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(54) **RANGE HOOD, RANGE HOOD CLEANING DEVICE AND CONTROL METHOD THEREFOR**

(57) A range hood, a cleaning device for a range hood and a method for controlling a cleaning device for a range hood are provided. The device includes a water pump configured to suck a cleaning fluid during working; a heating assembly communicated with the water pump; a temperature sensor provided corresponding to the heating assembly and configured to detect a temperature of the heating assembly; a nozzle communicated with the heating assembly; a control module coupled with the water pump, the heating assembly and the temperature sensor, respectively, in which the control module is configured to control the heating assembly to perform heating when

the range hood starts a cleaning procedure and control the water pump to work for a first preset period and to stop for a second preset period in each cleaning cycle after a temperature of the heating assembly reaches a first preset temperature for the first time, in which when the water pump works, the cleaning fluid is pumped into the heating assembly and heated in the heating assembly to form a steam mixture with a high temperature and a high pressure, and the steam mixture is sprayed from the nozzle to clean the range hood. With the device of the present disclosure, the effect of cleaning the range hood may be improved.

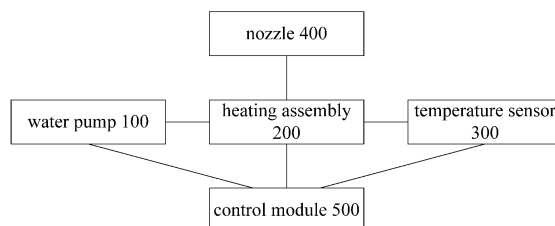


Fig. 1

Description

FIELD

[0001] The present disclosure relates to a field of household appliances, and more particularly to a cleaning device for a range hood, a range hood, a method for controlling a cleaning device for a range hood and a non-transitory computer-readable storage medium.

BACKGROUND

[0002] After a range hood has been used for a long time, greasy dirt may remain inside the range hood, thus resulting in a performance degradation (such as increased noise, reduced air volume, and increased power consumption). At the same time, bacterial and mold colonies may be generated easily inside the range hood. Therefore, the range hood needs to be cleaned after working for a period of time.

[0003] Currently, a hot water cleaning method and a steam cleaning method are known to be used for cleaning the range hoods on the market. The hot water cleaning method does not have a satisfactory effect of cleaning the greasy dirt due to its low temperature. Meanwhile, since no phase transformation happens to the water during heating, the volume of the water does not change much, on this basis the impact force for cleaning only depends on a flow rate provided by the pump, and thus a cleaning pressure is low. With the steam cleaning method, the temperature of the steam is reduced rapidly due to expansion work after the steam is sprayed for a certain distance. On one hand, the distance between the nozzle and a surface to be cleaned is required to be short. On the other hand, the cleaning temperature is still difficult to be maintained at a high level. Therefore, cleaning effects of the above mentioned cleaning methods of the range hoods still need to be improved.

SUMMARY

[0004] Embodiments of the present disclosure seek to solve at least one of the problems existing in the related art to at least some extent. Accordingly, a first object of the present disclosure is to provide a cleaning device for a range hood, which not only has a high cleaning pressure, but also has a high cleaning temperature and a slow temperature reduction rate, and thus the effect of cleaning the range hood may be improved.

[0005] A second object of the present disclosure is to provide a range hood.

[0006] A third object of the present disclosure is to provide a method for controlling a cleaning device for a range hood.

[0007] A fourth object of the present disclosure is to provide a non-temporary computer-readable storage medium.

[0008] In order to realize the above objects, an embod-

iment of a first aspect of the present disclosure provides a cleaning device for a range hood, including: a water pump configured to suck a cleaning fluid during working; a heating assembly communicated with the water pump; a temperature sensor provided corresponding to the heating assembly and configured to detect a temperature of the heating assembly; a nozzle communicated with the heating assembly; a control module coupled with the water pump, the heating assembly and the temperature sensor, respectively, wherein the control module is configured to control the heating assembly to perform heating when the range hood starts a cleaning procedure and control the water pump to work for a first preset period and to stop for a second preset period in each cleaning cycle after a temperature of the heating assembly reaches a first preset temperature for the first time, in which when the water pump works, the cleaning fluid is pumped into the heating assembly and heated in the heating assembly to form a steam mixture with a high temperature and a high pressure, and the steam mixture is sprayed from the nozzle to clean the range hood.

[0009] With the cleaning device for a range hood according to embodiments of the present disclosure, the control module is coupled with the water pump, the heating assembly and the temperature sensor, respectively. The control module is configured to control the heating assembly to perform heating when the range hood starts the cleaning procedure and control the water pump to work for the first preset period and to stop for the second preset period in each cleaning cycle after the temperature of the heating assembly reaches the first preset temperature for the first time. When the water pump works, the cleaning fluid is pumped into the heating assembly and heated in the heating assembly to form the steam mixture with a high temperature and a high pressure, and the steam mixture is sprayed from the nozzle to clean the range hood. Therefore, not only the cleaning pressure is increased, but also the cleaning temperature is increased and the temperature reduction rate is slow, thus significantly improving the effect of cleaning the range hoods.

[0010] In addition, the cleaning device for a range hood according to above embodiment of the present disclosure may also have following additional technical features.

[0011] Further, the heating assembly includes a liquid reservoir and a heating element provided corresponding to the liquid reservoir, in which an inlet of the liquid reservoir is communicated with the water pump and an outlet of the liquid reservoir is communicated with the nozzle.

[0012] Further, the control module includes: a timer configured to time the first preset period, the second preset period and a duration of the cleaning procedure; a power supply unit coupled with the heating element and the water pump, respectively, in which the power supply unit is configured to control the heating element to start heating by supplying power to the heating element, and control the water pump to work or stop by supplying power to the water pump or cutting off the power supply to the water pump.

[0013] Further, the cleaning device for a range hood further includes: a pressure relief valve disposed between the water pump and the inlet of the liquid reservoir and configured to release pressure when a pressure of the liquid reservoir is greater than a pressure threshold.

[0014] Further, the first preset temperature is in a range of 120 °C to 160 °C.

[0015] Further, the first preset period ranges from 1s to 3s, the second preset period ranges from 3s to 8s, and the duration of the cleaning procedure is in a range of 4 to 12 min.

[0016] In order to realize the above objects, an embodiment of a second aspect of the present disclosure provides a range hood including the cleaning device according to embodiments of the first aspect of the present disclosure.

[0017] With the range hood according to embodiments of the present disclosure, the cleaning device not only has a high cleaning pressure, but also has a high temperature and a slow temperature reduction rate, thus achieving a good effect of cleaning the range hood.

[0018] In order to realize the above objects, an embodiment of a third aspect of the present disclosure provides a method for controlling a cleaning device for a range hood, in which the cleaning device includes a water pump, a heating assembly, a temperature sensor and a nozzle, the water pump is configured to suck a cleaning fluid during working, the heating assembly is communicated with the water pump, the temperature sensor is provided corresponding to the heating assembly and is configured to detect a temperature of the heating assembly, the nozzle is communicated with the heating assembly, and the method includes: controlling the heating assembly to perform heating when the range hood starts a cleaning procedure; controlling the water pump to work for a first preset period and to stop for a second preset period in each cleaning cycle after a temperature of the heating assembly reaches a first preset temperature for the first time, in which when the water pump works, the cleaning fluid is pumped into the heating assembly and heated in the heating assembly to form a steam mixture with a high temperature and a high pressure, and the steam mixture is sprayed from the nozzle to clean the range hood.

[0019] With the method for controlling a cleaning device for a range hood according to embodiments of the present disclosure, the heating assembly is controlled to perform heating when the range hood starts the cleaning procedure and the water pump is controlled to work for the first preset period and to stop for the second preset period in each cleaning cycle after the temperature of the heating assembly reaches the first preset temperature for the first time. When the water pump works, the cleaning fluid is pumped into the heating assembly and heated in the heating assembly to form the steam mixture with a high temperature and a high pressure, and the steam mixture is sprayed from the nozzle to clean the range hood. Therefore, not only the cleaning pressure is in-

creased, but also the cleaning temperature is increased and the temperature reduction rate is slow, thus significantly improving the effect of cleaning the range hoods.

[0020] In addition, the method for controlling a cleaning device for a range hood according to above embodiment of the present disclosure may also have following additional technical features.

[0021] Specifically, the first preset temperature is in a range of 120 °C to 160 °C.

[0022] Specifically, the first preset period ranges from 1s to 3s, the second preset period ranges from 3s to 8s, and the duration of the cleaning procedure is in a range of 4 to 12 min.

[0023] In order to realize the above objects, an embodiment of a fourth aspect of the present disclosure provides a non-transitory computer-readable storage medium stored therein a computer program, when executed by a processor of a terminal, cause the terminal to perform a method for controlling a cleaning device for a range hood according to embodiments of the third aspect of the present disclosure.

[0024] With the non-transitory computer-readable storage medium according to embodiments of the present disclosure, the effect of cleaning the range hood may be significantly improved by performing the computer program stored with the medium.

BRIEF DESCRIPTION OF THE DRAWINGS

[0025]

Fig. 1 is a block diagram of a cleaning device for a range hood according to an embodiment of the present disclosure;

Fig. 2 is a schematic diagram of a cleaning device for a range hood according to an embodiment of the present disclosure;

Fig. 3 is a brief schematic diagram of a cleaning device for a range hood according to an embodiment of the present disclosure;

Fig. 4 is a control graph of a cleaning device for a range hood according to an embodiment of the present disclosure;

Fig. 5 is a flow chart of a method for controlling a cleaning device for a range hood according to an embodiment of the present disclosure.

DETAILED DESCRIPTION

[0026] Embodiments of the present disclosure will be described in detail and examples of embodiments are illustrated in the drawings. The same or similar elements and the elements having same or similar functions are denoted by like reference numerals throughout the descriptions. Embodiments described herein with reference to drawings are explanatory, serve to explain the present disclosure, and are not construed to limit embodiments of the present disclosure.

[0027] Hereinafter, a range hood, a cleaning device for a range hood and a method for controlling the same according to embodiments of the present disclosure will be described with reference to the accompanying drawings.

[0028] Fig. 1 is a block diagram of a cleaning device for a range hood according to an embodiment of the present disclosure.

[0029] As shown in Fig. 1, a cleaning device for a range hood according to embodiments of the present disclosure includes a water pump 100, a heating assembly 200, a temperature sensor 300, a nozzle 400 and a control module 500.

[0030] Specifically, the water pump 100 is configured to suck a cleaning fluid during working; the heating assembly 200 is communicated with the water pump 100; the temperature sensor 300 is provided corresponding to the heating assembly 200 and is configured to detect a temperature of the heating assembly 200; the nozzle 400 is communicated with the heating assembly 200; the control module 500 is coupled with the water pump 100, the heating assembly 200 and the temperature sensor 300, respectively, in which the control module 500 is configured to control the heating assembly 200 to perform heating when the range hood starts a cleaning procedure and control the water pump 100 to work for a first preset period and to stop for a second preset period in each cleaning cycle after a temperature of the heating assembly 200 reaches a first preset temperature for the first time, in which when the water pump 100 works, the cleaning fluid is pumped into the heating assembly 200 and heated in the heating assembly 200 to form a steam mixture with a high temperature and a high pressure, and the steam mixture is sprayed from the nozzle 400 to clean the range hood.

[0031] As shown in Fig. 2, in an embodiment of the present disclosure, the cleaning device further includes a water container 600. The water container 600 is used to store a cleaning fluid, such as water, greasy dirt decomposing liquid and a combination thereof. As shown in Fig. 3, the inlet of the water pump 100 is communicated with the water container 600 via a first pipe 01 so as to suck the cleaning fluid from the water container 600 during working.

[0032] As shown in Figs. 2 and 3, the heating assembly 200 includes a liquid reservoir 210 and a heating element 220 provided corresponding to the liquid reservoir 210, in which an inlet of the liquid reservoir 210 is communicated with the water pump 100 via a second pipe 02 and an outlet of the liquid reservoir 210 is communicated with a joint 211 via a third pipe 03 so as to communicate with the nozzle 400.

[0033] As shown in Fig. 2, the cleaning device for a range hood further includes a pressure relief valve 700. The pressure relief valve 700 is disposed between the water pump 100 and the inlet of the liquid reservoir 210 and configured to release pressure when a pressure of the liquid reservoir 210 is greater than a pressure threshold. In a specific embodiment of the present disclosure,

the pressure relief valve 700 is integrated in the water pump 100 or at an outlet of the water pump 100.

[0034] As shown in Fig. 3, the control module 500 is formed on a control board. The control module 500 is coupled with the water pump 100 via a first power line 04 and with the heating assembly 200 via a second power line 05 so as to supply power to the water pump 100 and the heating assembly 200. The control module 500 is also coupled with the temperature sensor 300 via a conductor 06 so as to supply power to the temperature sensor 300 and receive a temperature detected by the temperature sensor 300.

[0035] In an embodiment of the present disclosure, the control module 500 includes a timer and a power supply unit. Specifically, the timer is configured to time the first preset period, the second preset period and a duration of the cleaning procedure. The power supply unit is coupled with the heating element 220 and the water pump 100, respectively. Specifically, the power supply unit is configured to control the heating element 220 to start heating by supplying power to the heating element 220, and control the water pump 100 to work or stop by supplying power to the water pump 100 or cutting off the power supply to the water pump 100.

[0036] Specifically, when the range hood starts a cleaning procedure, the power supply unit of the control module 500 controls the heating element 220 to start heating the liquid reservoir 210 by supplying power to the heating element 220. As shown in Fig. 4, the heating element 220 remains working during the whole cleaning procedure.

[0037] The temperature sensor 300 may detect the temperature of the heating element 220 or the liquid reservoir 210. As shown in Fig. 4, when the temperature of the heating assembly 200 reaches the first preset temperature, i.e., temperature t , for the first time, the power supply unit of the control module 500 supplies power to the water pump 100 to control the water pump to work so as to suck the cleaning fluid and pump it to the liquid reservoir 210. Since the temperature of the heating assembly 200 reaches the first preset temperature, i.e., the temperature of the liquid reservoir 210 is relatively high, the cleaning fluid may be vaporized and expanded in the instant once it is pumped into the liquid reservoir 210, to generate a high pressure vapour and a high temperature liquid cleaning fluid, i.e., to form a steam mixture. As shown in Fig. 2, the nozzle 400 includes a plurality of orifices 410, and the high pressure vapour and the high temperature liquid cleaning fluid may be pushed by a high pressure to spray to a position, which needs to be cleaned, of the range hood via the plurality of orifices 410. The heat carried by the high temperature liquid cleaning fluid may reduce the heat loss of the vapour during spraying. Moreover, the vapour has a relatively high impact force, i.e., has a high cleaning pressure, and thus effective cleaning of the range hood may be realized by the steam mixture. As shown in Fig. 4, the cleaning pressure, i.e., the pressure of the liquid reservoir 210,

may be increased as the cleaning fluid is heated in the instant, and may be decreased as the steam mixture is sprayed. Specifically, the first preset temperature is a temperature at which the cleaning fluid may be vaporized and expanded in the instant once it is pumped into the liquid reservoir 210 to generate the high pressure vapour and high temperature liquid cleaning fluid. In an embodiment of the present disclosure, the first preset temperature is in a range of 120 to 160 °C.

[0038] It should be understood that, the temperature of the liquid reservoir 210 may be decreased as the cleaning fluid keeps being pumped into the liquid reservoir 210 and absorbs heat. As shown in Fig. 4, after the water pump 100 works for a while, the temperature of the heating assembly 200 decreases. When the temperature of the heating assembly 200 is relatively low, the cleaning pressure is not enough to meet the cleaning requirements. Therefore, in embodiments of the present disclosure, the water pump 100 stops working after the water pump 100 works for the first preset period T1 timed by the timer, such that the temperature of the heating assembly may be increased again. After the water pump remains stop for the second preset period T2 timed by the timer, the water pump 100 may be controlled to be work again, such that the cleaning pressure is increased to spray the high pressure vapour and the high temperature liquid cleaning fluid to the position, which needs to be cleaned, inside the range hood, thus realizing the cleaning for the range hood.

[0039] Moreover, as shown in Fig. 4, a time period T from the time at which the temperature of the heating assembly 200 reaches the first preset temperature to the time at which the cleaning procedure is finished includes a plurality of cleaning cycles. Each cleaning cycle may be divided into a first preset period T1 and a second preset period T2. The water pump 100 is controlled to work in the first preset period T1 and to stop in the second preset period T2. In other words, processes that the water pump 100 works for the first preset period T1 and stops for the second preset period T2 may be performed circularly, so as to realize the pulse washing of the range hood. In a specific embodiment of the present disclosure, the first preset period ranges from 1s to 3s, the second preset period ranges from 3s to 8s, and the duration of the cleaning procedure is in a range of 4 to 12 min. The whole cleaning procedure may include 20 to 160 cleaning cycles, i.e., the pulse washing may be performed 20 to 160 times in the whole cleaning procedure.

[0040] In a further embodiment of the present disclosure, the water pump 100 is controlled to work once the temperature of the heating assembly 200 reaches the first preset temperature and to stop once a working duration of the water pump 100 reaches the first preset period. In this way, there is no need to time the second preset period, and the cleaning cycle may be determined according to the temperature of the heating assembly 200 and the first preset period.

[0041] With the cleaning device for range hood accord-

ing to embodiments of the present disclosure, the control module is coupled with the water pump, the heating assembly and the temperature sensor, respectively. The control module is configured to control the heating assembly to perform heating when the range hood starts the cleaning procedure and control the water pump to work for the first preset period and to stop for the second preset period in each cleaning cycle after the temperature of the heating assembly reaches the first preset temperature for the first time. When the water pump works, the cleaning fluid is pumped into the heating assembly and heated in the heating assembly to form the steam mixture with a high temperature and a high pressure, and the steam mixture is sprayed from the nozzle to clean the range hood. Therefore, not only the cleaning pressure is increased, but also the cleaning temperature is increased and the temperature reduction rate is slow, and thus the effect of cleaning the range hoods is significantly improved.

[0042] In embodiments of the present disclosure, a range hood is also provided corresponding to above embodiments.

[0043] In embodiments of the present disclosure, the range hood includes the cleaning device provided in above embodiments of the present disclosure, such that specific embodiments of the range hood may refer to above embodiments which are not described in detail herein to avoid redundancy.

[0044] With the range hood according to embodiments of the present disclosure, the cleaning device only not has a high cleaning pressure, but also has a high cleaning temperature and a slow temperature reduction rate, and thus a good cleaning effect is realized.

[0045] In embodiments of the present disclosure, a method for controlling the cleaning device for a range hood is also provided corresponding to above embodiments.

[0046] With reference to Figs. 1 to 3, the cleaning device according to embodiments of the present disclosure includes a water pump, a heating assembly, a temperature sensor and a nozzle. The water pump is configured to suck a cleaning fluid during working. The heating assembly is communicated with the water pump. The temperature sensor is provided corresponding to the heating assembly and configured to detect a temperature of the heating assembly. The nozzle is communicated with the heating assembly.

[0047] As shown in Fig. 5, in embodiments of the present disclosure, the method for controlling a cleaning device for a range hood includes following steps.

[0048] At S1, the heating assembly is controlled to perform heating when the range hood starts a cleaning procedure.

[0049] At S2, the water pump is controlled to work for a first preset period and to stop for a second preset period in each cleaning cycle after a temperature of the heating assembly reaches a first preset temperature for the first time, in which when the water pump works, the cleaning

fluid is pumped into the heating assembly and heated in the heating assembly to form a steam mixture with a high temperature and a high pressure, and the steam mixture is sprayed from the nozzle to clean the range hood.

[0050] In an embodiment of the present disclosure, the heating assembly includes a liquid reservoir and a heating element provided corresponding to the liquid reservoir, in which an inlet of the liquid reservoir is communicated with the water pump and an outlet of the liquid reservoir is communicated with the nozzle.

[0051] Specifically, when the range hood starts a cleaning procedure, the heating element is supplied with power to start heating the liquid reservoir. As shown in Fig. 4, the heating element remains working during the whole cleaning procedure.

[0052] The temperature sensor may detect the temperature of the heating element or the liquid reservoir. As shown in Fig. 4, when the temperature of the heating assembly reaches the first preset temperature, i.e., temperature t , for the first time, the power supply unit of the control module supplies power to the water pump to control the water pump to work so as to suck the cleaning fluid and pump it to the liquid reservoir. Since the temperature of the heating assembly reaches the first preset temperature, i.e., the temperature of the liquid reservoir is relatively high, the cleaning fluid may be vaporized and expanded in the instant once it is pumped into the liquid reservoir, to generate a high pressure vapour and a high temperature liquid cleaning fluid, i.e., to form a steam mixture. As shown in Fig. 2, the nozzle includes a plurality of orifices, and the high pressure vapour and the high temperature liquid cleaning fluid may be sprayed under a high pressure to a position, which needs to be cleaned, of the range hood via the plurality of orifices. The heat carried by the high temperature liquid cleaning fluid may reduce the heat loss of the vapour during spraying. Moreover, the vapour has a relatively high impact force, i.e., has a high cleaning pressure, and thus effective cleaning of the range hood may be realized by the steam mixture. As shown in Fig. 4, the cleaning pressure, i.e., the pressure of the liquid reservoir, may be increased as the cleaning fluid is heated in the instant, and may be decreased as the steam mixture is sprayed. Specifically, the first preset temperature is a temperature at which the cleaning fluid may be vaporized and expanded in the instant once it is pumped into the liquid reservoir to generate the high pressure vapour and high temperature liquid cleaning fluid. In an embodiment of the present disclosure, the first preset temperature is in a range of 120 to 160 °C.

[0053] It should be understood that, the temperature of the liquid reservoir may be decreased as the cleaning fluid keeps being pumped into the liquid reservoir and absorbs heat. As shown in Fig. 4, after the water pump works for a while, the temperature of the heating assembly decreases. When the temperature of the heating assembly is relatively low, the cleaning pressure is not enough to meet the cleaning requirements. Therefore, in

embodiments of the present disclosure, the water pump stops working after the water pump works for the first preset period T1 timed by the timer, such that the temperature of the heating assembly may be increased again. After the water pump remains stop for the second preset period T2 timed by the timer, the water pump may be controlled to be work again, such that the cleaning pressure is increased to spray the high pressure vapour and the high temperature liquid cleaning fluid to the position, which needs to be cleaned, inside the range hood, thus realizing the cleaning for the range hood.

[0054] Moreover, as shown in Fig. 4, a time period T from the time at which the temperature of the heating assembly reaches the first preset temperature to the time at which the cleaning procedure is finished includes a plurality of cleaning cycles. Each cleaning cycle may be divided into a first preset period T1 and a second preset period T2. The water pump is controlled to work in the first preset period T1 and to stop in the second preset period T2. In other words, processes that the water pump works for the first preset period T1 and stops for the second preset period T2 may be performed circularly, so as to realize the pulse washing of the range hood. In a specific embodiment of the present disclosure, the first preset period ranges from 1s to 3s, the second preset period ranges from 3s to 8s, and the duration of the cleaning procedure is in a range of 4 to 12 min. The whole cleaning procedure may include 20 to 160 cleaning cycles, i.e., the pulse washing may be performed 20 to 160 times in the whole cleaning procedure.

[0055] In a further embodiment of the present disclosure, the water pump is controlled to work once the temperature of the heating assembly reaches the first preset temperature and to stop once a working duration of the water pump reaches the first preset period. In this way, there is no need to time the second preset period, and the cleaning cycle may be determined according to the temperature of the heating assembly and the first preset period.

[0056] With the method for controlling a cleaning device for a range hood according to embodiments of the present disclosure, the heating assembly is controlled to perform heating when the range hood starts the cleaning procedure and the water pump is controlled to work for the first preset period and to stop for the second preset period in each cleaning cycle after the temperature of the heating assembly reaches the first preset temperature for the first time. When the water pump works, the cleaning fluid is pumped into the heating assembly and heated in the heating assembly to form the steam mixture with a high temperature and a high pressure, and the steam mixture is sprayed from the nozzle to clean the range hood. Therefore, not only the cleaning pressure is increased, but also the cleaning temperature is increased and the temperature reduction rate is slow, thus the effect of cleaning the range hoods is significantly improved.

[0057] In embodiments of the present disclosure, a non-transitory computer-readable storage medium is al-

so provided corresponding to above embodiments.

[0058] The non-transitory computer-readable storage medium according to an embodiment of the present disclosure stored therein a computer program, when executed by a processor of a terminal, cause the terminal to perform a method for controlling a cleaning device for a range hood according above embodiments of the present disclosure.

[0059] With the non-transitory computer-readable storage medium, the effect of cleaning the range hood may be significantly improved by performing the computer program stored with the medium.

[0060] In the specification, it is to be understood that terms such as "central", "longitudinal", "lateral", "length", "width", "thickness", "upper", "lower", "front", "rear", "left", "right", "vertical", "horizontal", "top", "bottom", "inner", "outer", "clockwise" and "counterclockwise" should be construed to refer to the orientation as described or as shown in the drawings under discussion. These relative terms are for convenience of description and do not require that the present disclosure be constructed or operated in a particular orientation.

[0061] In addition, terms such as "first" and "second" are used herein for purposes of description and are not intended to indicate or imply relative importance or significance or to imply the number of indicated technical features. Thus, the feature defined with "first" and "second" may include one or more of this feature(s). In the description of the present disclosure, unless specified otherwise, "a plurality of" means two or more.

[0062] In the present disclosure, unless specified or limited otherwise, the terms "mounted", "communicated", "coupled", "fixed" and the like are used broadly, and may be, for example, fixed connections, detachable connections, or integral connections; may also be mechanical or electrical connections; may also be direct connections or indirect connections via intervening structures; may also be inner communications of two elements, which can be understood by those skilled in the art according to specific situations.

[0063] In the present disclosure, unless specified or limited otherwise, a structure in which a first feature is "on" or "below" a second feature may include an embodiment in which the first feature is in direct contact with the second feature, and may also include an embodiment in which the first feature and the second feature are not in direct contact with each other, but are contacted via an additional feature formed therebetween. Furthermore, a first feature "on," "above," or "on top of" a second feature may include an embodiment in which the first feature is right or obliquely "on," "above," or "on top of" the second feature, or just means that the first feature is at a height higher than that of the second feature; while a first feature "below," "under," or "on bottom of" a second feature may include an embodiment in which the first feature is right or obliquely "below," "under," or "on bottom of" the second feature, or just means that the first feature is at a height lower than that of the second feature.

[0064] Reference throughout this specification to "an embodiment," "some embodiments," "one embodiment", "another example," "an example," "a specific example," or "some examples," means that a particular feature, architecture, material, or characteristic described in connection with the embodiment or example is included in at least one embodiment or example of the present disclosure. Thus, the appearances of the phrases such as "in some embodiments," "in one embodiment", "in an embodiment", "in another example," "in an example," "in a specific example," or "in some examples," in various places throughout this specification are not necessarily referring to the same embodiment or example of the present disclosure. Furthermore, the particular features, architectures, materials, or characteristics may be combined in any suitable manner in one or more embodiments or examples.

[0065] Although explanatory embodiments have been shown and described, it would be appreciated by those skilled in the art that the above embodiments cannot be construed to limit the present disclosure, and changes, alternatives, and modifications can be made in the embodiments without departing from spirit, principles and scope of the present disclosure.

Claims

1. A cleaning device for a range hood, comprising:

a water pump configured to suck a cleaning fluid during working;
a heating assembly communicated with the water pump;
a temperature sensor provided corresponding to the heating assembly and configured to detect a temperature of the heating assembly;
a nozzle communicated with the heating assembly;
a control module coupled with the water pump, the heating assembly and the temperature sensor, respectively, wherein the control module is configured to control the heating assembly to perform heating when the range hood starts a cleaning procedure and control the water pump to work for a first preset period and to stop for a second preset period in each cleaning cycle after a temperature of the heating assembly reaches a first preset temperature for the first time, in which when the water pump works, the cleaning fluid is pumped into the heating assembly and heated in the heating assembly to form a steam mixture with a high temperature and a high pressure, and the steam mixture is sprayed from the nozzle to clean the range hood.

2. The cleaning device according to claim 1, wherein the heating assembly comprises a liquid reservoir

and a heating element provided corresponding to the liquid reservoir, in which an inlet of the liquid reservoir is communicated with the water pump and an outlet of the liquid reservoir is communicated with the nozzle.

3. The cleaning device according to claim 2, wherein the control module comprises:

a timer configured to time the first preset period, the second preset period and a duration of the cleaning procedure;
a power supply unit coupled with the heating element and the water pump, respectively, wherein the power supply unit is configured to control the heating element to start heating by supplying power to the heating element, and control the water pump to work or stop by supplying power to the water pump or cutting off the power supply to the water pump.

4. The cleaning device according to claim 3, further comprising:

a pressure relief valve disposed between the water pump and the inlet of the liquid reservoir and configured to release pressure when a pressure of the liquid reservoir is greater than a pressure threshold.

5. The cleaning device according to any one of claims 1 to 4, wherein the first preset temperature is in a range of 120 °C to 160 °C.

6. The cleaning device according to claim 5, wherein the first preset period ranges from 1s to 3s, the second preset period ranges from 3s to 8s, and the duration of the cleaning procedure is in a range of 4 to 12 min.

7. A range hood, comprising a cleaning device according to any one of claims 1-6.

8. A method for controlling a cleaning device for a range hood, wherein the cleaning device comprises a water pump, a heating assembly, a temperature sensor and a nozzle, the water pump is configured to suck a cleaning fluid during working, the heating assembly is communicated with the water pump, the temperature sensor is provided corresponding to the heating assembly and is configured to detect a temperature of the heating assembly, the nozzle is communicated with the heating assembly, and the method comprises:

controlling the heating assembly to perform heating when the range hood starts a cleaning procedure;
controlling the water pump to work for a first preset period and to stop for a second preset period

in each cleaning cycle after a temperature of the heating assembly reaches a first preset temperature for the first time, in which when the water pump works, the cleaning fluid is pumped into the heating assembly and heated in the heating assembly to form a steam mixture with a high temperature and a high pressure, and the steam mixture is sprayed from the nozzle to clean the range hood.

9. The method according to claim 8, wherein the first preset temperature is in a range of 120 °C to 160 °C.

10. The method according to claim 9, wherein the first preset period ranges from 1s to 3s, the second preset period ranges from 3s to 8s, and the duration of the cleaning procedure is in a range of 4 to 12 min.

11. A non-transitory computer-readable storage medium stored therein a computer program, when executed by a processor of a terminal, cause the terminal to perform a method for controlling a cleaning device for a range hood according to any one of claims 8-10.

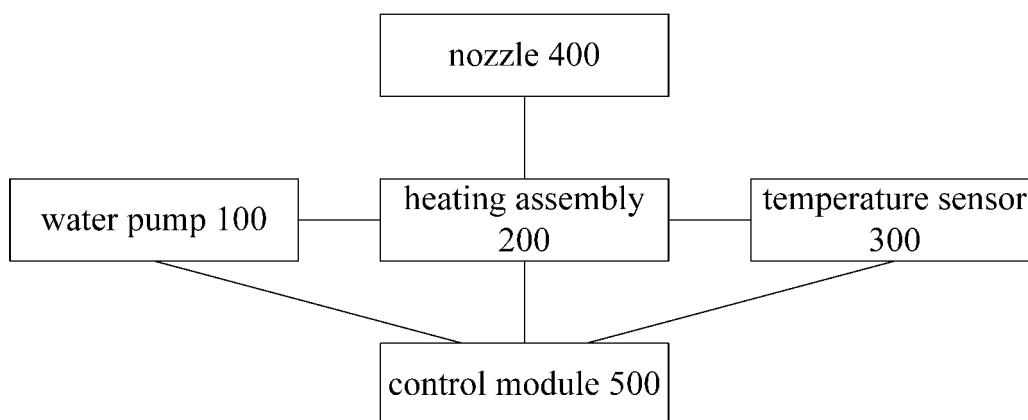


Fig. 1

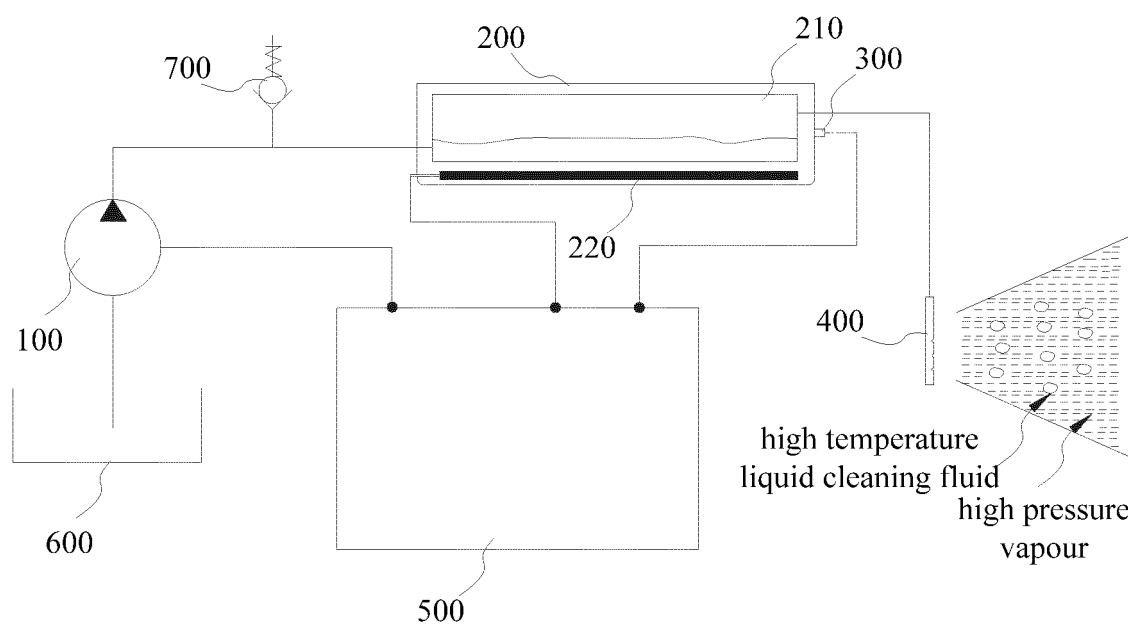


Fig. 2

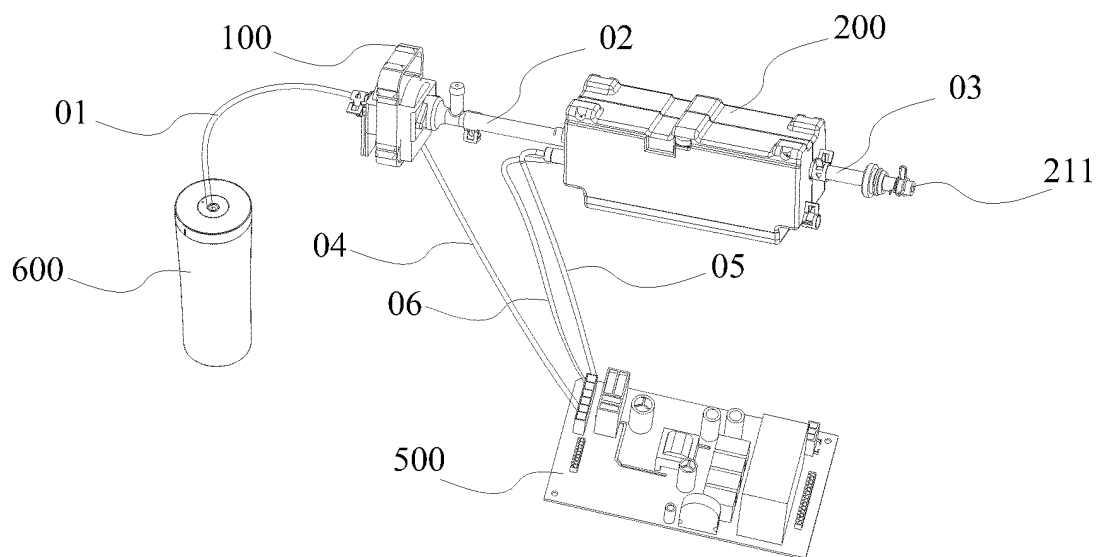


Fig. 3

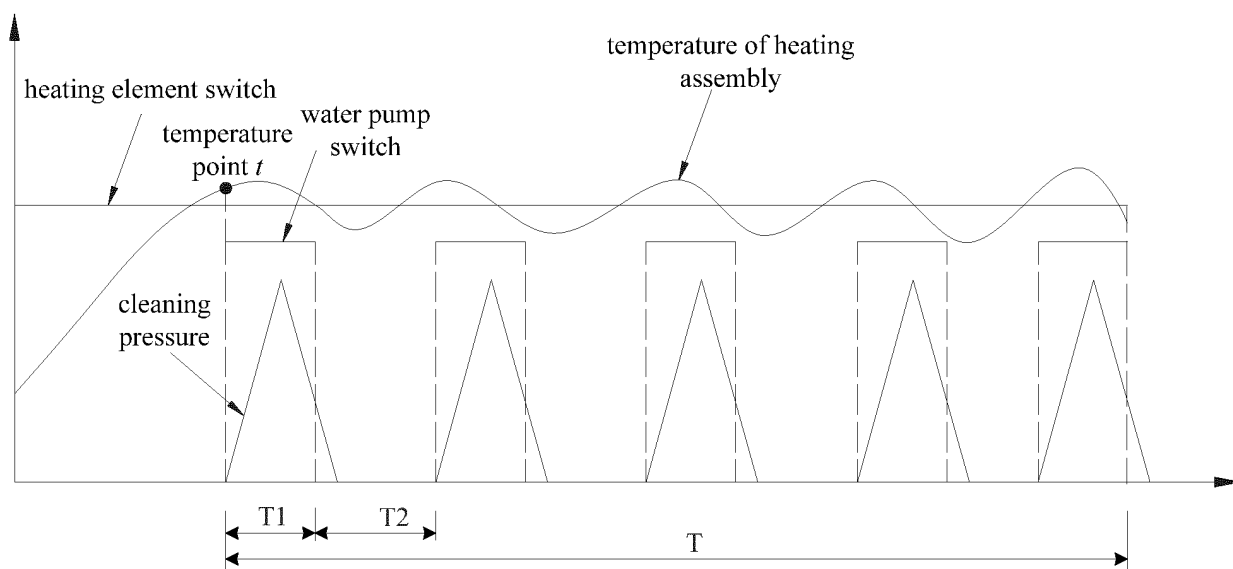


Fig. 4

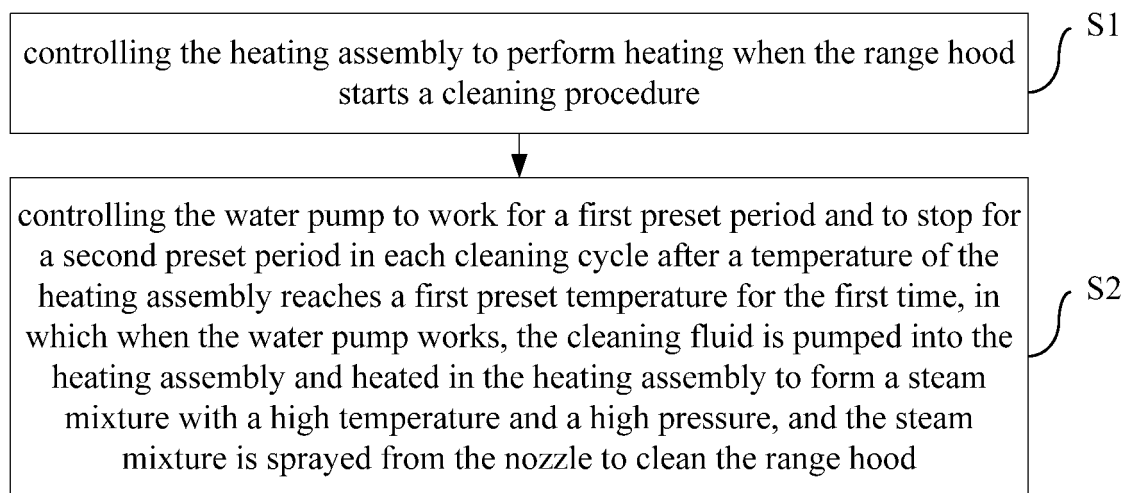


Fig. 5

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2018/080786

A. CLASSIFICATION OF SUBJECT MATTER														
F24C 15/20 (2006.01) i; B08B 3/02 (2006.01) i														
According to International Patent Classification (IPC) or to both national classification and IPC														
B. FIELDS SEARCHED														
Minimum documentation searched (classification system followed by classification symbols)														
F24C, B08B														
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched														
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)														
CNTXT, VEN, CPRSABS, CNKI: 烟机, 清洗, 水泵, 加热, 温度, 传感器, 预设, 预定, 时间, hood, clean+, pump+, heat+, temperature, sensor, preinstall, time														
C. DOCUMENTS CONSIDERED TO BE RELEVANT														
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.												
PX	CN 107620997 A (GUANGDONG MIDEA KITCHEN APPLIANCES MANUFACTURING CO., LTD. et al.), 23 January 2018 (23.01.2018), claims 1-11, description, paragraphs [0004]-[0060], and figures 1-5	1-11												
X	CN 106196203 A (VATTI CORPORATION LIMITED), 07 December 2016 (07.12.2016), description, paragraphs [0004]-[0014], and figures 1-3	1-11												
X	CN 204730287 U (VATTI CORPORATION LIMITED), 28 October 2015 (28.10.2015), description, paragraphs [0004]-[0014], and figures 1-3	1-11												
A	CN 2252299 Y (WANQUAN ENTERPRISE CO., LTD.), 16 April 1997 (16.04.1997), entire document	1-11												
A	CN 2926880 Y (SHANDONG HUANGGUAN KITCHEN CO., LTD.), 25 July 2007 (25.07.2007), entire document	1-11												
A	CN 205518733 U (BEIJING JINGKANG ZHONGHE TECHNOLOGY CO., LTD.), 31 August 2016 (31.08.2016), entire document	1-11												
A	FR 2865419 B1 (SYLVESTRE, G.), 29 July 2005 (29.07.2005), entire document	1-11												
☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex.														
<table border="0"> <tr> <td>* Special categories of cited documents:</td><td>“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</td></tr> <tr> <td>“A” document defining the general state of the art which is not considered to be of particular relevance</td><td></td></tr> <tr> <td>“E” earlier application or patent but published on or after the international filing date</td><td>“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</td></tr> <tr> <td>“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)</td><td>“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</td></tr> <tr> <td>“O” document referring to an oral disclosure, use, exhibition or other means</td><td></td></tr> <tr> <td>“P” document published prior to the international filing date but later than the priority date claimed</td><td>“&” document member of the same patent family</td></tr> </table>			* Special categories of cited documents:	“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	“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	“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	“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)	“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	“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	“&” document member of the same patent family
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Date of the actual completion of the international search		Date of mailing of the international search report												
11 June 2018		02 July 2018												
Name and mailing address of the ISA State Intellectual Property Office of the P. R. China No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088, China Facsimile No. (86-10) 62019451		Authorized officer XIE, Lei Telephone No. 86-010-62085006												

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2018/080786

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 6457481 B1 (GAYLORD IND INC.), 01 October 2002 (01.10.2002), entire document	1-11

Form PCT/ISA/210 (continuation of second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2018/080786

Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
CN 107620997 A	23 January 2018	None	
CN 106196203 A	07 December 2016	None	
CN 204730287 U	28 October 2015	None	
CN 2252299 Y	16 April 1997	None	
CN 2926880 Y	25 July 2007	None	
CN 205518733 U	31 August 2016	None	
FR 2865419 B1	29 July 2005	FR 2865419 A1	29 July 2005
US 6457481 B1	01 October 2002	US 6532972 B2	18 March 2003
		US 2002189645 A1	19 December 2002

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