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(54) CONTROL METHOD FOR DISHWASHER, DISHWASHER AND COMPUTER-READABLE STORAGE MEDIUM

STEUERVERFAHREN FÜR EINE GESCHIRRSPÜLMASCHINE, GESCHIRRSPÜLMASCHINE UND COMPUTERLESBARES SPEICHERMEDIUM

PROCÉDÉ DE COMMANDE DE LAVE-VAISSELLE, LAVE-VAISSELLE ET SUPPORT D'INFORMATIONS LISIBLE PAR ORDINATEUR

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Description

FIELD

[0001] The present invention relates to household appliances, in particular, to a control method for a dishwasher, a dishwasher and a computer-readable storage medium.

BACKGROUND

[0002] For dishwashers, drying is generally performed only during the drying phase of the washing program. So, in order to avoid subsequent re-elevation of humidity leading to wet dishes, user have to take out the dishes as soon as possible after the washing program is finished, so as to avoid the problem of bacterial growth caused by wet dishes. Since users cannot remove the dishes for a short time, how to prevent the dishes from becoming wet becomes a technical problem to be solved.

[0003] US 2003/079760 A1 concerns dishwashers and drying cycles for dishwashers

[0004] CN 105832263 A concerns a dishwasher and a drying device for the dishwasher. In particular, CN 105832263 A discloses a dishwasher with a temperature sensor and a humidity sensor connected to a control chip, and a control method for blowing alternatively cold air and hot air into the working chamber of the dishwasher after the washing has finished for bacterial and smell prevention.

SUMMARY

[0005] Aspects of the invention are defined by the accompanying claims. In accordance with a first aspect there is provided a control method for a dishwasher according to claim 1. In accordance with a second aspect there is provided a dishwasher according to claim 9. In accordance with a third aspect there is provided a computer readable medium according to claim 10. Preferred optional features are defined in the dependent claims.

[0006] Embodiments of the present invention provide a control method for a dishwasher, a dishwasher and a computer-readable storage medium.

[0007] In an aspect of the present invention, a control method for a dishwasher is provided, the dishwasher including a housing, a fan, a humidity detection unit, a heating device and a feeding device for a dish-brightening agent for reducing the surface tension of water and avoiding water marks on dishes in the dishwasher, wherein the housing is provided with a working chamber and an air flue for keeping the working chamber in communication with the outside, the humidity detection unit is configured to detect a humidity of the working chamber, and the fan is configured to establish an airflow passing through the heating device and the air flue to ventilate the working chamber, the control method comprising steps of:

determining whether the dish-brightening agent is fed by the feeding device;

controlling the humidity detection unit to detect the humidity after the dishwasher finishes washing;

controlling, according to the humidity, the fan to stop running for a first predefined time and then run for a second predefined time after the dishwasher finishes washing, when the dish-brightening agent is fed by the feeding device, wherein the humidity is negatively correlated to the first predefined time, and the humidity is positively correlated to the second predefined time; and

controlling, according to the humidity, the fan and the heating device to stop running for a third predefined time and then run for a fourth predefined time after the dishwasher finishes washing, when no dish-brightening agent is fed by the feeding device, wherein the humidity is negatively correlated to the third predefined time, and the humidity is positively correlated to the fourth predefined time.

[0008] In a certain embodiment, before the dishwasher finishes washing, the method includes steps of:

controlling the fan to stop running for a fifth predefined time, run for a sixth predefined time and stop running for a seventh predefined time in order, when the dish-brightening agent is fed by the feeding device; and

controlling the fan and the heating device to stop running for an eighth predefined time, run for a ninth predefined time and stop running for a tenth predefined time in order, when no dish-brightening agent is fed by the feeding device.

[0009] In a certain embodiment, the fifth predefined time and the eighth predefined time are both about 5 minutes, the sixth predefined time and the ninth predefined time are both about 40 minutes, and the seventh predefined time and the tenth predefined time are both about 60 minutes.

[0010] In a certain embodiment, the step of controlling the humidity detection unit to detect a humidity after the dishwasher finishes washing includes steps of:

controlling the fan to run for an eleventh predefined time after the dishwasher finishes washing and before the first predefined time when the dish-brightening agent is fed by the feeding device;

controlling the fan and the heating device to run for a twelfth predefined time after the dishwasher finishes washing and before the third predefined time when no dish-brightening agent is fed by the feeding device; and

controlling the humidity detection unit to detect the humidity within the eleventh predefined time or the twelfth predefined time.

[0011] In a certain embodiment, the step of controlling the humidity detection unit to detect a humidity after the dishwasher finishes washing includes steps of:

controlling the humidity detection unit to perform a plurality of detections to obtain a plurality of initial humidity values; and
processing the plurality of initial humidity values to obtain the humidity, the humidity being an intermediate value or an average value of the plurality of initial humidity values.

[0012] In a certain embodiment, when the humidity is less than or equal to 50%, the first predefined time is about 170 minutes and the second predefined time is about 10 minutes; when the humidity is greater than 50% and less than or equal to 60%, the first predefined time is about 140 minutes, and the second predefined time is about 10 minutes; when the humidity is greater than 60% and less than or equal to 70%, the first predefined time is about 110 minutes, and the second predefined time is about 10 minutes; when the humidity is greater than 70% and less than or equal to 80%, the first predefined time is about 80 minutes, and the second predefined time is about 10 minutes; when the humidity is greater than 80% and less than or equal to 85%, the first predefined time is about 40 minutes, and the second predefined time is about 20 minutes; and when the humidity is greater than 85%, the first predefined time is about 10 minutes, and the second predefined time is about 20 minutes.

[0013] In a certain embodiment, when the humidity less than or equal to 55%, the third predefined time is about 170 minutes, and the fourth predefined time is about 10 minutes; when the humidity is greater than 55% and less than or equal to 70%, the third predefined time is about 110 minutes, and the fourth predefined time is about 20 minutes; when the humidity is greater than 70% and less than or equal to 85%, the third predefined time is about 60 minutes, and the fourth predefined time is about 20 minutes; and when the humidity is greater than 85%, the third predefined time is about 10 minutes, and the fourth predefined time is about 20 minutes.

[0014] In a certain embodiment, the step of controlling, according to the humidity, the fan and the heating device to stop running for a third predefined time and then run for a fourth predefined time after the dishwasher finishes washing, when no dish-brightening agent is fed by the feeding device includes steps of:

determining whether the humidity is greater than a humidity threshold when no dish-brightening agent is fed by the feeding device;
controlling, according to the humidity, the fan and the heating device to stop running for the third predefined time and then run for the fourth predefined time after the dishwasher finishes washing, when the humidity is greater than the humidity threshold; and
controlling, according to the humidity, the fan to stop

running for the third predefined time and then run for the fourth predefined time and controlling the heating device to stop heating after the dishwasher finishes washing, when the humidity is less than or equal to the humidity threshold.

[0015] A dishwasher in a further aspect of the present invention includes:

a housing, provided with a working chamber and an air flue for keeping the working chamber in communication with the outside;
a heating device;
a fan, configured to establish an airflow passing through the heating device and the air flue to ventilate the working chamber;
a humidity detection unit, configured to detect a humidity of the working chamber;
a heating device;
a feeding device for the dish-brightening agent; and
a processor, configured to perform any of the above mentioned control methods.

[0016] In a certain embodiment, the humidity detection unit includes a humidity sensor.

[0017] In a certain embodiment, the dishwasher is provided with a plurality of fans, and the plurality of fans is configured to be cooperated to establish an airflow passing through the air flue to ventilate the working chamber.

[0018] In a certain embodiment, the heating device includes a heating pipe.

[0019] In a certain embodiment, the feeding device includes a feeding detection unit, and the feeding detection unit includes a pressure sensor.

[0020] In certain embodiments of the present invention, the dishwasher includes:

a memory; and
one or more programs, wherein the one or more programs are stored in the memory, and configured to be executed by the one or more processors, and the one or more programs are configured to execute instructions of the control method as described above.

[0021] A computer-readable storage medium of the embodiment of the present invention has stored thereon a computer program with executable instructions to cause a dishwasher as defined above to perform the control method as described above.

[0022] The control method for dishwasher, the dishwasher and the computer-readable storage medium according to embodiments of the present invention control the fan and heating device according to whether the dish-brightening agent is added and the humidity of the working chamber, thereby reducing the water vapor content of the working chamber.

[0023] The additional aspects and advantages of the present invention will be set forth in part in the description which follows, and will be known from the practice of the present invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0024] The above and/or additional aspects and advantages of the present invention will become apparent and readily understood with combination of the following drawings, in which:

Fig. 1 is a flow chart of a control method for a dishwasher of an embodiment of the present invention;
 Fig. 2 is a structural diagram of a dishwasher of an embodiment of the present invention;
 Fig. 3 is another flow chart of a control method for a dishwasher of an embodiment of the present invention;
 Fig. 4 is still another flow chart of a control method for a dishwasher of an embodiment of the present invention;
 Fig. 5 is further still another flow chart of a control method for a dishwasher of an embodiment of the present invention;
 Fig. 6 is another structural diagram of a dishwasher of an embodiment of the present invention;
 Fig. 7 is further still another flow chart of a control method for a dishwasher of an embodiment of the present invention;
 Fig. 8 is still another structural diagram of a dishwasher of an embodiment of the present invention;
 Fig. 9 is a diagram showing a connection between a dishwasher and a computer-readable storage medium of an embodiment of the present invention.

Description of Main Reference Numerals:

[0025] dishwasher 100, housing 110, working chamber 111, air flue 112, fan 120, humidity detection unit 140, processor 150, memory 160, heating device 170, feeding device 180, feeding detection unit 182, computer-readable storage medium 200.

DETAILED DESCRIPTION

[0026] Below is detailed description of embodiments of the present disclosure, which are shown in the drawings. Throughout the drawings, same or similar reference signs identify same or similar elements or elements having same or similar functions. The embodiments described below in conjunction with the drawings are illustrative, i.e., the embodiments are intended to illustrate the present disclosure, but not to limit the present disclosure.

[0027] As shown in combination of Figs. 1 and 2, a control method of an embodiment of the present disclosure may be applied to a dishwasher 100. The dishwasher 100 includes a housing 110, a fan 120, a humidity

detection unit 140, a heating device 170, and a feeding device 180 for the dish-brightening agent. The housing 110 is provided with a working chamber 111 and an air flue 112 for keeping the working chamber 111 in communication with the outside, and the humidity detection unit 140 is configured to detect a humidity of the working chamber 111. The fan 120 is configured to establish an airflow passing through the heating device 170 and the air flue 112 to ventilate the working chamber 111. The control method includes steps of:

S151: determining whether a dish-brightening agent is fed by the feeding device 180;
 S152: controlling the humidity detection unit 140 to detect a humidity after the dishwasher 100 finishes washing;
 S153: controlling the fan 120 to run for a second predefined time after stopping running for a first predefined time according to the humidity after the dishwasher 100 finishes washing when the dish-brightening agent is fed by the feeding device 180, wherein the humidity is negatively correlated to the first predefined time, and the humidity is positively correlated to the second predefined time; and
 S154: controlling the fan 120 and the heating device 170 to run for a fourth predefined time after stopping running for a third predefined time according to the humidity after the dishwasher 100 finishes washing when no dish-brightening agent is fed by the feeding device 180, wherein the humidity is negatively correlated to the third predefined time, and the humidity is positively correlated to the fourth predefined time.

[0028] Again, with reference to Fig. 2, the dishwasher 100 of an embodiment of the present disclosure includes a housing 110, a fan 120, a humidity detection unit 140, a processor 150, a heating device 170, and a feeding device 180 for the dish-brightening agent. The housing 110 is provided with a working chamber 111 and an air flue 112 for keeping the working chamber 111 in communication with the outside. The fan 120 is configured to establish an airflow passing through the air flue 112 to ventilate the working chamber 111. The humidity detection unit 140 is configured to detect the humidity of the working chamber 111. The processor 150 is configured to:

determine whether a dish-brightening agent is fed by the feeding device 180;
 control the humidity detection unit 140 to detect a humidity after the dishwasher 100 finishes washing;
 control the fan 120 to run for a second predefined time after stopping running for a first predefined time according to the humidity after the dishwasher 100 finishes washing when the dish-brightening agent is fed by the feeding device 180, wherein the humidity is negatively correlated to the first predefined time, and the humidity is positively correlated to the second predefined time; and

control the fan 120 and the heating device 170 to run for a fourth predefined time after stopping running for a third predefined time according to the humidity after the dishwasher 100 finishes washing when no dish-brightening agent is fed by the feeding device 180, wherein the humidity is negatively correlated to the third predefined time, and the humidity is positively correlated to the fourth predefined time.

[0029] That is to say, the control method of an embodiment of the present disclosure may be implemented by the dishwasher 100 of the embodiment of the present disclosure, wherein steps S151, S152, S153, and S154 may be implemented by the processor 150.

[0030] The control method for dishwasher 100 and the dishwasher 100 of the embodiment of the present disclosure control the fan 120 and heating device 170 according to whether the dish-brightening agent is fed and the humidity of the working chamber 111, thereby reducing the water vapor content of the working chamber 111.

[0031] Again, with reference to Fig. 1, the step S151 of the embodiment of the present disclosure is executed after the step S152. It is to be understood that, in other embodiments, the step S151 may be executed before the step S152, which is not specifically limited herein.

[0032] In a certain embodiment, due to the space limitation of the working chamber 111, for example, the working chamber 111 is small, the humidity detection unit 140 may not be directly installed in the working chamber 111, thus the humidity detection unit 140 may be installed in the air flue 112 to detect the humidity in the air flue 112 using the humidity detection unit 140. The working chamber 111 refers to a component in the dishwasher 100 for placing dishes and washing dishes, and is also called an inner container. In some embodiments, the humidity in the air flue 112 may be regarded as the humidity of the working chamber 111.

[0033] In some embodiments, the humidity detection unit 140 may be directly disposed in the working chamber 111 to accurately obtain the humidity of the working chamber 111, which is not specifically limited herein.

[0034] In some embodiments, the fan 120 may be disposed inside the dishwasher 100 or outside the dishwasher 100, which is not specifically limited herein. In an embodiment, the fan 120 is disposed adjacent to the heating device 170, so that the fan 120 may blow a thermal energy generated by the operation of the heating device 170 to the working chamber 111.

[0035] In some embodiments, the dishwasher 100 finishing washing means that the dishwasher 100 has finished the washing program, which generally includes several programs such as pre-washing, main washing, rinsing and drying. The dishwasher 100 finishing washing generally means that the drying program has ended. The steps S151, S152, S153, and S154 of the embodiment of the present disclosure may be regarded as maintenance programs, and the steps S151, S152, S153, and S154 may be repeatedly executed repeatedly to keep the work

chamber 111 dry.

[0036] In some embodiments, the humidity detection unit 140 includes a humidity sensor.

[0037] As such, the humidity sensor may be used to obtain the humidity quickly.

[0038] Specifically, the humidity sensor may refer to a device for measuring the relative humidity of the air. The humidity detection unit 140 is generally configured to measure the relative humidity.

[0039] Specifically, the dish-brightening agent refers to a product for reducing the surface tension of water and avoiding water marks on the dishes after the dishwasher 100 finishes washing. It is to be understood that when the dishwasher 100 performs washing, basically no water marks will be left on the dishes if the dish-brightening agent is fed by the feeding device 180, without using the heating device 170 to evaporate the water marks, so the heating device 170 may be controlled to be turned off to reduce the power consumption of the dishwasher 100; when the dishwasher 100 performs washing, water marks will be left on the dishes if no dish-brightening agent is fed by the feeding device 180, so the heating device 170 may be controlled to work, so that the water marks on the dishes may be evaporated into water vapor, and further the fan 120 may discharge the water vapor from the working chamber 111.

[0040] It is to be understood that when the humidity is relatively small, indicating that the water vapor in the dishwasher 100 is not easy to condense into water droplets, the fan 120 may be controlled to stop running for a longer time (that is, the first predefined time and the third predefined time are both longer) and run for a shorter time (that is, the second predefined time and the fourth predefined time are both short); when the humidity is relatively large, indicating that the water vapor in the dishwasher 100 is easy to condense into water droplets, the fan 120 may be controlled to stop running for a short time (that is, the first predefined time and the third predefined time are both shorter) and run for a longer time (that is, the second predefined time and the fourth predefined time are both longer), thereby removing the water vapor in the dishwasher 100, further preventing the water vapor from condensing into droplets.

[0041] In some embodiments, when the humidity values are the same, the first predefined time and the third predefined time may be the same or different, and the second predefined time and the fourth predefined time may be the same or different, which are not specifically limited herein.

[0042] In some embodiments, the heating device 170 includes a heating pipe. As such, the heating device 170 may be used to generate the thermal energy.

[0043] In some embodiments, the feeding device 180 includes a feeding detection unit 182, and the feeding detection unit 182 includes a pressure sensor. As such, whether a dish-brightening agent is fed by the feeding device 180 may be determined by an output of the feeding detection unit 182.

[0044] Specifically, the feeding detection unit 182 may be a pressure sensor, and then by placing the pressure sensor in the feeding device 180, such as at the bottom of the feeding device 180, whether the dish-brightening agent is fed may be determined through the changes in pressure generated by the dish-brightening agent stored in the feeding detection device 180. For example, when the pressure detected by the pressure sensor becomes smaller, it indicates that the feeding device 180 may feed the dish-brightening agent into the dishwasher.

[0045] In some embodiments, the feeding detection unit 182 may also be an infrared sensor. The infrared sensor determines whether the dish-brightening agent fed into the device 180 is reduced by the emission and the return time of infrared light.

[0046] In some embodiments, the feeding device 180 includes a switch configured to control the entry and exit of the dish-brightening agent, and the state of the switch may also be used to determine whether the dish-brightening agent is fed by the feeding device 180.

[0047] It should be noted that the dish-brightening agent is generally used in the washing program of the dishwasher 100 such as a rinsing program. If the dish-brightening agent is used during the rinsing program, it can be determined that the dish-brightening agent is fed by the feeding device 180, and if the dish-brightening agent is not used during the rinsing program, it can be determined that no dish-brightening agent is fed by the feeding device 180.

[0048] With reference to Fig. 3, in some embodiments, before the dishwasher 100 finishes washing, the method includes steps of:

S155: controlling the fan 120 to stop running for a seventh predefined time after stopping running for a fifth predefined time and after running for a sixth predefined time when the dish-brightening agent is fed by the feeding device 180; and

S156: controlling the fan 120 and the heating device 170 to stop running for a tenth predefined time after stopping running for an eighth predefined time and after running for a ninth predefined time when no dish-brightening agent is fed by the feeding device 180.

[0049] Again, with reference to Fig. 2, in some embodiments, the processor 150 is configured to:

control the fan 120 to stop running for a seventh predefined time after stopping running for a fifth predefined time and after running for a sixth predefined time when the dish-brightening agent is fed by the feeding device 180; and

control the fan 120 and the heating device 170 to stop running for a tenth predefined time after stopping running for an eighth predefined time and after running for a ninth predefined time when no dish-bright-

ening agent is fed by the feeding device 180.

[0050] That is to say, the steps S155 and S156 may be implemented by the processor 150.

[0051] As such, dishes in the dishwasher 100 may be subjected to drying treatment.

[0052] Specifically, before the dishwasher 100 finishes washing, the dishwasher 100 generally includes a drying program, and the water vapor content in the working chamber 111 may be greatly reduced by the drying program. When the dish-brightening agent is fed by the feeding device 180, the drying program of the dishwasher 100 may be implemented by controlling the fan 120 to stop running for the fifth predefined time and run for the sixth predefined time, and when no dish-brightening agent is fed by the feeding device 180, the drying program of the dishwasher 100 may be implemented by controlling the fan 120 to stop running for the eighth predefined time and run for the ninth predefined time. That is to say, the drying program of the dishwasher 100 may be running for a period of time (a sixth predefined time or a ninth predefined time) after the fan 120 is controlled to stop running for a period of time (the fifth predefined time or the eighth predefined time). It can be understood that in order to greatly reduce the water vapor content in the working chamber 111, the fifth predefined time may be much shorter than the sixth predefined time, and the eighth predefined time may be much shorter than the ninth predefined time, and the fan 120 may be controlled to work for the fifth predefined time and the sixth predefined time in multiple times or the fan 120 may be controlled to work for an eighth predefined time and a ninth predefined time in multiple times.

[0053] It should be noted that the steps S151, S152, S153, and S154 of the embodiment of the present disclosure may also be used to dry the air in the working chamber 111, but generally a long time is required, so the fan 120 may be controlled to stop running for a period of time (the fifth predefined time or the eighth predefined time) and run for a period of time (the sixth predefined time or the ninth predefined time) to dry the air in the working chamber 111 in a short time. In addition, after the working chamber 111 is dried by the fan 120, the water vapor content of the working chamber 100 is low in a short time, so the fan 120 may be controlled to stop running for the seventh predefined time or the tenth predefined time, such as 60 minutes, thereby reducing the power consumption of the dishwasher 100.

[0054] It is to be understood that the fifth predefined time and the eighth predefined time may be the same or different, the sixth predefined time and the ninth predefined time may be the same or different, and the seventh predefined time and the tenth predefined time may be the same or different, which are not specifically limited herein.

[0055] In some embodiments, the fifth predefined time and the eighth predefined time are both about 5 minutes, the sixth predefined time and the ninth predefined time

are both about 40 minutes, and the seventh predefined time and the tenth predefined time are both about 60 minutes.

[0056] As such, the air in the working chamber 111 may be dried.

[0057] In some embodiments, the fifth predefined time and the eighth predefined time are the same, the sixth predefined time and the ninth predefined time are the same, and the seventh predefined time and the tenth predefined time are the same. Specifically, when the fan 120 is controlled to dry the dishwasher 100, generally, the fan 120 first stops running for the shorter fifth predefined time or the eighth predefined time, such as 0 to 10 minutes, preferably 5 minutes, then runs for a longer sixth predefined time or the ninth predefined time, such as 30 to 60 minutes, preferably 40 minutes, thereby fully taking away the water vapor in the working chamber 111 and further ensuring the drying of the working chamber 111. After the working chamber 111 is dried by the fan 120, the water vapor content of the working chamber 111 is low, then the fan 120 may stop running for the seventh predefined time or the tenth predefined time, such as 50 to 70 minutes, preferably 60 minutes, and after stopping running for 60 minutes, the humidity may be detected and the fan 120 may be controlled to operate to execute the maintenance program of the dishwasher 100 according to the control method of the embodiment of the present disclosure.

[0058] With reference to Fig. 4, in some embodiments, the step S151 includes steps of:

S1511: controlling the fan 120 to run for the eleventh predefined time after the dishwasher 100 finishes washing and before the first predetermined time when the dish-brightening agent is fed by the feeding device 180;

S1512: controlling the fan 120 and the heating device 170 to run for the twelfth predefined time after the dishwasher 100 finishes washing and before the third predetermined time when no dish-brightening agent is fed by the feeding device 180; and

S1513: controlling the humidity detection unit 140 to detect the humidity within the eleventh predefined time or the twelfth predefined time.

[0059] Again, with reference to Fig. 2, in some embodiments, the processor 150 is configured to:

control the fan 120 to run for the eleventh predefined time after the dishwasher 100 finishes washing and before the first predetermined time when the dish-brightening agent is fed by the feeding device 180; control the fan 120 and the heating device 170 to run for the twelfth predefined time after the dishwasher 100 finishes washing and before the third predetermined time when no dish-brightening agent is fed by the feeding device 180; and control the humidity detection unit 140 to detect the

humidity within the eleventh predefined time or the twelfth predefined time.

[0060] That is to say, the steps S1511, S1512 and S1513 may be implemented by the processor 150.

[0061] As such, the humidity detected by the humidity detection unit 140 may be made substantially consistent with the humidity of the working chamber.

[0062] Specifically, the humidity detection unit 140 may be disposed in the air flue 112, and when the humidity detection unit 140 works, the fan 120 may be controlled to run if the dish-brightening agent is fed by the feeding device 180; the fan 120 and the heating device 170 may be controlled to run simultaneously if no dish-brightening agent is fed by the feeding device 180; then the fan 120 may drive the air in the working chamber 111 to flow, and further the air in the air flue 112 may be regarded as the air in the working chamber 111, that is, the humidity detected by the humidity detection unit 140 may be regarded as the humidity of the working chamber 111.

[0063] It is to be understood that the eleventh predefined time is between the end of washing of the dishwasher 100 and the first predefined time, and in some embodiments, the eleventh predefined time may refer to the last period of the seventh predefined time, such as the last 20 seconds of the seventh predefined time. In an embodiment, just when the washing program ends, the eleventh predefined time may refer to the last period of the seventh predefined time, such as 20 seconds. In another embodiment, when the steps S151, S152, S153, and S154 are executed cyclically and the previous first predefined time and the second predefined time have just ended, the eleventh predefined time may refer to the last period of the previous second predefined time, such as 20 seconds.

[0064] It is to be understood that the twelfth predefined time is between the end of washing of the dishwasher 100 and the third predefined time, and in some embodiments, the twelfth predefined time may refer to the last period of the tenth predefined time, such as the last 20 seconds of the tenth predefined time. In an embodiment, just when the washing program ends, the twelfth predefined time may refer to the last period of the tenth predefined time, such as 20 seconds. In another embodiment, when the steps S151, S152, S153, and S154 are executed cyclically and the previous third predefined time and the fourth predefined time have just ended, the twelfth predefined time may refer to the last period of the previous fourth predefined time, such as 20 seconds.

[0065] It is to be understood that controlling the humidity detection unit 140 to detect the humidity within the eleventh predefined time or the twelfth predefined time refers to controlling the humidity detection unit 140 to detect the humidity within the eleventh predefined time when the dish-brightening agent is fed by the feeding device 180, and controlling the humidity detection unit 140 to detect the humidity within the twelfth predefined time when no dish-brightening agent is fed by the feeding

device 180.

[0066] It should be noted that in order to ensure that the humidity detected by the humidity detection unit 140 is substantially the same as the humidity of the working chamber 111 when no dish-brightening agent is fed by the feeding device 180, generally, the twelfth predefined time is greater than the eleventh predefined time, e.g., the eleventh predefined time may be 20 seconds, and the twelfth predefined time may be 1 minute. In some embodiments, the eleventh predefined time and the twelfth predefined time may also be the same.

[0067] With reference to Fig. 5, in some embodiments, the step S151 includes steps of:

S1514: controlling the humidity detection unit 140 to perform a plurality of detections to obtain a plurality of initial humidity values; and

S1515: processing the plurality of initial humidity values to obtain the humidity, the humidity being an intermediate value or an average value of the plurality of initial humidity values.

[0068] Again, with reference to Fig. 2, in some embodiments, the processor 150 is configured to:

control the humidity detection unit 140 to perform a plurality of detections to obtain a plurality of initial humidity values; and

process the plurality of initial humidity values to obtain the humidity, the humidity being an intermediate value or an average value of the plurality of initial humidity values.

[0069] That is to say, the steps S1514 and S1515 may be implemented by the processor 150.

[0070] As such, the accuracy of the humidity may be ensured.

[0071] It is to be understood that the humidity detection unit 140 may detect to obtain an initial humidity, a plurality of initial humidity values may be obtained through a plurality of detections by the humidity detection unit 140, and the humidity may be obtained by processing the plurality of initial humidity values. Specifically, the method of processing the plurality of initial humidity values to obtain the humidity includes methods such as taking the average value of the plurality of initial humidity values as the humidity, or taking the median value of the plurality of initial humidity values as the humidity, etc., which are not specifically limited herein.

[0072] In addition, the plurality of initial humidity values may be to obtain an initial humidity at intervals, for example, to obtain an initial humidity at intervals of 5 seconds within 20 seconds or an initial humidity at intervals of 20 seconds within 1 minute, and so on.

[0073] With reference to Fig. 6, in some embodiments, the fan 120 has a plurality of fans, and the plurality of fans 120 is configured to be cooperated to establish an airflow passing through the air flue 112 to ventilate the working

chamber 111.

[0074] As such, the dehumidifying effect of the dishwasher 100 may be achieved to a large extent.

[0075] It is to be understood that in order to enhance the dehumidification capacity of the working chamber 111, the fan 120 has a plurality of fans, that is, the dishwasher 100 includes a plurality of fans 120, so that the plurality of fans 120 may be operated simultaneously to enhance the air circulation in the working chamber 111 and discharge the water vapor in the air from the dishwasher 100.

[0076] It should be noted that the plurality of fans 120 may be disposed inside or outside the dishwasher 100. In an embodiment, one fan 120 is disposed adjacent to the heating device 170 to blow the thermal energy generated by the heating device 170 to the working chamber 111, and one fan 120 is disposed in the air flue 112 to guide the air into the air flue 112, thereby working simultaneously to speed up the air circulation in the working chamber 111.

[0077] In some embodiments, when the humidity is less than or equal to 50%, the first predefined time is about 170 minutes and the second predefined time is about 10 minutes; when the humidity is greater than 50% and less than or equal to 60%, the first predefined time is about 140 minutes, and the second predefined time is about 10 minutes; when the humidity is greater than 60% and less than or equal to 70%, the first predefined time is about 110 minutes, and the second predefined time is about 10 minutes; when the humidity is greater than 70% and less than or equal to 80%, the first predefined time is about 80 minutes, and the second predefined time is about 10 minutes; when the humidity is greater than 80% and less than or equal to 85%, the first predefined time is about 40 minutes, and the second predefined time is about 20 minutes; and when the humidity is greater than 85%, the first predefined time is about 10 minutes, and the second predefined time is about 20 minutes.

[0078] As such, the fan 120 may be controlled to run according to the humidity.

[0079] Specifically, when the humidity is less than or equal to 50%, indicating that the humidity is very small, the water vapor in the dishwasher 100 may not easily be condensed into water droplets, so the fan 120 is controlled to run for about 10 minutes after stopping running for about 170 minutes; when the humidity is greater than 50% and less than or equal to 60%, indicating that the humidity is smaller, so the fan 120 is controlled to run for about 10 minutes after stopping running for about 140 minutes; when the humidity is greater than 60% and less than or equal to 70%, indicating that the humidity is slightly higher, so the fan 120 is controlled to run for about 10 minutes after stopping running for about 110 minutes; when the humidity is greater than 70% and less than or equal to 80%, indicating that the humidity is higher, so the fan 120 is controlled to run for about 10 minutes after stopping running for about 80 minutes; when the humidity is greater than 80% and less than or equal to 85%, indicating that the humidity is very high,

the water vapor in the dishwasher 100 may easily be condensed into water droplets, so the fan 120 is controlled to run for about 20 minutes after stopping running for about 40 minutes; when the humidity is greater than 85%, indicating that the humidity is extremely high, the water vapor in the dishwasher 100 has been substantially condensed into water droplets, so the fan 120 is controlled to run for about 20 minutes after stopping running for about 10 minutes.

[0080] In some embodiments, the third predefined time is the same as the first predefined time, and the fourth predefined time is the same as the second predefined time, that is, when the humidity is less than or equal to 50%, the third predefined time is about 170 minutes and the fourth predefined time is about 10 minutes; when the humidity is greater than 50% and less than or equal to 60%, the third predefined time is about 140 minutes, and the fourth predefined time is about 10 minutes; when the humidity is greater than 60% and less than or equal to 70%, the third predefined time is about 110 minutes, and the fourth predefined time is about 10 minutes; when the humidity is greater than 70% and less than or equal to 80%, the third predefined time is about 80 minutes, and the fourth predefined time is about 10 minutes; when the humidity is greater than 80% and less than or equal to 85%, the third predefined time is about 40 minutes, and the fourth predefined time is about 20 minutes; and when the humidity is greater than 85%, the third predefined time is about 10 minutes, and the fourth predefined time is about 20 minutes.

[0081] In some embodiments, when the humidity less than or equal to 55%, the third predefined time is about 170 minutes, and the fourth predefined time is about 10 minutes; when the humidity is greater than 55% and less than or equal to 70%, the third predefined time is about 110 minutes, and the fourth predefined time is about 20 minutes; when the humidity is greater than 70% and less than or equal to 85%, the third predefined time is about 60 minutes, and the fourth predefined time is about 20 minutes; and when the humidity is greater than 85%, the third predefined time is about 10 minutes, and the fourth predefined time is about 20 minutes.

[0082] As such, the fan 120 may be controlled to run according to the humidity.

[0083] Specifically, when the humidity is less than or equal to 55%, indicating that the humidity is very small, the water vapor in the dishwasher 100 may not easily be condensed into water droplets, so the fan 120 and the heating device 170 are controlled to run for about 10 minutes after stopping running for about 170 minutes; when the humidity is greater than 55% and less than or equal to 70%, indicating that the humidity is slightly higher, so the fan 120 and the heating device 170 are controlled to run for about 20 minutes after stopping running for about 110 minutes; when the humidity is greater than 70% and less than or equal to 85%, indicating that the humidity is higher, so the fan 120 and the heating device 170 are controlled to run for about 20 minutes after

stopping running for about 60 minutes; when the humidity is greater than 85%, indicating that the humidity is extremely high, the water vapor in the dishwasher 100 has been substantially condensed into water droplets, so the fan 120 and the heating device 170 are controlled to run for about 20 minutes after stopping running for about 10 minutes.

[0084] With reference to Fig. 7, in some embodiments, the step S154 includes steps of:

S1542: determining whether the humidity is greater than a humidity threshold when no dish-brightening agent is fed by the feeding device 180;

S1544: controlling the fan 120 and the heating device 170 to run for the fourth predefined time after stopping running for the third predefined time according to the humidity after the dishwasher 100 finishes washing when the humidity is greater than the humidity threshold; and

S1546: controlling the fan 120 to run for the fourth predefined time after stopping running for the third predefined time and controlling the heating device 170 to stop running according to the humidity after the dishwasher 100 finishes washing when the humidity is less than or equal to the humidity threshold.

[0085] Again, with reference to Fig. 2, in some embodiments, the processor 150 is configured to:

determine whether the humidity is greater than a humidity threshold when no dish-brightening agent is fed by the feeding device 180;

control the fan 120 and the heating device 170 to run for the fourth predefined time after stopping running for the third predefined time according to the humidity after the dishwasher 100 finishes washing when the humidity is greater than the humidity threshold; and

control the fan 120 to run for the fourth predefined time after stopping running for the third predefined time and control the heating device 170 to stop running according to the humidity after the dishwasher 100 finishes washing when the humidity is less than or equal to the humidity threshold.

[0086] That is to say, the steps S1542, S1544 and S1546 may be implemented by the processor 150.

[0087] As such, the heating device 170 may be controlled to stop working when the humidity is less than or equal to the humidity threshold to reduce the power consumption of the dishwasher 100.

[0088] Specifically, when no dish-brightening agent is fed by the feeding device 180, the water marks attached to the dishes may be evaporated to form the water vapor through the working of the heating device 170, thereby using the fan 120 discharge the water vapor to prevent bacteria from breeding. When the humidity is greater than the humidity threshold, the humidity in the working

chamber 111 is larger, and the fan 120 and the heating device 170 may be controlled to simultaneously run for the fourth predefined time after stopping running for the third predefined time according to the humidity; when the humidity is less than or equal to the humidity threshold, the humidity in the working chamber 111 is smaller, and the fan 120 may be controlled to run for the fourth predefined time after stopping running for the third predefined time and the heating device 170 may be controlled to stop working according to the humidity, thereby reducing the power consumption of the dishwasher 100.

[0089] It is to be understood that the humidity threshold may be preset in the dishwasher 100 or determined by a user input, e.g., the humidity threshold may be 60%, 70%, or 80%, which is not specifically limited herein.

[0090] With reference to Fig. 8, the dishwasher 100 of the embodiment of the present disclosure includes a housing 110, a fan 120, a humidity detection unit 140, a heating device 170, a feeding device 180, one or more processors 150, a memory 160, and one or more programs. Among them, the one or more programs are stored in the memory 160, and configured to be executed by the one or more processors 150, and the programs are configured to execute instructions of the control method of any one of above embodiments.

[0091] For example, the programs may be configured to execute instructions of the control method below:

S151: determining whether a dish-brightening agent is fed by the feeding device 180;

S152: controlling the humidity detection unit 140 to detect a humidity after the dishwasher 100 finishes washing;

S153: controlling the fan 120 to run for a second predefined time after stopping running for a first predefined time according to the humidity after the dishwasher 100 finishes washing when the dish-brightening agent is fed by the feeding device 180, wherein the humidity is negatively correlated to the first predefined time, and the humidity is positively correlated to the second predefined time; and

S154: controlling the fan 120 and the heating device 170 to run for a fourth predefined time after stopping running for a third predefined time according to the humidity after the dishwasher 100 finishes washing when no dish-brightening agent is fed by the feeding device 180, wherein the humidity is negatively correlated to the third predefined time, and the humidity is positively correlated to the fourth predefined time.

[0092] With reference to Fig. 9, a computer-readable storage medium 200 of the embodiment of the present disclosure includes a computer program for use in conjunction with the dishwasher 100, and the computer program is executable by the processor 150 to complete the control method of any one of above embodiments of the present disclosure.

[0093] For example, the computer program may be

executed by the processor 150 to complete the following control methods:

S151: determining whether a dish-brightening agent is fed by the feeding device 180;

S152: controlling the humidity detection unit 140 to detect a humidity after the dishwasher 100 finishes washing;

S153: controlling the fan 120 to run for a second predefined time after stopping running for a first predefined time according to the humidity after the dishwasher 100 finishes washing when the dish-brightening agent is fed by the feeding device 180, wherein the humidity is negatively correlated to the first predefined time, and the humidity is positively correlated to the second predefined time; and

S154: controlling the fan 120 and the heating device 170 to run for a fourth predefined time after stopping running for a third predefined time according to the humidity after the dishwasher 100 finishes washing when no dish-brightening agent is fed by the feeding device 180, wherein the humidity is negatively correlated to the third predefined time, and the humidity is positively correlated to the fourth predefined time.

[0094] It should be noted that the computer readable storage medium 200 may be a storage medium built in the dishwasher 100, or a storage medium that may be plugged and inserted in the dishwasher 100.

[0095] In the description of the embodiment of the present disclosure, the terms 'first', 'second' are used only for description and shall not be interpreted as an indication or implication of relative importance or an implicit indication of the number of technical features. Thus, the feature defined by 'first', 'second' can explicitly or implicitly include one or more characteristics. In the description of the embodiment of the present disclosure, the meaning of "a plurality" is two or more than two, unless specifically defined otherwise.

[0096] In the description of the embodiment of the present disclosure, the terms 'install', 'interconnect', and 'connect' should be understood from a broad extent. For instance, it may be connected in a fixed, removable or integrated manner; and it may be mechanically or electrically connected or communicated; and it may be directly or indirectly (via a media in between) connected; and it may be the inside of two elements in communication with each other or two elements interacting with each other. The ordinary artisans concerned may understand the specific meaning of terms in the embodiment of the present disclosure according to specific circumstance.

[0097] In the description of the present specification, the description with reference to the terms "an embodiment", "some embodiments", "illustrative embodiments", "example", "specific example", or "some examples" and the like means that specific features, structures, materials, or features described in connection with the embodiments or examples are included in at least one embodi-

ment or example of the present disclosure. In the present specification, the schematic representation of the above terms does not necessarily mean the same embodiment or example. Furthermore, the particular features, structures, materials, or characteristics described may be combined in a suitable manner in any one or more embodiments or examples.

[0098] Any process or method description in the flowcharts or otherwise described herein may be understood to represent a module, segment or portion of code including one or more executable instructions for implementing the steps of a custom logic function or process.

[0099] The logic and/or steps represented in the flowcharts or otherwise described herein, for example, may be considered as an ordered list of executable instructions for implementing logical functions, and may be embodied in any computer readable medium for use by or in connection with an instruction execution system, apparatus, or device (e.g., a computer-based system, a system including a processor, or other system that can fetch instructions from an instruction execution system, apparatus, or device and execute instructions). For the purposes of this specification, a "computer-readable medium" can be any apparatus that can contain, store, communicate, propagate, or transport a program for use in an instruction execution system, apparatus, or device, or in conjunction with the instruction execution system, apparatus, or device. More specific examples (non-exhaustive list) of computer readable medium include electrical connection (electronic device) having one or more wirings, portable computer disk cartridge (magnetic device), random access memory (RAM), read only memory (ROM), erasable and editable read-only memory (EPROM or flash memory), fiber optic devices, and portable compact disk read-only memory (CDROM). Additionally, since a program can be obtained electronically, for example by optical scanning of paper or other medium, followed by editing, interpretation or, if necessary, processing in other suitable manner, and then storing it in computer memory, the computer readable medium can even be a paper or other suitable medium on which the program can be printed.

[0100] It should be understood that portions of the embodiment of the present disclosure may be implemented in hardware, software, firmware or a combination thereof. In the above-described embodiments, multiple steps or methods may be implemented in software or firmware stored in a memory and executed by a suitable instruction execution system. For example, if implemented in hardware and in another embodiment, it can be implemented by any of the following techniques or combinations thereof well known in the art: discrete logic circuit with logic gates for implementing logic functions on data signals, ASIC with appropriate combinational logic gate, Programmable Gate Array (PGA), Field Programmable Gate Array (FPGA), etc..

[0101] It will be appreciated by those of ordinary skill in the art that all or part of the steps of implementing

embodiments of the foregoing method may be performed by hardware related to the program instructions. The foregoing program may be stored in a computer readable storage medium, which, when executed, includes one or a combination of the steps of a method embodiment.

[0102] In addition, the functional units in the embodiments of the present disclosure can be integrated in one processing module or each unit may independently physically exist, or two or more units may be integrated into one module. The integrated modules can be implemented in the form of hardware, and can also be implemented in the form of a software functional module. If the integrated modules are implemented in the form of a software functional module and sold or used as an independent product, they can be stored in a computer-readable storage medium.

[0103] The above-mentioned storage medium may be a read only memory, a magnetic disk or an optical disk or the like.

[0104] Although embodiments of the disclosure have been shown and described above, it will be understood that the above embodiments are illustrative and are not to be construed as limiting the present disclosure. Changes, modifications, alterations and variations of the above-described embodiments may be made by those skilled in the art.

Claims

1. A control method for a dishwasher (100), the dishwasher (100) comprising a housing (110), a fan (120), a humidity detection unit (140), a heating device (170) and a feeding device (180) for a dish-brightening agent for reducing the surface tension of water and avoiding water marks on dishes in the dishwasher, wherein the housing (110) is provided with a working chamber (111) and an air flue (112) for keeping the working chamber (111) in communication with the outside, the humidity detection unit (140) is configured to detect a humidity of the working chamber (111), and the fan (120) is configured to establish an airflow passing through the heating device (170) and the air flue (112) to ventilate the working chamber (111), the control method comprising steps of:

determining whether the dish-brightening agent is fed by the feeding device (180);

controlling the humidity detection unit (140) to detect the humidity after the dishwasher (100) finishes washing;

when the dish-brightening agent is fed by the feeding device (180), controlling the heating device (170) to be turned off and controlling, according to the humidity, the fan (120) to stop running for a first predefined time and then run for a second predefined time after the dish-

washer (100) finishes washing, wherein the humidity is negatively correlated to the first predefined time, and the humidity is positively correlated to the second predefined time; and when no dish-brightening agent is fed by the feeding device (180), controlling, according to the humidity, the fan (120) and the heating device (170) to stop running for a third predefined time and then run for a fourth predefined time after the dishwasher (100) finishes washing, wherein the humidity is negatively correlated to the third predefined time, and the humidity is positively correlated to the fourth predefined time.

2. The control method according to claim 1, wherein before the dishwasher (100) finishes washing, the method comprises steps of:

controlling the fan (120) to stop running for a fifth predefined time, run for a sixth predefined time and stop running for a seventh predefined time in order, when the dish-brightening agent is fed by the feeding device (180); and controlling the fan (120) and the heating device (170) to stop running for an eighth predefined time, run for a ninth predefined time and stop running for a tenth predefined time in order, when no dish-brightening agent is fed by the feeding device (180).

3. The control method according to claim 2, wherein the fifth predefined time and the eighth predefined time are both about 5 minutes, the sixth predefined time and the ninth predefined time are both about 40 minutes, and the seventh predefined time and the tenth predefined time are both about 60 minutes.
4. The control method according to claim 1, wherein the step of controlling the humidity detection unit (140) to detect a humidity after the dishwasher (100) finishes washing comprises steps of:

controlling the fan (120) to run for an eleventh predefined time after the dishwasher (100) finishes washing and before the first predefined time when the dish-brightening agent is fed by the feeding device (180); controlling the fan (120) and the heating device (170) to run for a twelfth predefined time after the dishwasher (100) finishes washing and before the third predefined time when no dish-brightening agent is fed by the feeding device (180); and controlling the humidity detection unit (140) to detect the humidity within the eleventh predefined time or the twelfth predefined time.

5. The control method according to claim 1, wherein the step of controlling the humidity detection unit (140) to detect a humidity after the dishwasher (100) finishes washing comprises steps of:

controlling the humidity detection unit (140) to perform a plurality of detections to obtain a plurality of initial humidity values; and processing the plurality of initial humidity values to obtain the humidity, the humidity being an intermediate value or an average value of the plurality of initial humidity values.

6. The control method according to claim 1, wherein when the humidity is less than or equal to 50%, the first predefined time is about 170 minutes and the second predefined time is about 10 minutes; when the humidity is greater than 50% and less than or equal to 60%, the first predefined time is about 140 minutes, and the second predefined time is about 10 minutes; when the humidity is greater than 60% and less than or equal to 70%, the first predefined time is about 110 minutes, and the second predefined time is about 10 minutes; when the humidity is greater than 70% and less than or equal to 80%, the first predefined time is about 80 minutes, and the second predefined time is about 10 minutes; when the humidity is greater than 80% and less than or equal to 85%, the first predefined time is about 40 minutes, and the second predefined time is about 20 minutes; and when the humidity is greater than 85%, the first predefined time is about 10 minutes, and the second predefined time is about 20 minutes.

7. The control method according to claim 1, wherein when the humidity less than or equal to 55%, the third predefined time is about 170 minutes, and the fourth predefined time is about 10 minutes; when the humidity is greater than 55% and less than or equal to 70%, the third predefined time is about 110 minutes, and the fourth predefined time is about 20 minutes; when the humidity is greater than 70% and less than or equal to 85%, the third predefined time is about 60 minutes, and the fourth predefined time is about 20 minutes; and when the humidity is greater than 85%, the third predefined time is about 10 minutes, and the fourth predefined time is about 20 minutes.

8. The control method according to claim 1, wherein the step of controlling, according to the humidity, the fan (120) and the heating device (170) to stop running for a third predefined time and then run for a fourth predefined time after the dishwasher (100) finishes washing, when no dish-brightening agent is fed by the feeding device (180) comprises steps of:

determining whether the humidity is greater than a humidity threshold when no dish-brightening

agent is fed by the feeding device (180);
controlling, according to the humidity, the fan
(120) and the heating device (170) to stop run-
ning for the third predefined time and then run for
the fourth predefined time after the dishwasher
(100) finishes washing, when the humidity is
greater than the humidity threshold; and
controlling, according to the humidity, the fan
(120) to stop running for the third predefined
time and then run for the fourth predefined time
and controlling the heating device (170) to stop
heating after the dishwasher (100) finishes
washing, when the humidity is less than or equal
to the humidity threshold.

9. A dishwasher (100), comprising:

a housing (110), provided with a working cham-
ber (111) and an air flue (112) for keeping the
working chamber (111) in communication with
the outside;
a heating device (170);
a fan (120), configured to establish an airflow
passing through the heating device (170) and
the air flue (112) to ventilate the working cham-
ber (111);
a humidity detection unit (140), configured to
detect a humidity of the working chamber (111);
a feeding device (180) for the dish-brightening
agent; and
a processor (150), configured to perform the
control method of any one of claims 1 to 8.

10. A computer-readable storage medium having stored
thereon a computer program with executable in-
structions to cause a dishwasher (100) as defined
in claim 9 to perform the control method according to
any one of claims 1 to 8.

Patentansprüche

1. Steuerverfahren für einen Geschirrspüler (100), wo-
bei der Geschirrspüler (100) Folgendes umfasst: ein
Gehäuse (110), ein Gebläse (120), eine Feuchtig-
keitserfassungseinheit (140), eine Heizvorrichtung
(170) und eine Aufgabevorrichtung (180) für einen
Glanzspüler zum Verringern der Oberflächenspan-
nung von Wasser und Vermeiden von Wasserfle-
cken auf Geschirr in dem Geschirrspüler, wobei das
Gehäuse (110) mit einer Arbeitskammer (111) und
einem Luftabzug (112) zum Aufrechterhalten einer
Verbindung der Arbeitskammer (111) nach außen
versehen ist, wobei die Feuchtigkeitserfassungsein-
heit (140) dazu konfiguriert ist, eine Feuchtigkeit der
Arbeitskammer (111) zu erfassen, und das Gebläse
(120) dazu konfiguriert ist, einen durch die Heizvor-
richtung (170) und den Luftabzug (112) strömenden

Luftstrom aufzubauen, um die Arbeitskammer (111)
zu lüften, wobei das Steuerverfahren die folgenden
Schritte umfasst:

Bestimmen, ob der Glanzspüler von der Auf-
gabeeinrichtung (180) aufgegeben wird;
Steuern der Feuchtigkeitserfassungseinheit
(140), um die Feuchtigkeit zu erfassen, nach-
dem der Geschirrspüler (100) das Spülen ab-
geschlossen hat;
wenn der Glanzspüler von der Aufgabeeinrich-
tung (180) aufgegeben wird, Steuern der Heiz-
vorrichtung (170), um ausgeschaltet zu werden,
und Steuern, gemäß der Feuchtigkeit, des Ge-
bläses (120), um den Betrieb für eine erste vor-
gegebene Zeit auszusetzen und dann für eine
zweite vorgegebene Zeit zu laufen, nachdem
der Geschirrspüler (100) das Spülen abge-
schlossen hat, wobei die Feuchtigkeit mit der
ersten vorgegebenen Zeit negativ korreliert und
die Feuchtigkeit mit der zweiten vorgegebenen
Zeit positiv korreliert; und
wenn kein Glanzspüler von der Aufgabeeinrich-
tung (180) aufgegeben wird, Steuern, gemäß
der Feuchtigkeit, des Gebläses (120) und der
Heizvorrichtung (170), um den Betrieb für eine
dritte vorgegebene Zeit auszusetzen und dann
für eine vierte vorgegebene Zeit zu laufen, nach-
dem der Geschirrspüler (100) das Spülen ab-
geschlossen hat, wobei die Feuchtigkeit mit der
dritten vorgegebenen Zeit negativ korreliert und
die Feuchtigkeit mit der vierten vorgegebenen
Zeit positiv korreliert.

2. Steuerverfahren nach Anspruch 1, wobei, bevor der
Geschirrspüler (100) das Spülen abschließt, das
Verfahren die folgenden Schritte umfasst:

Steuern des Gebläses (120), um der Reihe nach
den Betrieb für eine fünfte vorgegebene Zeit
auszusetzen, für eine sechste vorgegebene Zeit
zu laufen und den Betrieb für eine siebte vorge-
gebene Zeit auszusetzen, wenn der Glanzspü-
ler von der Aufgabeeinrichtung (180) aufgege-
ben wird; und
Steuern des Gebläses (120) und der Heizvor-
richtung (170), um der Reihe nach den Betrieb
für eine achte vorgegebene Zeit auszusetzen,
für eine neunte vorgegebene Zeit zu laufen und
den Betrieb für eine zehnte vorgegebene Zeit
auszusetzen, wenn kein Glanzspüler von der
Aufgabeeinrichtung (180) aufgegeben wird.

3. Steuerverfahren nach Anspruch 2, wobei die fünfte
vorgegebene Zeit und die achte vorgegebene Zeit
beide etwa 5 Minuten betragen, die sechste vorge-
gebene Zeit und die neunte vorgegebene Zeit beide
etwa 40 Minuten betragen und die siebte vorgege-

bene Zeit und die zehnte vorgegebene Zeit beide etwa 60 Minuten betragen.

4. Steuerverfahren nach Anspruch 1, wobei der Schritt des Steuerns der Feuchtigkeitserfassungseinheit (140), um eine Feuchtigkeit zu erfassen, nachdem der Geschirrspüler (100) das Spülen abgeschlossen hat, die folgenden Schritte umfasst:

Steuern des Gebläses (120), um für eine elfte vorgegebene Zeit zu laufen, nachdem der Geschirrspüler (100) das Spülen abgeschlossen hat und vor der ersten vorgegebenen Zeit, wenn der Glanzspüler von der Aufgabevorrichtung (180) aufgegeben wird;

Steuern des Gebläses (120) und der Heizvorrichtung (170), um für eine zwölfte vorgegebene Zeit zu laufen, nachdem der Geschirrspüler (100) das Spülen abgeschlossen hat und vor der dritten vorgegebenen Zeit, wenn kein Glanzspüler von der Aufgabevorrichtung (180) aufgegeben wird; und

Steuern der Feuchtigkeitserfassungseinheit (140), um die Feuchtigkeit innerhalb der elften vorgegebenen Zeit oder der zwölften vorgegebenen Zeit zu erfassen.

5. Steuerverfahren nach Anspruch 1, wobei der Schritt des Steuerns der Feuchtigkeitserfassungseinheit (140), um eine Feuchtigkeit zu erfassen, nachdem der Geschirrspüler (100) das Spülen abgeschlossen hat, die folgenden Schritte umfasst:

Steuern der Feuchtigkeitserfassungseinheit (140), um eine Vielzahl von Erfassungen durchzuführen, um eine Vielzahl von Anfangsfeuchtigkeitswerten zu erhalten; und

Verarbeiten der Vielzahl von Anfangsfeuchtigkeitswerten, um die Feuchtigkeit zu erhalten, wobei die Feuchtigkeit ein Zwischenwert oder ein Mittelwert der Vielzahl von Anfangsfeuchtigkeitswerten ist.

6. Steuerverfahren nach Anspruch 1, wobei, wenn die Feuchtigkeit geringer als oder gleich 50 % ist, die erste vorgegebene Zeit etwa 170 Minuten beträgt und die zweite vorgegebene Zeit etwa 10 Minuten beträgt; wenn die Feuchtigkeit höher als 50 % und geringer als oder gleich 60 % ist, die erste vorgegebene Zeit etwa 140 Minuten beträgt und die zweite vorgegebene Zeit etwa 10 Minuten beträgt; wenn die Feuchtigkeit höher als 60 % und geringer als oder gleich 70 % ist, die erste vorgegebene Zeit etwa 110 Minuten beträgt und die zweite vorgegebene Zeit etwa 10 Minuten beträgt; wenn die Feuchtigkeit höher als 70 % und geringer als oder gleich 80 % ist, die erste vorgegebene Zeit etwa 80 Minuten beträgt und die zweite vorgegebene Zeit etwa 10 Minuten be-

trägt; wenn die Feuchtigkeit höher als 80 % und geringer als oder gleich 85 % ist, die erste vorgegebene Zeit etwa 40 Minuten beträgt und die zweite vorgegebene Zeit etwa 20 Minuten beträgt; und wenn die Feuchtigkeit höher als 85 % ist, die erste vorgegebene Zeit etwa 10 Minuten beträgt und die zweite vorgegebene Zeit etwa 20 Minuten beträgt.

7. Steuerverfahren nach Anspruch 1, wobei, wenn die Feuchtigkeit geringer als oder gleich 55 % ist, die dritte vorgegebene Zeit etwa 170 Minuten beträgt und die vierte vorgegebene Zeit etwa 10 Minuten beträgt; wenn die Feuchtigkeit höher als 55 % und geringer als oder gleich 70 % ist, die dritte vorgegebene Zeit etwa 110 Minuten beträgt und die vierte vorgegebene Zeit etwa 20 Minuten beträgt; wenn die Feuchtigkeit höher als 70 % und geringer als oder gleich 85 % ist, die dritte vorgegebene Zeit etwa 60 Minuten beträgt und die vierte vorgegebene Zeit etwa 20 Minuten beträgt; und wenn die Feuchtigkeit höher als 85 % ist, die dritte vorgegebene Zeit etwa 10 Minuten beträgt und die vierte vorgegebene Zeit etwa 20 Minuten beträgt.

8. Steuerverfahren nach Anspruch 1, wobei der Schritt des Steuerns, gemäß der Feuchtigkeit, des Gebläses (120) und der Heizvorrichtung (170), um den Betrieb für eine dritte vorgegebene Zeit auszusetzen und dann für eine vierte vorgegebene Zeit zu laufen, nachdem der Geschirrspüler (100) das Spülen abgeschlossen hat, wenn kein Glanzspüler von der Aufgabevorrichtung (180) aufgegeben wird, die folgenden Schritte umfasst:

Bestimmen, ob die Feuchtigkeit höher als eine Feuchtigkeitsschwelle ist, wenn kein Glanzspüler von der Aufgabevorrichtung (180) aufgegeben wird;

Steuern, gemäß der Feuchtigkeit, des Gebläses (120) und der Heizvorrichtung (170), um den Betrieb für die dritte vorgegebene Zeit auszusetzen und dann für die vierte vorgegebene Zeit zu laufen, nachdem der Geschirrspüler (100) das Spülen abgeschlossen hat, wenn die Feuchtigkeit höher als die Feuchtigkeitsschwelle ist; und

Steuern, gemäß der Feuchtigkeit, des Gebläses (120), um den Betrieb für die dritte vorgegebene Zeit auszusetzen und dann für die vierte vorgegebene Zeit zu laufen, und Steuern der Heizvorrichtung (170), um das Heizen auszusetzen, nachdem der Geschirrspüler (100) das Spülen abgeschlossen hat, wenn die Feuchtigkeit geringer als oder gleich der Feuchtigkeitsschwelle ist.

9. Geschirrspüler (100), umfassend:

ein Gehäuse (110), das mit einer Arbeitskammer (111) und einem Luftabzug (112) zum Aufrechterhalten der Verbindung der Arbeitskammer (111) nach außen versehen ist;
 eine Heizvorrichtung (170);
 ein Gebläse (120), das dazu konfiguriert ist, einen durch die Heizvorrichtung (170) und den Luftabzug (112) strömenden Luftstrom aufzubauen, um die Arbeitskammer (111) zu lüften;
 eine Feuchtigkeitserfassungseinheit (140), die dazu konfiguriert ist, eine Feuchtigkeit der Arbeitskammer (111) zu erfassen;
 eine Aufgabevorrichtung (180) für den Glanzspüler; und
 einen Prozessor (150), der dazu konfiguriert ist, das Steuerverfahren nach einem der Ansprüche 1 bis 8 auszuführen.

10. Computerlesbares Speichermedium, auf dem ein Computerprogramm mit ausführbaren Anweisungen zum Veranlassen eines Geschirrspülers (100) nach Anspruch 9, das Steuerverfahren nach einem der Ansprüche 1 bis 8 durchzuführen, gespeichert ist.

Revendications

1. Procédé de commande pour un lave-vaisselle (100), le lave-vaisselle (100) comportant un boîtier (110), un ventilateur (120), une unité de détection d'humidité (140), un dispositif de chauffage (170) et un dispositif d'alimentation (180) pour un agent d'avivage de la vaisselle pour réduire la tension superficielle de l'eau et éviter les traces d'eau sur la vaisselle dans le lave-vaisselle, dans lequel le boîtier (110) est doté d'une chambre de travail (111) et d'un conduit d'air (112) servant à maintenir la chambre de travail (111) en communication avec l'extérieur, l'unité de détection d'humidité (140) est configurée pour détecter une humidité de la chambre de travail (111), et le ventilateur (120) est configuré pour établir un flux d'air qui traverse le dispositif de chauffage (170) et le conduit d'air (112) pour ventiler la chambre de travail (111), le procédé de commande comportant les étapes consistant à :

déterminer si l'agent d'avivage de la vaisselle est alimenté par le dispositif d'alimentation (180) ;
 commander l'unité de détection d'humidité (140) afin qu'elle détecte l'humidité une fois que le lave-vaisselle (100) a fini le lavage ;
 quand l'agent d'avivage de la vaisselle est alimenté par le dispositif d'alimentation (180), commander le dispositif de chauffage (170) afin qu'il s'arrête et commander, en fonction de l'humidité, le ventilateur (120) afin qu'il s'arrête de

fonctionner pendant une première durée prédéfinie, puis pour qu'il fonctionne pendant une deuxième durée prédéfinie une fois que le lave-vaisselle (100) a fini le lavage, dans lequel l'humidité est corrélée négativement à la première durée prédéfinie, et l'humidité est corrélée positivement à la deuxième durée prédéfinie ; et quand aucun agent d'avivage de la vaisselle n'est alimenté par le dispositif d'alimentation (180), commander, en fonction de l'humidité, le ventilateur (120) et le dispositif de chauffage (170) afin qu'ils s'arrêtent de fonctionner pendant une troisième durée prédéfinie, puis pour qu'ils fonctionnent pendant une quatrième durée prédéfinie une fois que le lave-vaisselle (100) a fini le lavage, dans lequel l'humidité est corrélée négativement à la troisième durée prédéfinie, et l'humidité est corrélée positivement à la quatrième durée prédéfinie.

2. Procédé de commande selon la revendication 1, dans lequel, avant que le lave-vaisselle (100) ne finisse le lavage, le procédé comporte les étapes consistant à :

commander le ventilateur (120) afin qu'il s'arrête de fonctionner pendant une cinquième durée prédéfinie, puis pour qu'il fonctionne pendant une sixième durée prédéfinie et afin qu'il s'arrête de fonctionner pendant une septième durée prédéfinie dans cet ordre, quand l'agent d'avivage de la vaisselle est alimenté par le dispositif d'alimentation (180) ; et commander le ventilateur (120) et le dispositif de chauffage (170) afin qu'ils s'arrêtent de fonctionner pendant une huitième durée prédéfinie, puis pour qu'ils fonctionnent pendant une neuvième durée prédéfinie et afin qu'ils s'arrêtent de fonctionner pendant une dixième durée prédéfinie dans cet ordre, quand aucun agent d'avivage de la vaisselle n'est alimenté par le dispositif d'alimentation (180).

3. Procédé de commande selon la revendication 2, dans lequel la cinquième durée prédéfinie et la huitième durée prédéfinie durent toutes les deux environ 5 minutes, la sixième durée prédéfinie et la neuvième durée prédéfinie durent toutes les deux environ 40 minutes, et la septième durée prédéfinie et la dixième durée prédéfinie durent toutes les deux environ 60 minutes.
4. Procédé de commande selon la revendication 1, dans lequel l'étape consistant à commander l'unité de détection d'humidité (140) afin qu'elle détecte une humidité une fois que le lave-vaisselle (100) a fini le lavage comporte les étapes consistant à :

- commander le ventilateur (120) afin qu'il fonctionne pendant une onzième durée prédéfinie une fois que le lave-vaisselle (100) a fini le lavage et avant la première durée prédéfinie quand l'agent d'avivage de la vaisselle est alimenté par le dispositif d'alimentation (180) ; commander le ventilateur (120) et le dispositif de chauffage (170) afin qu'ils fonctionnent pendant une douzième durée prédéfinie une fois que le lave-vaisselle (100) a fini le lavage et avant la troisième durée prédéfinie quand aucun agent d'avivage de la vaisselle n'est alimenté par le dispositif d'alimentation (180) ; et commander l'unité de détection d'humidité (140) afin qu'elle détecte l'humidité pendant la onzième durée prédéfinie ou la douzième durée prédéfinie.
5. Procédé de commande selon la revendication 1, dans lequel l'étape consistant à commander l'unité de détection d'humidité (140) afin qu'elle détecte une humidité une fois que le lave-vaisselle (100) a fini le lavage comporte les étapes consistant à :
- commander l'unité de détection d'humidité (140) afin qu'elle effectue une pluralité de détectations pour obtenir une pluralité de valeurs d'humidité initiales ; et traiter la pluralité de valeurs d'humidité initiales pour obtenir l'humidité, l'humidité étant une valeur intermédiaire ou une valeur moyenne de la pluralité de valeurs d'humidité initiales.
6. Procédé de commande selon la revendication 1, dans lequel, quand l'humidité est inférieure ou égale à 50 %, la première durée prédéfinie dure environ 170 minutes et la deuxième durée prédéfinie dure environ 10 minutes ; quand l'humidité est supérieure à 50 % et inférieure ou égale à 60 %, la première durée prédéfinie dure environ 140 minutes et la deuxième durée prédéfinie dure environ 10 minutes ; quand l'humidité est supérieure à 60 % et inférieure ou égale à 70 %, la première durée prédéfinie dure environ 110 minutes et la deuxième durée prédéfinie dure environ 10 minutes ; quand l'humidité est supérieure à 70 % et inférieure ou égale à 80 %, la première durée prédéfinie dure environ 80 minutes et la deuxième durée prédéfinie dure environ 10 minutes ; quand l'humidité est supérieure à 80 % et inférieure ou égale à 85 %, la première durée prédéfinie dure environ 40 minutes et la deuxième durée prédéfinie dure environ 20 minutes ; et quand l'humidité est supérieure à 85 %, la première durée prédéfinie dure environ 10 minutes et la deuxième durée prédéfinie dure environ 20 minutes.
7. Procédé de commande selon la revendication 1, dans lequel, quand l'humidité est inférieure ou égale

à 55 %, la troisième durée prédéfinie dure environ 170 minutes et la quatrième durée prédéfinie dure environ 10 minutes ; quand l'humidité est supérieure à 55 % et inférieure ou égale à 70 %, la troisième durée prédéfinie dure environ 110 minutes et la quatrième durée prédéfinie dure environ 20 minutes ; quand l'humidité est supérieure à 70 % et inférieure ou égale à 85 %, la troisième durée prédéfinie dure environ 60 minutes et la quatrième durée prédéfinie dure environ 20 minutes ; et quand l'humidité est supérieure à 85 %, la troisième durée prédéfinie dure environ 10 minutes et la quatrième durée prédéfinie dure environ 20 minutes.

8. Procédé de commande selon la revendication 1, dans lequel l'étape consistant à commander, en fonction de l'humidité, le ventilateur (120) et le dispositif de chauffage (170) afin qu'ils s'arrêtent de fonctionner pendant une troisième durée prédéfinie puis pour qu'ils fonctionnent pendant une quatrième durée prédéfinie une fois que le lave-vaisselle (100) a fini le lavage, quand aucun agent d'avivage de la vaisselle n'est alimenté par le dispositif d'alimentation (180) comporte les étapes consistant à :

déterminer si l'humidité est supérieure à un seuil d'humidité quand aucun agent d'avivage de la vaisselle n'est alimenté par le dispositif d'alimentation (180) ; commander, en fonction de l'humidité, le ventilateur (120) et le dispositif de chauffage (170) afin qu'ils s'arrêtent de fonctionner pendant la troisième durée prédéfinie, puis pour qu'ils fonctionnent pendant la quatrième durée prédéfinie une fois que le lave-vaisselle (100) a fini le lavage, quand l'humidité est supérieure au seuil d'humidité ; et commander, en fonction de l'humidité, le ventilateur (120) afin qu'il s'arrête de fonctionner pendant la troisième durée prédéfinie, puis pour qu'il fonctionne pendant la quatrième durée prédéfinie, et commander le dispositif de chauffage (170) pour qu'il s'arrête de chauffer une fois que le lave-vaisselle (100) a fini le lavage, quand l'humidité est inférieure ou égale au seuil d'humidité.

9. Lave-vaisselle (100), comportant :

un boîtier (110), doté d'une chambre de travail (111) et d'un conduit d'air (112) servant à maintenir la chambre de travail (111) en communication avec l'extérieur ; un dispositif de chauffage (170) ; un ventilateur (120), configuré pour établir un flux d'air traversant le dispositif de chauffage (170) et le conduit d'air (112) pour ventiler la chambre de travail (111) ;

une unité de détection d'humidité (140), configurée pour détecter une humidité de la chambre de travail (111) ;

un dispositif d'alimentation (180) pour l'agent d'avivage de la vaisselle ; et

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un processeur (150), configuré pour effectuer le procédé de commande selon l'une quelconque des revendications 1 à 8.

10. Support de stockage lisible par ordinateur ayant, stocké sur celui-ci, un programme informatique avec des instructions en mesure d'être exécutées pour amener un lave-vaisselle (100) tel que défini dans la revendication 9 à effectuer le procédé de commande selon l'une quelconque des revendications 1 à 8.

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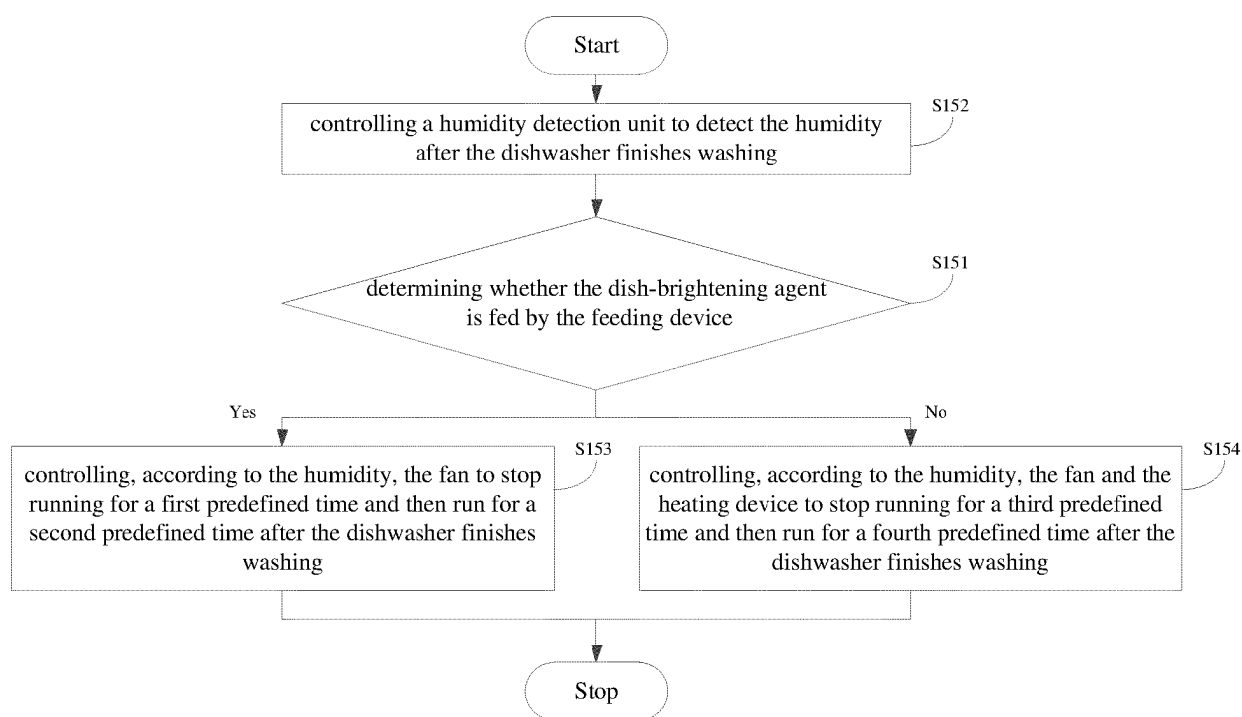


Fig. 1

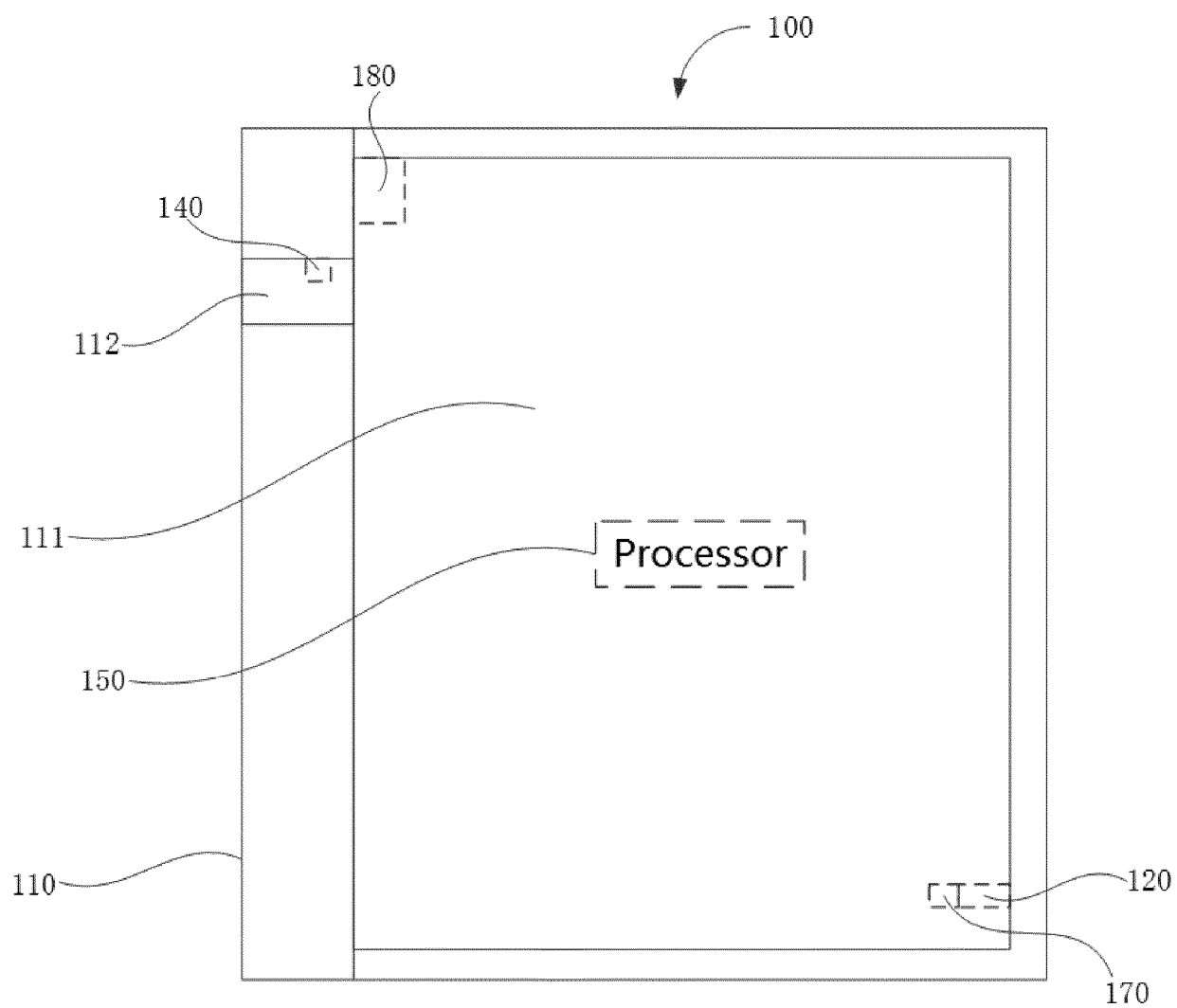


Fig. 2

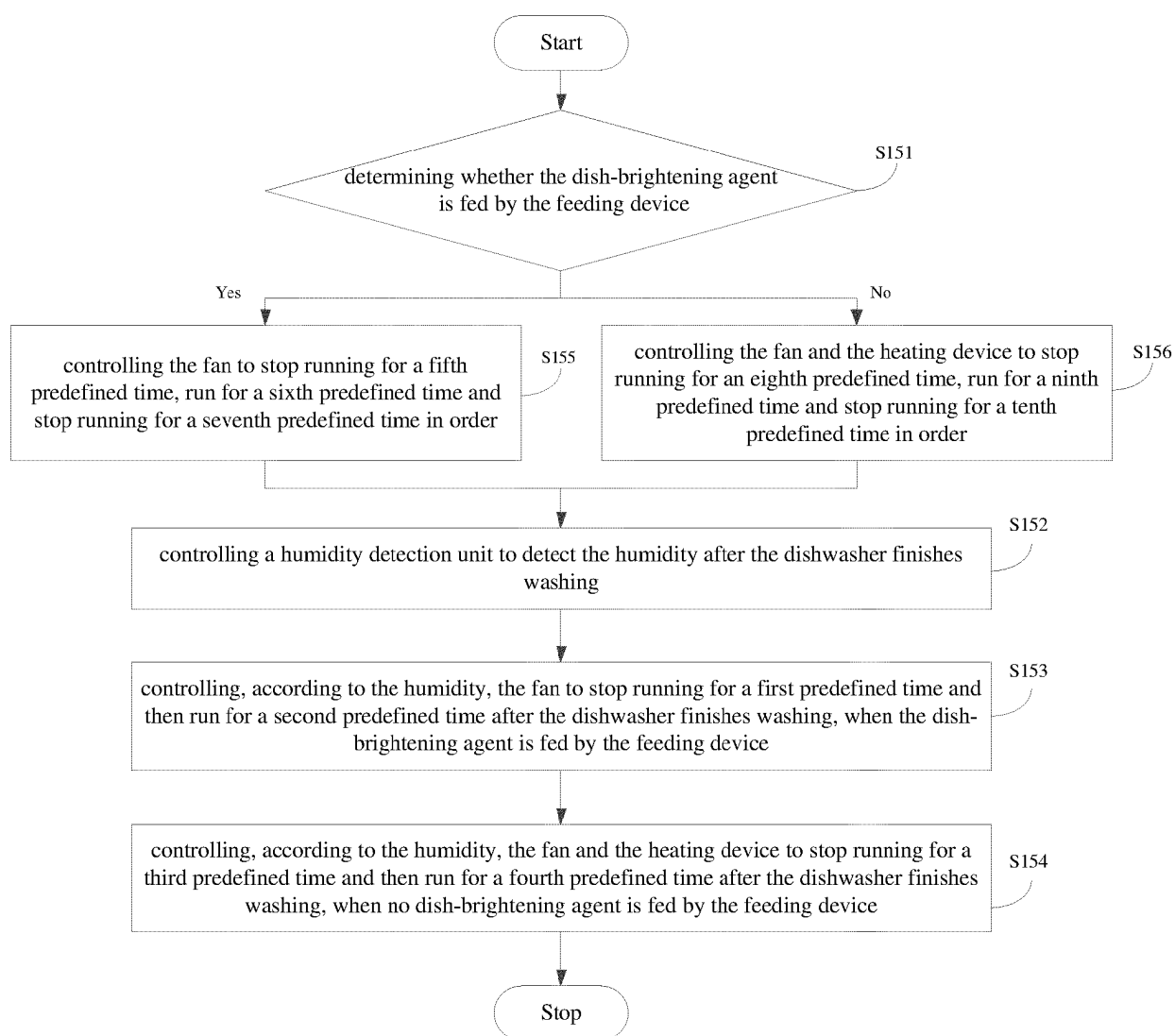


Fig. 3

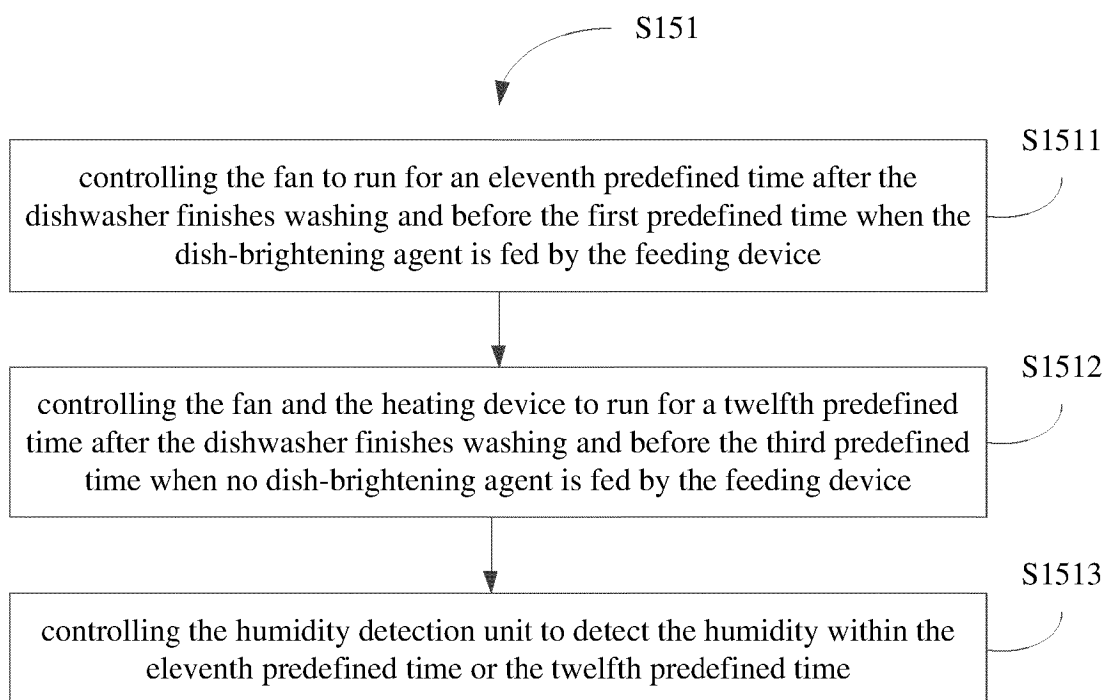


Fig. 4

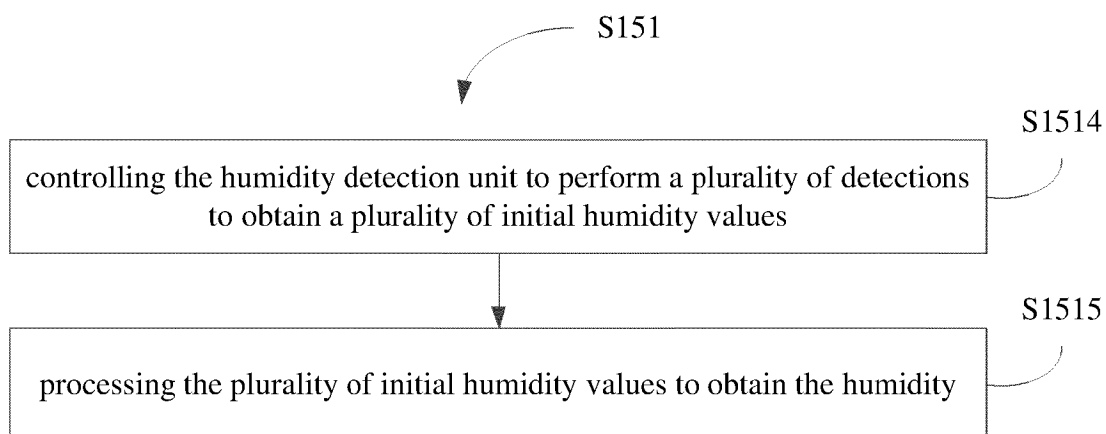


Fig. 5

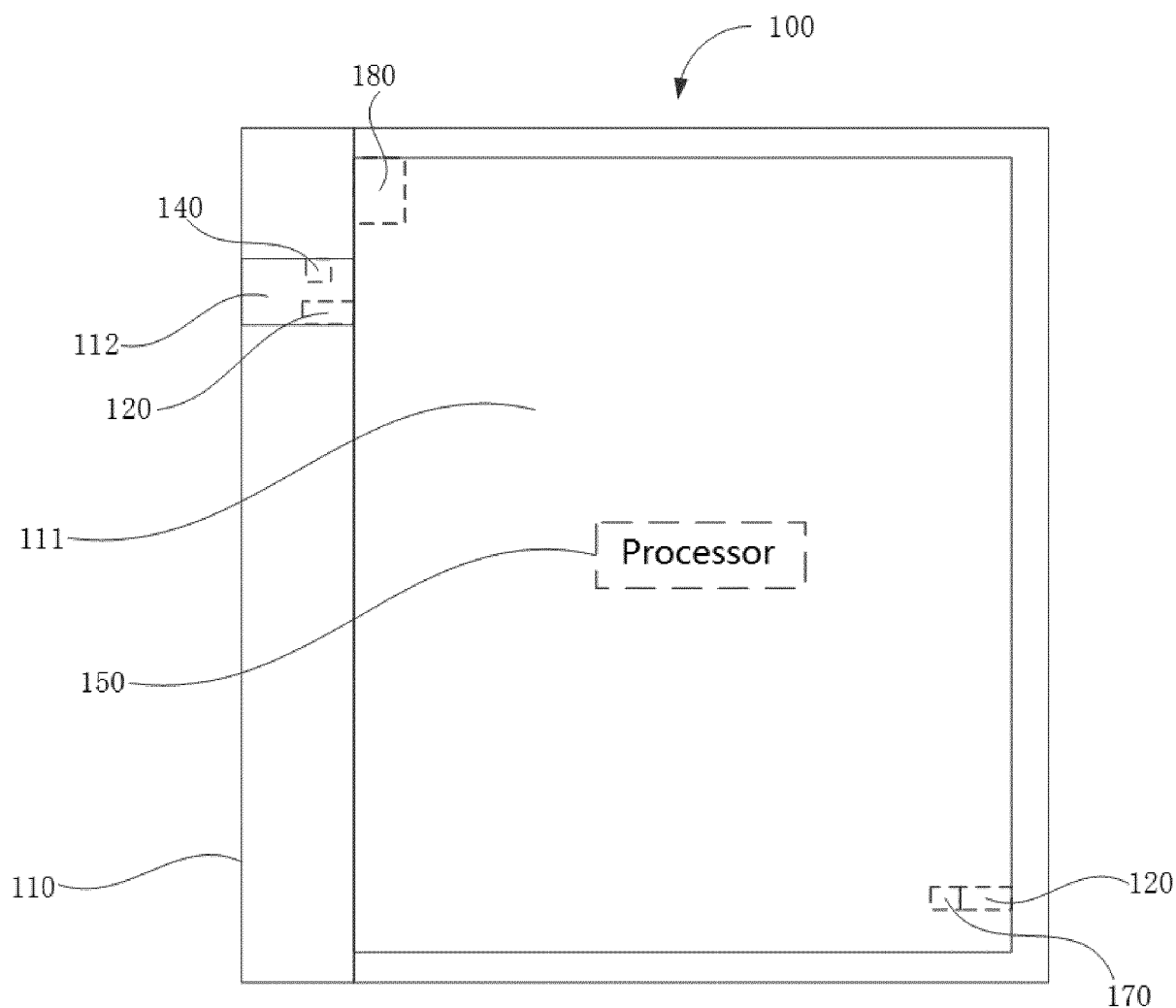


Fig. 6

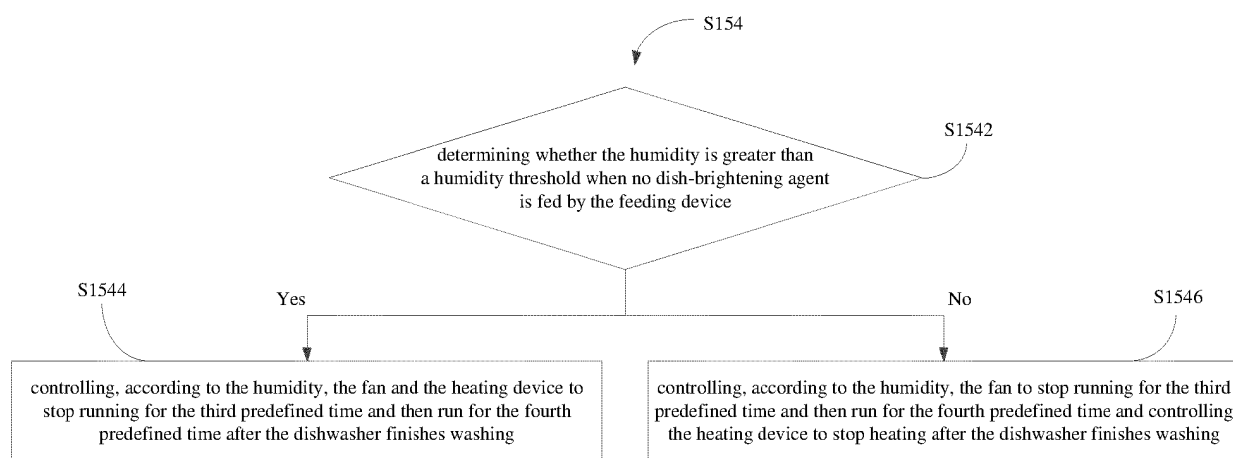


Fig. 7

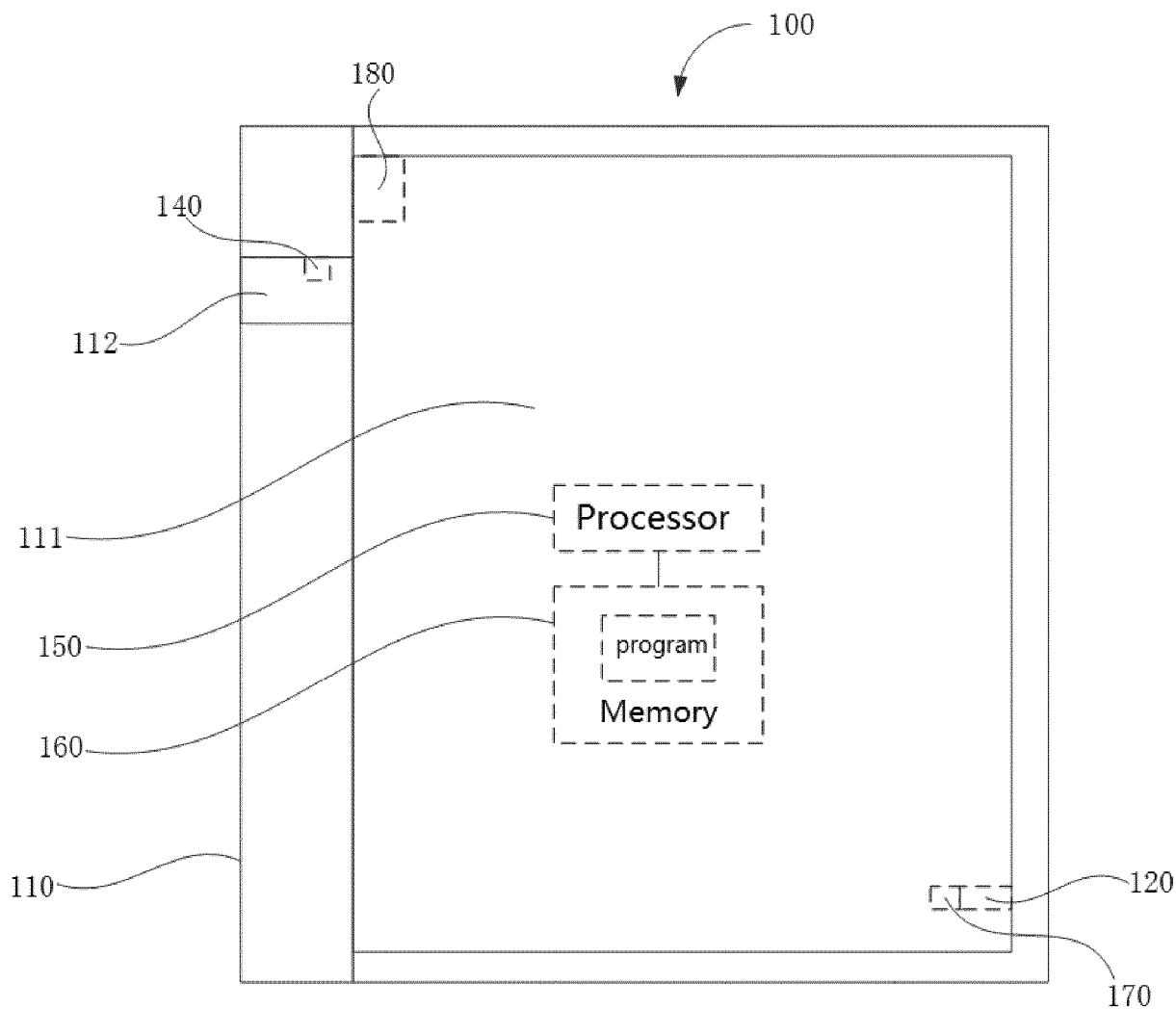


Fig. 8

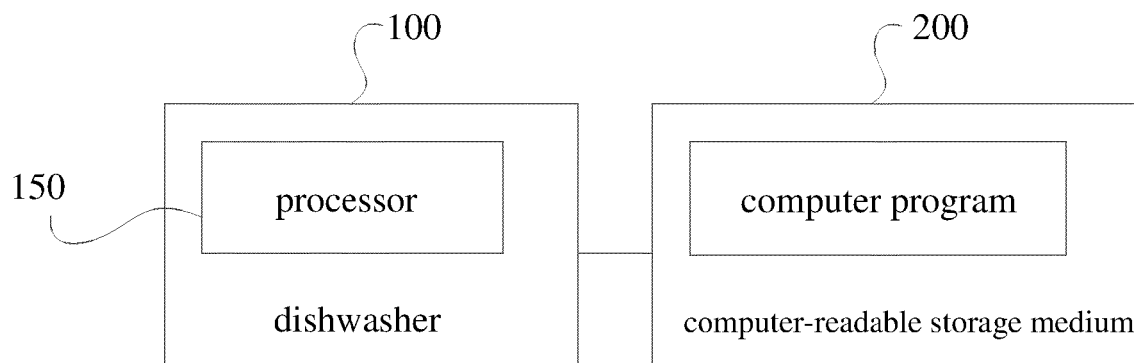


Fig. 9

REFERENCES CITED IN THE DESCRIPTION

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