal operation mode, the first air guiding plate 200 rotates around the rotating shaft 300 to a maximum opening and

maintains the maximum opening without affecting the air out-flowing of the air outlet 110. When the air conditioner is in a breezeless mode, the first air guiding plate 200 rotates around the rotating shaft 300 which is installed at the lower side of the air outlet 110. The upper edge of the first air guiding plate 200 moves from the maximum opening close to the upper edge of the air outlet 110, and rotates to the air shielding position, which is specifically the position where the first air guiding plate 200 covers at least partially the air outlet 110. When the air outlet 110 is covered by the first air guiding plate 200, the first air guiding plate 200 completely blocks the air outlet 110. The cold air in the air conditioner is completely dispersed by the air dispersing holes 210 on the first air guiding plate 200, thus reducing the air out-flowing volume and speed, to achieve the optimal breezeless feeling and improve the comfortability. While when the first air guiding plate 200 partially covers the air outlet 110, a gap is formed between the upper edge of the first air guiding plate 200 and the upper edge of the air outlet 110, so the cold air in the air conditioner can be diffused through the gap along with the air dispersing holes 210. The first air guiding plate 200 guides the air flowing out from the gap to be obliquely upward. Although flowing concentratedly from the gap, the air is not directly flowing to the user, thus realizing the breezeless feeling to some degree and improving the comfortability.

[0030] The second air guiding plate 700 can specifically rotate in the air outlet passage 111, to adjust the air flowing directions, in an up-down direction and a left-right direction of the air conditioner. In which, the second air guiding plate 700 may be provided with a plurality of ventilation holes, and the air flow in the air outlet passage is further disturbed by the action of the ventilation holes while the air is guided so as to reduce the air speed, thereby improving the air softening effect of the air outlet of the air conditioner and improving the breezeless feeling experience of users. Specifically, the second air guiding plate 700 may include two air guiding plates arranged in the air outlet passage 111 in an intersecting manner, in which one of the second air guiding plates is used for adjusting air outflowing directions of the air conditioner in an up-down direction, and the other one for adjusting air outflowing directions of the air conditioner in a left-right direction. The second air guiding plate 700 independently adjusts the air out-flowing directions of the air conditioner through the two air guiding plates, and can flexibly adapt to the cooling requirements of users in a breezeless feeling mode.

[0031] Based on the above configuration of the air conditioner, as shown in Fig. 2, the air conditioner may further include a processor 4001, such as a CPU, a memory 4002, a humidity detecting module 500, a drive module 600, and a communication bus. In which, the communication bus is used to implement connection and communication between these components. The memory 4002 may be a high-speed RAM memory or a non-volatile memory such as a disk memory. The memory 4002 may

alternatively be a storage device independent of the aforementioned processor 40011001,

[0032] The humidity detecting module 500 is configured to detect the humidity of the indoor environment where the indoor unit 1 of the air conditioner is located. The humidity detecting module 500 can be a functional module arranged on the indoor unit 1 of the air conditioner close to the air outlet 110, or can be an independent detection device with respect to the air conditioner and arranged in the indoor environment where the air conditioner is located.

[0033] The drive module 600 is in transmission connection with the rotating shaft 300 of the first air guiding plate 200 or directly with the first air guiding plate 200. The drive module 600 may be a motor in particular. The drive module 600 receives a control instruction from the processor 4001 and controls the first air guiding plate 200 to rotate to a target position around the rotating shaft 300 according to the control instruction from the processor 4001. The target position may be a position corresponding to the above-mentioned maximum opening, a position where the air outlet 110 is covered or a position where the air outlet 110 is partially covered.

[0034] It would be understood by those skilled in the art that the terminal shown in Fig. 1 does not constitute a limitation to the terminal, which may include more or fewer components than shown, or some components may be combined, or different components arranged.

[0035] As shown in Fig. 2, an air conditioner control program may be included in the memory 4002 as a computer storage medium. In the air conditioner, the processor 4001 may be used to call the air conditioner control program stored in the memory 4002 and perform relevant operations in the control method for an air conditioner in the following embodiments.

[0036] In addition, an air conditioner control device 400 is further provided in the embodiments of the present disclosure. As shown in Fig. 2, the air conditioner control device 400 includes the above processor 4001, the memory 4002, and an air conditioner control program stored in the memory 4002 and executable on the processor 4001. When the air conditioner control program is executed by the processor 4001, the operations of the control method for the air conditioner in the following embodiments are implemented. The air conditioner control device 400 may be installed in the air conditioner or may be a control terminal independent of the air conditioner.

[0037] Referring to Fig. 3, the embodiment of the present disclosure provides a control method for an air conditioner, which includes the following operations: operation S10, acquiring an indoor environmental humidity under a breezeless mode;

[0038] The air conditioner enters into a breezeless feeling mode after receiving a breezeless feeling control instruction from a user. The indoor environment humidity of the indoor environment in which the air conditioner indoor unit 1 is located can be obtained at this point. operation S20, determining an air shielding position of

the first air guiding plate 200 according to the indoor environmental humidity;

Before performing the above-mentioned operation S10, a plurality of corresponding relationships between the preset humidity levels and the preset air shielding positions of the first air guiding plate 200 may be set in advance. The preset air shielding position may be a position where the first air guiding plate 200 covers the air outlet 110 or a position where the air outlet 110 is partially covered. Specifically, one preset humidity may correspond to one preset air shielding position, or a preset humidity range may correspond to a preset air shielding position, or other preset humidities may correspond to the preset air shielding position, etc. The determination of the preset air shielding position can be obtained by computer simulation or by a large amount of experimental data. When the environmental humidity is at a certain preset humidity or in a certain preset humidity range, the first air guiding plate 200 rotates to a corresponding preset air shielding position, the air out-flowing volume at the air outlet 110 at this time point can prevent the air from condensation on the first air guiding plate 200 at this humidity condition.

[0039] After the indoor environmental humidity is acquired, the air shielding position of the first air guiding plate 200 can be determined according to the indoor environmental humidity and the preset corresponding relationship. Specifically, the indoor environmental humidity is matched with a preset humidity or a preset humidity range with a preset correspondence. If the matching is successful, the corresponding preset air shielding position is taken as the air shielding position of the first air guiding plate 200.

[0040] In operation S30, controlling the first air guiding plate to rotate to the air shielding position.

[0041] The first air guiding plate 200 is controlled to rotate to the air shielding position determined, so that the air out-flowing from the air outlet 110 of the air conditioner can be adapted to the current indoor environmental humidity, and indoor air under the current indoor environmental humidity cannot form water condensation on the first air guiding plate 200. In the embodiments of the present invention, in response to a breezeless mode, the indoor environmental temperature is acquired; the air shielding position of the first air guiding plate is determined according to the indoor environmental temperature, and the first air guiding plate is controlled to rotate to the determined air shielding position, so that the first air guiding plate can rotate to the air shielding position which is suitable for the indoor environmental humidity in the breezeless mode, and water condensation generated by the air conditioner is prevented with the user demands for breezeless feeling ensured.

[0042] While controlling the first air guiding plate 200 to rotate to the above-mentioned air shielding position, the second air guiding plate 700 can be controlled to maintain its current air guiding position unchanged, or the air guiding position of the second air guiding plate 700 can further be correspondingly determined accord-

ing to the cooling demand of the air conditioner or other user demands. Specifically, after the above operation is performed of determining the air shielding position of the first air guiding plate 200 according to the indoor environmental humidity, the rotating angle of the second air guiding plate 700 in the air outlet passage 111 of the indoor unit 1 can be determined according to the determined air shielding position, so that on the basis of the first air guiding plate 100 being rotated to the air shielding position corresponding to the current indoor environmental humidity, and the air out-flowing direction of the air conditioner is controlled to be far away from the user by the second air guiding plate 700, further improving the user's breezeless feeling.

[0043] Specifically, as shown in Fig. 4, the operation of determining an air shielding position of the first air guiding plate 200 according to the indoor environmental humidity, includes:

- operation S21, determining a humidity range in which the indoor environment humidity is positioned;
- operation S22, determining the air shielding position according to the humidity range.

[0044] After the indoor environmental humidity is obtained, the preset humidity range in which the indoor environmental humidity is located can be determined in a plurality of preset humidity ranges in the preset correspondence, and the preset air shielding position corresponding to the determined preset humidity range is taken as the air shielding position of the first air guiding plate 200.

[0045] In which, a plurality of preset humidity ranges and threshold values of the intervals can be set according to actual conditions. Several preset humidity ranges can be set as continuous intervals or discontinuous intervals according to actual requirements.

[0046] By determining the humidity range in which the indoor environmental humidity is located and determining the corresponding air shielding position according to the humidity range in which the indoor environmental humidity is located, the air shielding position of the first air guiding plate 200 can be found to adapt to the indoor environmental humidity without frequent changes along with the indoor environmental humidity, and operation stability of the air conditioner is ensured.

[0047] In addition to determining the corresponding air shielding position according to the humidity range in which the indoor environmental humidity is located, the indoor environmental humidity can be matched with a plurality of preset humidity. If there is a preset humidity matched with the indoor environmental humidity, the preset air shielding position corresponding to the preset humidity is taken as the air shielding position of the first air guiding plate 200.

[0048] Specifically, as shown in Fig. 5, the operation S21 includes:

- operation S211, determining whether the indoor environment humidity is less than or equal to a first preset humidity;
- If yes, operation S212 is executed; if no, operation S213 is executed;
- operation S212, determining the indoor environmental humidity to be in a first preset humidity range;
- operation S213, determining whether the indoor environment humidity is less than or equal to a second preset humidity;
- If yes, operation S214 is executed; if no, operation S215 is executed;
- operation S214, determining the indoor environmental humidity to be in a second preset humidity range;;
- operation S215, determining the indoor environmental humidity to be in a third preset humidity range;
- The operation S22 includes:

- operation S221, in response to a determination that the indoor environmental humidity is located in a first preset humidity range, determining the air shielding position at a first position;
- operation S222, in response to a determination that the indoor environmental humidity is located in a second preset humidity range, determining the air shielding position at a second position;
- the air outlet area of the air conditioner corresponding to the first position is smaller than the air outlet area of the air conditioner corresponding to the second position.

[0049] Three preset humidity ranges can be specifically set, and the first preset humidity and the second preset humidity are respectively taken as threshold values of the preset humidity ranges. The first preset humidity may specifically be the maximum humidity at which the air will not form condensation on the first air guiding plate 200, and the second preset humidity may specifically be the minimum humidity at which the air is extremely easy to form water condensation on the first air guiding plate 200 when the air out-flowing volume is insufficient. The second preset humidity is greater than the first preset humidity, and the specific values of the two humidities can be set according to actual requirements. Specifically, humidity less than or equal to the first preset humidity is classified into the first preset humidity range, and humidity greater than or equal to the second preset humidity is classified into a second preset humidity range, and humidity greater than the first preset humidity and less than the second preset humidity is classified into a third preset humidity range. In which, the preset air shielding position corresponding to the first preset humidity range is the first position, and the preset air shielding position corresponding to the second preset humidity range is the second position.

[0050] The air outlet area of the air conditioner corresponding to the first position is smaller than the air outlet area of the air conditioner corresponding to the second

position. In which, the first position may be the position of the first air guiding plate 200 when the air outlet area of the air conditioner is small. The second position can be specifically the position of the first air guiding plate 200 where the air guiding plate partially covers the air outlet 110. They can be set comprehensively considering the breezeless feeling and the prevention of water condensation. The first position and that second position can be set in other positions adapting to the structure of the first air guiding plate 200 or cooperating with other control of the air conditioner.

[0051] The first position corresponding to the first preset humidity range can be set as the position where the first air guiding plate 200 covers the air outlet 110 to minimize the air outlet area of the air outlet 110. The air flow blown out by the air conditioner can be completely dispersed to optimize the breezeless feeling of the air conditioner, with the air under the current indoor environmental humidity not forming water condensation in the first air guiding plate 200 ensured.

[0052] When the indoor environmental humidity is located in the third preset humidity range, the first air guiding plate 200 does not necessarily form water condensation. A third position can be as a preset air shielding position corresponding to the third preset humidity range. The air outlet area of the air conditioner corresponding to the third position can be in between the first position and the second position. The air outlet area of the air conditioner corresponding to the preset air shielding position increases with the increase of humidity, so that the air outlet volume of the air conditioner is increased by increasing the air outlet area of the air conditioner, preventing the first air guiding plate 200 from forming water condensation due to the increase of humidity. In addition, the third preset humidity range may further correspond to other air shielding positions. When the indoor environmental humidity is located in the third preset humidity range, the air shielding position may be specifically the current position of the first air guiding plate 200 or other set positions, and in combination with other controls such as compressor operating frequency and the like, to prevent water condensation.

[0053] In the present embodiment, the humidity value is classified into three preset humidity ranges using the first preset humidity and the second preset humidity. When the indoor environment humidity is in the first preset humidity range in which water condensation will not be formed, the air shielding position of the first air guiding plate 200 is determined at the first position where the air outlet area is smaller, so as to improve the breezeless feeling of the air conditioner; when the indoor environmental humidity is in a second preset humidity range in which water condensation will be formed, the air shielding position of the first air guiding plate 200 is determined at a second position with a larger air outlet area, so as to realize a breezeless feeling and prevent the air conditioner from forming water condensation.

[0054] Further, before the operation of acquiring an in-

door environmental humidity under a breezeless mode, the control method further includes:

operation S00, controlling the first air guiding plate to rotate to the second position, in response to receive an instruction to open the breezeless mode.

[0055] When an instruction is received from a user to initiate the breezeless mode, the first air guiding plate 200 is controlled to rotate to the second position, so that on the one hand, the user can be intuitively fed back that the air conditioner has entered the breezeless mode, and on the other hand, no water condensation on the first air guiding plate 200 can be guaranteed regardless of the current indoor environment humidity.

[0056] Specifically, it is defined that when the first air guiding plate 200 covers the air outlet 110, the plane where the upper edge of the first air guiding plate 200 and the rotating shaft 300 are located is the reference plane. When the first air guiding plate 200 avoids the air outlet 110, the plane where the upper edge of the first air guiding plate 200 and the rotating shaft 300 are located is defined as the moving surface. And the included angle between the active surface and the reference surface is defined as α , which is no less than 25° and no more than 35° corresponding to the second position. When the indoor environmental humidity is greater than or equal to the second preset humidity, and the angle α corresponding to the set second position is less than 25° , the first air guiding plate 200 rotates to the corresponding second position, which will form water condensation due to insufficient air out-flowing and insufficient air out-flowing area of the air conditioner; when the angle α corresponding to the set second position is greater than 35° , the rotation of the first air guiding plate 200 to the corresponding second position, bringing the air outlet area of the air conditioner too large to produce the breezeless feeling. Therefore, setting the α corresponding to the second position being no less than 25° and no more than 35° , may ensure that the air conditioner has a better breezeless feeling without water condensation formed in the first air guiding plate 200 when the indoor environment humidity is high. Specifically, α corresponding to the second position may be 26° , 27.5° , 30° , 32.5° , etc.

[0057] Specifically, on the basis that α corresponding to the second position is no less than 25° and no more than 35° , an interval distance M is defined between the upper edge of the first air guiding plate and the upper edge of the air outlet, and M corresponding to the second position is no less than 40mm and no more than 60mm. When the indoor environmental humidity is greater than or equal to the second preset humidity, and the distance M corresponding to the set second position is less than 40mm, the first air guiding plate 200 rotates to the corresponding second position, which will form water condensation due to insufficient air out-flowing and insufficient air out-flowing area of the air conditioner; when the distance M corresponding to the set second position is greater than 60mm, the rotation of the first air guiding plate 200 to the corresponding second position, bringing

the air outlet area of the air conditioner too large to produce the breezeless feeling. Therefore, setting the distance M corresponding to the second position being no less than 40mm and no more than 60mm, may ensure that the air conditioner has a better breezeless feeling without water condensation formed in the first air guiding plate 200 when the indoor environment humidity is high. Specifically, the value of M corresponding to the second position may be 44mm, 48mm, 50mm, 53mm, 57mm, etc. It should be noted that any combination of angle α being no less than 25° and no more than 35° and the distance M no less than 40mm and no more than 60mm corresponding to the second position, can ensure a better breezeless feeling of the air conditioner, without any water condensation formed in the first air guiding plate 200 when the indoor environmental humidity is high.

[0058] Specifically, on the basis that α corresponding to the second position is no less than 25° and no more than 35°, an interval distance N is defined between the lower edge of the first air guiding plate and the lower edge of the air outlet, and N corresponding to the second position is no less than 15mm and no more than 35mm. When the indoor environmental humidity is greater than or equal to the second preset humidity, and the distance N corresponding to the set second position is less than 15mm, and the first air guiding plate 200 rotates to the corresponding second position, the distance between the lower edge of the first air guiding plate 200 and the lower edge of the air outlet 110 is too small, which is easy to cause an interference and affect the rotation of the first air guiding plate; when the distance N corresponding to the set second position is more than 35mm, and the first air guiding plate 200 rotates to the corresponding second position, the distance between the lower edge of the first air guiding plate 200 and the lower edge of the air outlet 110 is too large, which is easy to blow the air out from the lower edge of the air outlet 110, down to the user below the air conditioner, affecting the breezeless feeling of the air conditioner and the comfortability. Therefore, when the second position is set, the distance N corresponding to the second position is set no less than 15mm and no more than 35mm, so that the first air guiding plate 200 rotates smoothly, and a better breezeless feeling can be ensured of the air conditioner with no water condensation formed on the first air guiding plate 200 when the indoor environment humidity is high. Specifically, the value of N corresponding to the second position may be 18mm, 20mm, 25mm, 30mm, 33mm, etc. It should be noted that any combination of angle α no less than 25° and no more than 35° and the distance N being no less than 15mm and no more than 35mm corresponding to the second position, can ensure a better breezeless feeling of the air conditioner, without any water condensation formed in the first air guiding plate 200 when the indoor environmental humidity is high.

[0059] In addition, on the basis that M corresponding to the second position being set no less than 40mm and no more than 60mm, N being set no less than 15mm and

no more than 35mm, can ensure a better breezeless feeling of the air conditioner, without any water condensation formed in the first air guiding plate 200 when the indoor environmental humidity is high. It should be noted that any combination of the distance M no less than 40mm and no more than 60mm and the distance N no less than 15mm and no more than 35mm corresponding to the second position, can simultaneously ensure a smooth rotation of the first air guiding plate and a better breezeless feeling of the air conditioner, without any water condensation formed in the first air guiding plate 200 when the indoor environmental humidity is high.

[0060] It should be noted that in this document, the terms "comprising" "including" or any other variation thereof are intended to cover a non-exclusive inclusion, such that a process, method, article, or system that includes a list of elements includes not only those elements but further other elements not expressly listed, or elements inherent to such process, method, article, or system. Without further restrictions, an element defined by the statement " includes an" does not exclude the presence of another identical element in a process, method, article, or system including the element.

[0061] The aforementioned serial numbers regarding the embodiments of the present disclosure are for description only and do not represent the superiority and inferiority of the embodiments.

[0062] From the above description of the embodiments, those skilled in the art can clearly understand that the method of the above embodiments can be implemented by means of software plus necessary general-purpose hardware platforms. Of course, it can further be implemented by means of hardware, but in many cases the former is a better embodiment. Based on this understanding, the technical solution of the present disclosure, in essence, or the part contributing to the prior art, can be embodied in the form of a software product stored in a storage medium (such as ROM/RAM, magnetic disk, diskette) as described above, including several instructions to cause a terminal device (which can be a mobile phone, computer, server, air conditioner, or network device, etc.) to perform the methods described in various embodiments of the present disclosure.

[0063] The description aforementioned is only the preferred embodiment of the present disclosure and is not intended to limit the scope of the present disclosure. Any equivalent structural or flow modification made by using the description and drawings of the present disclosure or direct/indirect present disclosure in other related technical fields under the concept of the present disclosure shall be included in the protection scope of the present disclosure.

55 Claims

1. A method for controlling an air conditioner, **characterized in that**

the air conditioner comprises an indoor unit,
wherein the indoor unit comprises:

a housing comprising:

an air outlet; and
an air outlet passage formed in the housing
and communicated with the air outlet; and

a first air guiding plate comprising a plurality of
air dispersing holes and rotatably mounted at a
lower side of the air outlet through a rotating
shaft to allow to open or cover the air outlet by
rotation; and

a second air guiding plate mounted in the air
outlet passage,

wherein the method comprises:

acquiring an indoor environmental humidity under a breezeless mode;
determining an air shielding position of the first
air guiding plate according to the indoor environmental humidity; and
controlling the first air guiding plate to rotate to the air shielding position.

2. The method according to claim 1, characterized in that,

the operation of determining an air shielding position of the first air guiding plate according to the indoor environmental humidity, comprises:

determining a humidity range in which the indoor environment humidity is positioned; and
determining the air shielding position according to the humidity range.

3. The method according to claim 2, characterized in that

the operation of determining a humidity range in which the indoor environment humidity is positioned, comprises:

determining whether the indoor environment humidity is less than or equal to a first preset humidity;
in response to a determination that the indoor environment humidity is less than or equal to the first preset humidity, determining the indoor environmental humidity to be in a first preset humidity range;
in response to a determination that the indoor environment humidity is greater than the first preset humidity, determining whether the indoor environment humidity is greater than or equal to a second preset humidity; and
in response to a determination that the indoor

environmental humidity is greater than or equal to the second preset humidity, determining the indoor environmental humidity to be in a second preset humidity range,

wherein the operation of determining the air shielding position according to the humidity range, comprises:

in response to a determination that the indoor environmental humidity is located in the first preset humidity range, determining the air shielding position to be a first position; and
in response to a determination that the indoor environmental humidity is located in the second preset humidity range, determining the air shielding position to be a second position,
wherein an air outlet area of the air conditioner corresponding to the first position is smaller than that of the air conditioner corresponding to the second position.

4. The method according to claim 3, characterized in that

in response to a determination that the air shielding position is the first position, the air outlet is covered by the first air guiding plate.

5. The method according to claim 3, characterized in that

before the operation of acquiring an indoor environmental humidity under a breezeless mode, the method further comprises:
controlling the first air guiding plate to rotate to the second position, after an instruction for initiating the breezeless mode is received.

6. The method according to claim 3, characterized in that

the air outlet area corresponding to the air shielding position is increased with an increase of humidity.

7. The method according to claim 3, characterized in that

the method further comprises:

defining a plane where an upper edge of the first air guiding plate and the rotating shaft are located as a reference plane, after the air outlet is covered by the first air guiding plate; and
defining another plane where the upper edge of the first air guiding plate and the rotating shaft are located as a moving plane, after the air outlet is opened by the first air guiding plate,

wherein an included angle α is defined between the moving plane and the reference plane, and the included angle α corresponding to the second position is no less than 25° and no more than 35° .

8. The method according to claim 7, **characterized in that**

an interval distance M is defined between the upper edge of the first air guiding plate and an upper edge of the air outlet, and the interval distance M corresponding to the second position is no less than 40mm and no more than 60mm.

9. The method according to claim 8, **characterized in that**

an interval distance N is defined between a lower edge of the first air guiding plate and a lower edge of the air outlet, and the interval distance N corresponding to the second position is no less than 15mm and no more than 35mm.

10. The method of claim 1, **characterized in that** the operation of controlling the first air guiding plate to rotate to the air shielding position, comprises:

controlling the first air guiding plate to rotate to the air shielding position, and
controlling a current air guiding position of the second air guiding plate unchanged.

11. The method according to claim 1, **characterized in that**

after the operation of determining an air shielding position of the first air guiding plate according to the indoor environmental humidity, the method further comprises:

determining a rotating angle of the second air guiding plate according to the determined air shielding position, and
controlling an air out-blowing direction of the air conditioner to be far away from a user by the second air guiding plate.

12. The method according to claim 1, **characterized in that**

the operation of determining an air shielding position of the first air guiding plate according to the indoor environmental humidity, comprises:

matching the indoor environmental humidity with a plurality of preset humidities; and
in response to a determination that the indoor environmental humidity is matched with one of the preset humidities, taking a preset air shielding position corresponding to the matched preset humidity as the air shielding position of the first air guiding plate.

13. A device for controlling an air conditioner, **characterized in that** the air conditioner control device comprises:

a memory, a processor, and a computer program

stored on the memory and executable by the processor,
wherein the computer program when executed by the processor implements the following operations:

acquiring an indoor environmental humidity under a breezeless mode;
determining an air shielding position of the first air guiding plate according to the indoor environmental humidity; and
controlling the first air guiding plate to rotate to the air shielding position.

14. An air conditioner, **characterized in that**

the air conditioner comprises a control device comprising a memory, a processor, and a computer program stored on the memory and executable by the processor,
wherein the computer program when executed by the processor implements the following operations:

acquiring an indoor environmental humidity under a breezeless mode;
determining an air shielding position of the first air guiding plate according to the indoor environmental humidity; and
controlling the first air guiding plate to rotate to the air shielding position.

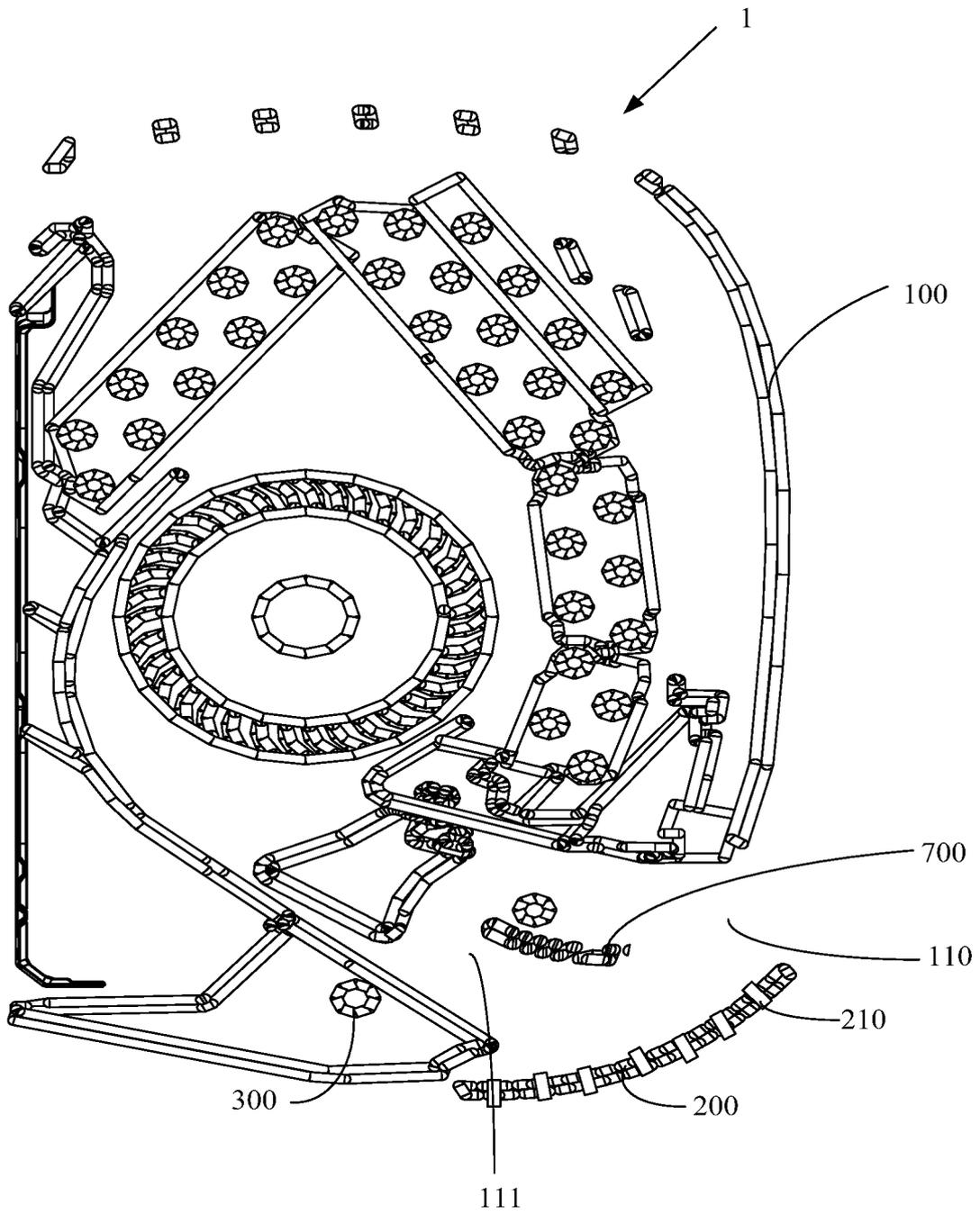


Fig. 1

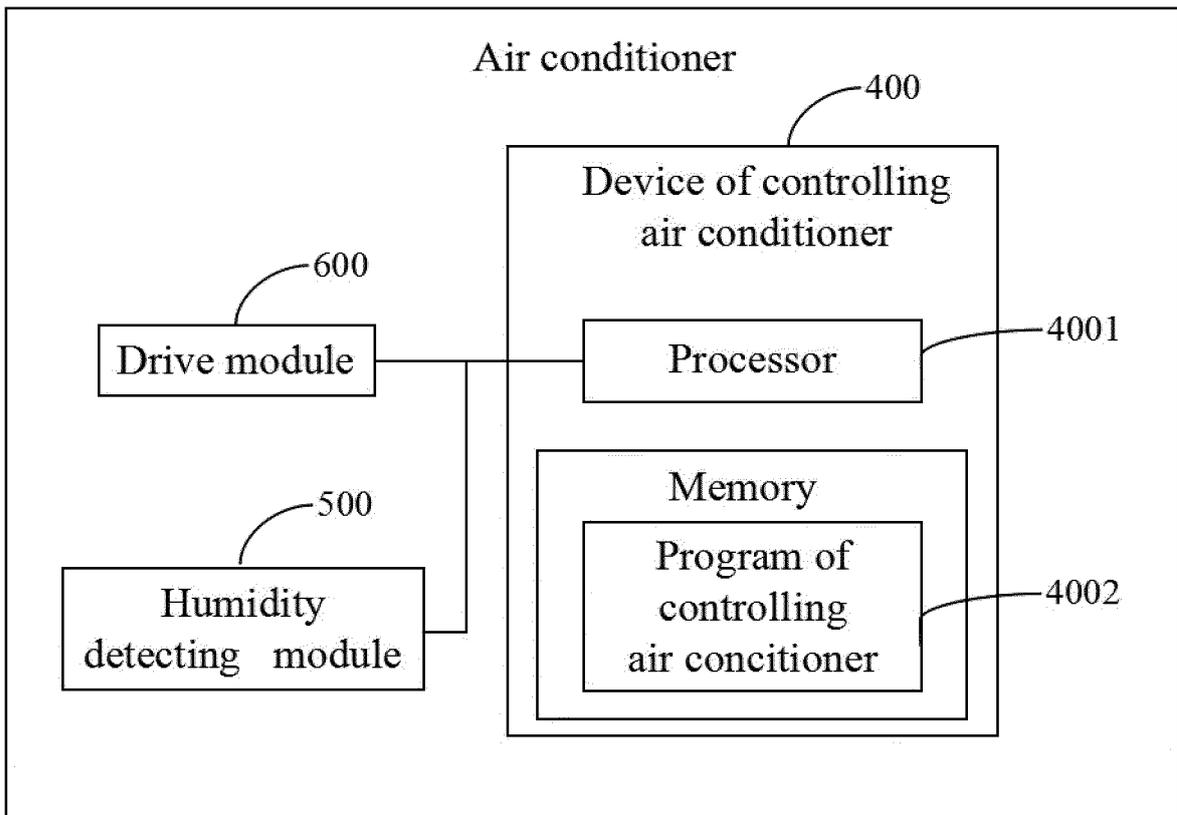


Fig. 2

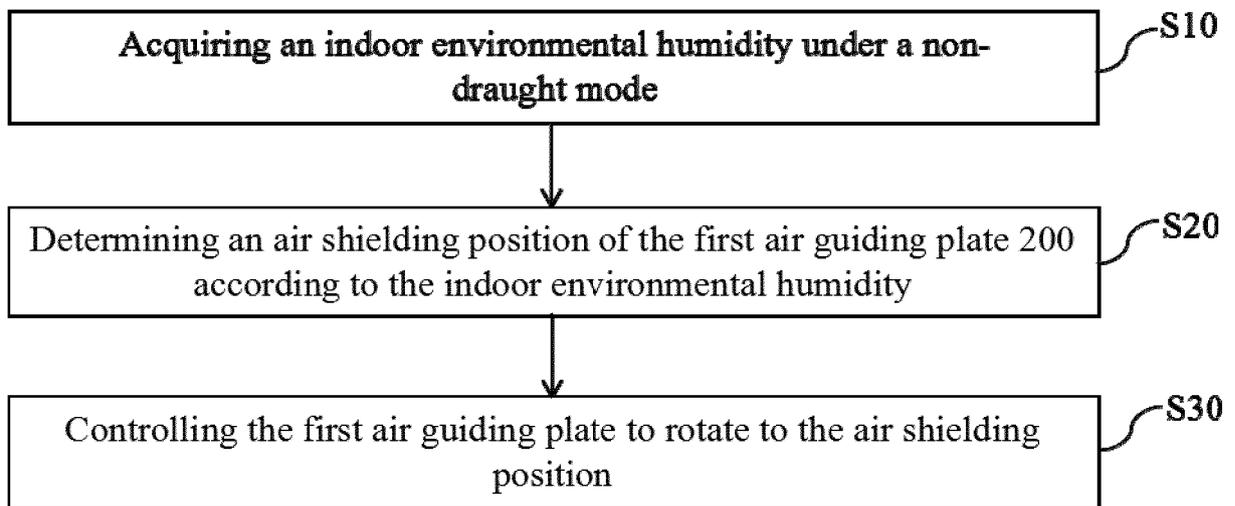


Fig. 3

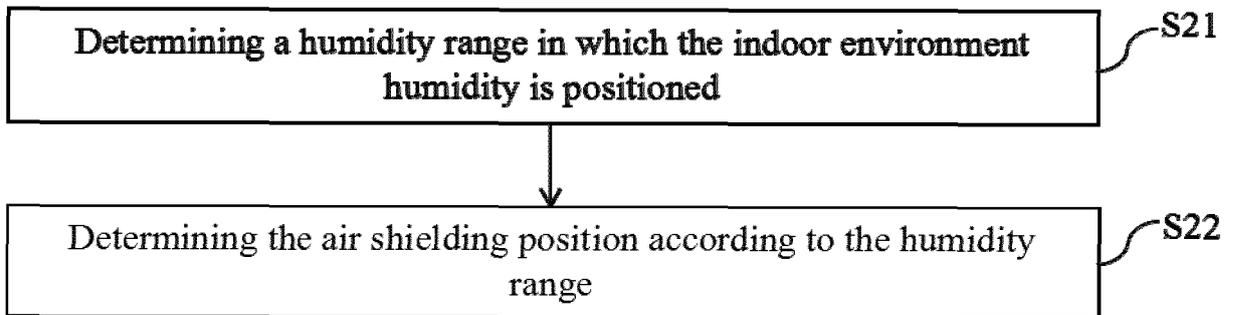


Fig. 4

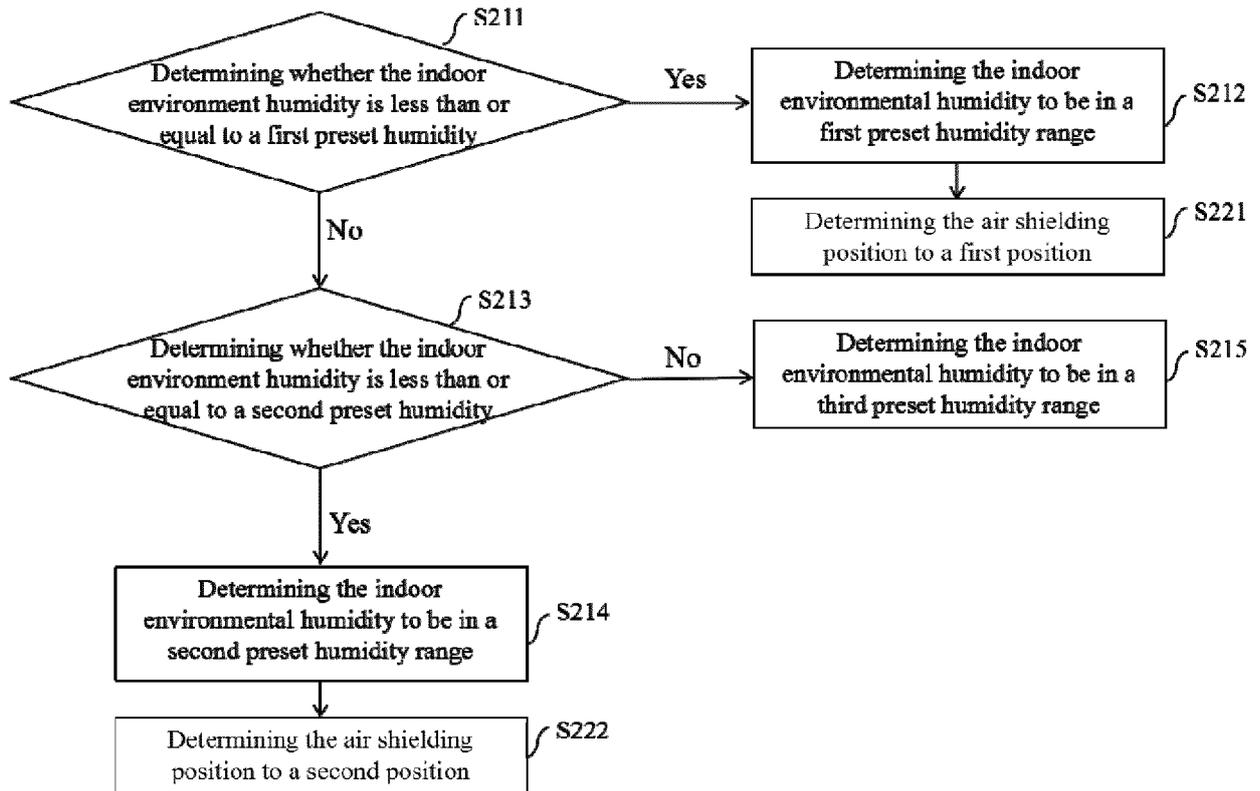


Fig. 5

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2018/084897

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A. CLASSIFICATION OF SUBJECT MATTER

F24F 1/00(2011.01)i; F24F 11/00(2018.01)i; F24F 13/14(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

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B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

F24F1, F24F11, F24F13

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

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Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CNABS, SIPOABS, CNKI, CNTXT, VEN: 空调, 空气调节, 空气调和, 控制, 方法, 室内机, 室内单元, 室内装置, 出风口, 出气口, 出口, 导风板, 导风叶片, 散风孔, 无风感, 转轴, 转动, 风道, 风管, 湿度, air condition+, control+, method, indoor machine, indoor unit, indoor apparatus, air outlet, air duct, air pipe, air passage, air channel, air guid+ plate, air guid+ board, air baffle, air guid+ vane, air hole+, rotat+ shaft, rotat+, humidity

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	CN 105180268 A (GUANGDONG MIDEA AIR-CONDITIONING EQUIPMENT CO., LTD. ET AL.) 23 December 2015 (2015-12-23) description, paragraphs [0045]-[0106], and figures 1-8	1-14
Y	CN 107327931 A (GUANGDONG MIDEA AIR-CONDITIONING EQUIPMENT CO., LTD.) 07 November 2017 (2017-11-07) description, paragraphs [0037]-[0067], and figures 1-7	1-14
Y	CN 107401776 A (GUANGDONG MIDEA AIR-CONDITIONING EQUIPMENT CO., LTD.) 28 November 2017 (2017-11-28) description, paragraphs [0044]-[0096], and figures 1-13	1-14
Y	CN 106895568 A (HISENSE (SHANDONG) AIR-CONDITIONING CO., LTD.) 27 June 2017 (2017-06-27) description, paragraphs [0016]-[0027], and figures 1 and 2	1, 2
A	CN 106839107 A (HISENSE (SHANDONG) AIR-CONDITIONING CO., LTD.) 13 June 2017 (2017-06-13) entire document	1-14

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

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* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

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Date of the actual completion of the international search

15 August 2018

Date of mailing of the international search report

04 September 2018

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