



(11)

EP 4 040 048 A1

(12)

EUROPEAN PATENT APPLICATION
published in accordance with Art. 153(4) EPC

(43) Date of publication:

10.08.2022 Bulletin 2022/32

(51) International Patent Classification (IPC):

F24C 15/20 ^(2006.01) **F04D 29/42** ^(2006.01)

(21) Application number: **20937869.4**

(52) Cooperative Patent Classification (CPC):

F24C 15/2042; F04D 27/001; F04D 29/462;
F24C 15/20; F05D 2250/52; F05D 2270/335

(22) Date of filing: **21.12.2020**

(86) International application number:

PCT/CN2020/138109

(87) International publication number:

WO 2021/238186 (02.12.2021 Gazette 2021/48)

(84) Designated Contracting States:

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO
PL PT RO RS SE SI SK SM TR

Designated Extension States:

BA ME

Designated Validation States:

KH MA MD TN

(71) Applicant: **Foshan Shunde Midea Washing**
Appliances

Manufacturing Co., Ltd.

Foshan, Guangdong 528300 (CN)

(72) Inventors:

• **LI, Jiayang**

Foshan, Guangdong 528300 (CN)

• **SITU, Dieqiang**

Foshan, Guangdong 528300 (CN)

(30) Priority: **27.05.2020 CN 202020930573 U**

27.05.2020 CN 202010462387

27.05.2020 CN 202020930634 U

27.05.2020 CN 202010463696

(74) Representative: **RGTH**

Patentanwälte PartGmbH

Neuer Wall 10

20354 Hamburg (DE)

(54) **COOKING OIL FUME SUCTION APPARATUS, COMBINED COOKING DEVICE, CONTROL METHOD AND APPARATUS, AND STORAGE MEDIUM**

(57) Provided is a range hood (30), a fume exhaust pipe (31) thereof includes a pipe body (311) and a flow diverting member (312), the pipe body (311) is in communication with a volute (32) of the range hood (30), the flow diverting member (312) is disposed in the pipe body (311), the flow diverting member (312) includes a first flow diverting portion (3121) having a first air guide surface (31211), the first flow diverting portion (3121) is disposed correspondingly to a position through which oil fume with a flowing component passes, and the first air guide surface (31211) is inclined to a length direction of the pipe body (311) and is disposed away from a volute tongue of the volute (32). When the fume exhaust pipe (31) is used in the range hood (30), the oil fume enters the pipe body (311) through an air outlet of the volute (32), a portion of the oil fume entering into the pipe body (311) has a transverse flowing component, the first air guide surface (31211) guides the oil fume with the transverse flowing component in such a manner that a flowing direction of the oil fume with the transverse flowing component is consistent with a length direction of the pipe body (311), thereby reducing the loss of the flowing en-

ergy of the oil fume, improving the discharging effect of the oil fume, and improving the user experience. Also provided are a combined cooking device including the range hood (30), a control method and apparatus therefor, and a storage medium.

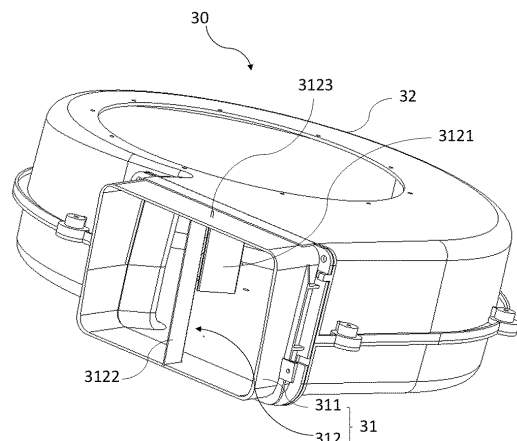


FIG. 2

EP 4 040 048 A1

Description

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to and the benefit of Chinese Patent Application No. 202010462387.8, entitled "Fume Exhaust Pipe, Range Hood and Combined Cooking Device" and filed on May 27, 2020 before China National Intellectual Property Administration; Chinese Patent Application No. 202020930573.5, entitled "Fume Exhaust Pipe, Range Hood and Combined Cooking Device" and filed on May 27, 2020 before China National Intellectual Property Administration; Chinese Patent Application No. 202010463696.7, entitled "Fume Exhaust Pipe, Range Hood and Combined Cooking Device" and filed on May 27, 2020 before China National Intellectual Property Administration; and Chinese Patent Application No. 202020930634.8, entitled "Fume Exhaust Pipe, Range Hood and Combined Cooking Device" and filed on May 27, 2020 before China National Intellectual Property Administration, the entire disclosures of which are incorporated herein by their references.

FIELD

[0002] The present disclosure relates to the technical field of household appliances, and more particularly, to a range hood, a combined cooking device, a control method and apparatus, and a storage medium.

BACKGROUND

[0003] This section provides merely background information related to the present disclosure and is not necessarily the prior art.

[0004] The combined cooking device is usually equipped with a case, a cooking table, a heating apparatus and a range hood. The cooking table fits with the case. The range hood is disposed in the case and in communication with the top of the cooking table. The heating apparatus is disposed in the case (electromagnetic heating structure) or disposed on the cooking table (gas heating structure). The heating apparatus is disposed correspondingly to a cooking position of the cooking table. The range hood usually includes a fan, a volute and a fume exhaust pipe. An air inlet of the volute is in communication with the top of the cooking table. An air outlet of the volute is in communication with the fume exhaust pipe. When cooking foods, the cooker is placed on the cooking position, the heating mechanism heats the cooker to cook the foods, and the fan is started to generate negative pressure in the volute, so that the oil fume above the cooking table passes through the air inlet, the interior of the volute and the air outlet and enters the fume exhaust pipe, which improves the air quality when cooking.

[0005] However, under the action of the centrifugal force of the fan, the oil fume is discharged into the fume

exhaust pipe through the air outlet of the volute. After the oil fume enters the fume exhaust pipe, the oil fume has a large transverse flowing component, which causes the loss of flowing energy and affects the fume exhausting effect.

SUMMARY

[0006] The purpose of the present disclosure is to solve at least the problem of the loss of flowing energy due to the flowing component of the oil fume. This purpose is achieved through the following technical solutions.

[0007] In a first aspect, the present disclosure provides a range hood, and the range hood includes: a volute having an air inlet and an air outlet that are in communication with an interior of the volute; a fan disposed in the volute; and a fume exhaust pipe in communication with the air outlet. The fume exhaust pipe includes a pipe body and a flow diverting member disposed in the pipe body. The flow diverting member includes a first flow diverting portion having a first air guide surface. The first flow diverting portion is disposed correspondingly to a position through which oil fume with a flowing component passes. The first air guide surface is configured to adjust a flowing direction of the oil fume with the flowing component in such a manner that the flowing direction of the oil fume with the flowing component is consistent with a length direction of the pipe body.

[0008] According to the range hood of the present disclosure, the pipe body of the fume exhaust pipe is in communication with the volute of the range hood. Under the action of the fan of the range hood, the oil fume enters the volute through the air inlet of the volute, and then enters the pipe body through the air outlet of the volute. A portion of oil fume entering the pipe body has a transverse flowing component, and the first air guide surface guides the oil fume with the transverse flowing component, so that the flowing direction of the oil fume with the transverse flowing component is consistent with the length direction of the pipe body. That is, the oil fume in the pipe body flows along the length direction of the pipe body. In this way, the loss of the flowing energy of the oil fume is reduced, the discharging effect of the oil fume is improved, and the user experience is improved.

[0009] In addition, the range hood according to the present disclosure may further have the following additional technical features.

[0010] In some embodiments of the present disclosure, a side surface of the first flow diverting portion close to a volute tongue of the volute is the first air guide surface.

[0011] In some embodiments of the present disclosure, the first flow diverting portion further has a second air guide surface, and the second air guide surface is a side surface of the first flow diverting portion facing towards an inflow direction of the oil fume with the flowing component.

[0012] In some embodiments of the present disclosure,

sure, the first flow diverting portion has a side close to an inner wall of the pipe body and another side close to a middle part of the pipe body.

[0013] In some embodiments of the present disclosure, the second air guide surface is a first curved surface.

[0014] In some embodiments of the present disclosure, the first curved surface is a first convex arc surface.

[0015] In some embodiments of the present disclosure, the flow diverting member further includes a second flow diverting portion, the second flow diverting portion has two ends respectively connected to the inner wall of the pipe body, and the second flow diverting portion is located on a side of the first flow diverting portion facing away from an inlet of the pipe body.

[0016] In some embodiments of the present disclosure, the second flow diverting portion is of a first plate-like structure disposed along the length direction of the pipe body, and the first plate-like structure has two ends respectively connected to the inner wall of the pipe body in a detachable manner.

[0017] In some embodiments of the present disclosure, the second flow diverting portion has a third air guide surface, and the third air guide surface is a side surface of the first plate-like structure facing towards the inlet.

[0018] In some embodiments of the present disclosure, the third air guide surface is a second curved surface.

[0019] In some embodiments of the present disclosure, the second curved surface is a second convex arc surface.

[0020] In some embodiments of the present disclosure, the first flow diverting portion is disposed in the pipe body in a rotatable manner.

[0021] In some embodiments of the present disclosure, the fume exhaust pipe further includes: a connecting shaft through which the first flow diverting portion fits with the pipe body; and a driving member disposed at the pipe body and connected to the connecting shaft in a transmission manner.

[0022] In some embodiments of the present disclosure, the flow diverting member further includes a second flow diverting portion close to the first flow diverting portion.

[0023] In some embodiments of the present disclosure, the second flow diverting portion is of a first plate-like structure, the first flow diverting portion is of a second plate-like structure, the second plate-like structure is close to the first plate-like structure, and a position where the connecting shaft fits with the second plate-like structure is close to the first plate-like structure, so that the oil fume flows along the second plate-like structure to the first plate-like structure in a continuous way.

[0024] In some embodiments of the present disclosure, the first air guide surface is inclined to the length direction of the pipe body and is disposed away from the volute tongue of the volute.

[0025] In some embodiments of the present disclosure, the first flow diverting portion is connected to the second flow diverting portion.

[0026] In some embodiments of the present disclosure, the first flow diverting portion is an arc plate having a convex arc surface which is the first air guide surface.

[0027] In a second aspect, the present disclosure provides a combined cooking device. The combined cooking device includes: the range hood as mentioned above; a case in which the range hood is disposed; a cooking table having a cooking position provided thereon and fitting with the case; and a heating apparatus fitting with the cooking table and disposed correspondingly to the cooking position.

[0028] In a third aspect, the present disclosure provides a control method for a range hood. The control method is implemented according to the range hood as mentioned above, and the control method includes: obtaining resistance information of the range hood; determining a working air volume of the fan and a working position of the first flow diverting portion based on the resistance information; and controlling the range hood to initiate an oil fume suction procedure.

[0029] In some embodiments of the present disclosure, said obtaining the resistance information of the range hood includes: calculating the resistance information based on a detected current and a detected rotation speed of the fan.

[0030] In some embodiments of the present disclosure, the control method for the range hood further includes: controlling the range hood to initiate a self-checking procedure prior to said obtaining the resistance information of the range hood.

[0031] In some embodiments of the present disclosure, the self-checking procedure includes: controlling the first flow diverting portion to be at an initial position; and controlling the fan to start up, and obtaining the detected current and the detected rotation speed of the fan.

[0032] In some embodiments of the present disclosure, the control method for the range hood further includes: determining that installation of the range hood is completed, and controlling the range hood to issue a prompt message; and receiving a self-checking instruction, and controlling the range hood to execute the self-checking procedure.

[0033] In some embodiments of the present disclosure, said determining the working air volume of the fan and the working position of the first flow diverting portion based on the resistance information includes: obtaining a predetermined air pressure of the range hood based on the resistance information; determining a predetermined air volume corresponding to the predetermined air pressure based on the predetermined air pressure; and determining the working air volume of the fan and the working position of the first flow diverting portion based on the predetermined air pressure and the predetermined air volume.

[0034] In some embodiments of the present disclosure,

sure, said determining the working air volume of the fan based on the resistance information includes: determining a working rotation speed of the fan based on the resistance information, and controlling the working air volume of the fan based on the working rotation speed.

[0035] In some embodiments of the present disclosure, the fan is a direct current fan, and said determining the working rotation speed of the fan based on the resistance information includes: determining a working current of the fan based on the resistance information, and controlling the working rotation speed of the fan based on the working current.

[0036] In some embodiments of the present disclosure, said determining the working position of the first flow diverting portion based on the resistance information includes: determining an included angle between the flow diverting member and an extending direction of the pipe body based on the resistance information in such a manner that the flowing direction of the oil fume is consistent with the extending direction of the pipe body.

[0037] In some embodiments of the present disclosure, said determining the included angle between the first flow diverting portion and the extending direction of the pipe body based on the resistance information includes: driving, through a driving member, the first flow diverting portion to rotate, so as to control the included angle between the first flow diverting portion and the extending direction of the pipe body.

[0038] In some embodiments of the present disclosure, the control method for the range hood further includes, subsequent to said controlling the range hood to initiate the oil fume suction procedure: obtaining a working pressure of the range hood; and determining that the working pressure is greater than a predetermined pressure, and controlling the range hood to issue an alarm message.

[0039] In some embodiments of the present disclosure, the control method for the range hood further includes, prior to said controlling the range hood to initiate the oil fume suction procedure: receiving a gear instruction; and adjusting the working air volume of the range hood and the working position of the first flow diverting portion based on the gear instruction.

[0040] In some embodiments of the present disclosure, said receiving the gear instruction includes: obtaining gear information in the gear instruction, the gear information being determined based on a target noise value, a target oil fume suction effect, and a target cooking type.

[0041] In some embodiments of the present disclosure, said adjusting the working air volume of the range hood and the working position of the first flow diverting portion based on the gear instruction includes: in accordance with a determination that the gear information is a mute gear, adjusting the working air volume of the range hood to be within a first air volume range, and adjusting a rotation position of the first flow diverting portion to be a first position; in accordance with a determination that

the gear information is a balance gear, adjusting the working air volume of the range hood to be within a second air volume range, and adjusting the rotation position of the first flow diverting portion to be a second position; and in accordance with a determination that the gear information is a high-power gear, adjusting the working air volume of the range hood to be within a third air volume range, and adjusting the rotation position of the first flow diverting portion to be a third position. The target noise value of the mute gear is smaller than the target noise value of the balance gear, and the target noise value of the balance gear is smaller than the target noise value of the high-power gear.

[0042] In a fourth aspect, the present disclosure provides a control apparatus for a range hood. The control device for the range hood is configured to perform the control method for the range hood as described above. The control apparatus for the range hood includes: an obtaining module configured to obtain resistance information of the range hood; a determining module configured to determine the working air volume of the fan and the rotation position of the first flow diverting portion based on the resistance information; and a control module configured to control the range hood to initiate the oil fume suction procedure.

[0043] In some embodiments of the present disclosure, the control apparatus for the range hood further includes: a self-checking module configured to control the range hood to initiate a self-checking procedure and control the first flow diverting portion to be at an initial position, in such a manner that the resistance information is obtained based on a current and a rotation speed of the fan.

[0044] In some embodiments of the present disclosure, the control module includes a memory, a processor, and a control program for the range hood stored in the memory and executable on the processor. The processor is configured to, when executing the control program for the range hood, implement the control method for the range hood as described above.

[0045] In a fifth aspect, the present disclosure provides a computer-readable storage medium having a control program for a range hood stored thereon. The control program for the range hood, when executed by a processor, implements the control method for the range hood as described above.

BRIEF DESCRIPTION OF DRAWINGS

[0046] Other advantages and benefits will become apparent to those of ordinary skill in the art upon reading the following detailed description of the preferred embodiments. The drawings are for purposes of illustrating the preferred embodiments only and are not to be considered as limitation on the present disclosure. The same components are denoted by the same reference numerals throughout the drawings.

FIG. 1 schematically illustrates a schematic structural diagram of a combined cooking device according to embodiments of the present disclosure.

FIG. 2 is a schematic structural diagram of a first embodiment (partial structure) of the range hood of the combined cooking device shown in FIG. 1.

FIG. 3 is a schematic structural diagram of a fume exhaust pipe of the range hood shown in FIG. 2 (in the figure, the black solid arrows indicate a flowing direction of oil fume with a transverse flowing component).

FIG. 4 is a schematic structural diagram of a second embodiment (partial structure) of the range hood of the combined cooking device shown in FIG. 1.

FIG. 5 is a structural schematic diagram of a fume exhaust pipe of the range hood shown in FIG. 4.

FIG. 6 is a cross-sectional view of the fume exhaust pipe shown in FIG. 5 (in the figure, the black solid arrows indicate a flowing direction of oil fume with a transverse flowing component).

FIG. 7 schematically shows a flowchart of a control method for a range hood according to some embodiments of the present disclosure.

FIG. 8 schematically shows a flowchart of a control method for a range hood according to some other embodiments of the present disclosure.

FIG. 9 schematically shows a flow chart of a control method for a range hood according to some other embodiments of the present disclosure.

FIG. 10 schematically shows a flowchart of a control method for a range hood according to some other embodiments of the present disclosure.

FIG. 11 schematically shows a flowchart of a control method for a range hood according to some other embodiments of the present disclosure.

FIG. 12 schematically shows a flowchart of a control method for a range hood according to some other embodiments of the present disclosure.

FIG. 13 schematically shows a structural block diagram of a control apparatus for a range hood according to the present disclosure.

Reference numbers:

[0047]

100 combined cooking device;
10 cooking table, 11 cooking position;
20 case;
30 range hood;
31 fume exhaust pipe, 311 pipe body, 312 flow diverting member, 3121 first flow diverting portion, 31211 first air guide surface, 31212 second air guide surface, 3122 second flow diverting portion, 31221 third air guide surface, 3123 connecting shaft;
32 volute;
200 control apparatus;
21 obtaining module, 22 determining module, 23

control module, 231 memory, 232 processor.

DESCRIPTION OF EMBODIMENTS

[0048] Exemplary embodiments of the present disclosure will be described in more detail below with reference to the accompanying drawings. Although the exemplary embodiments of the present disclosure are shown in the drawings, it should be understood that the present disclosure may be embodied in various forms and should not be limited to the embodiments set forth herein. Rather, these embodiments are provided for thorough understanding of the present disclosure and for fully conveying the scope of the present disclosure to those skilled in the art.

[0049] It is to be understood that the terminology used herein is for the purpose of describing particular exemplary embodiments only and is not intended to provide a limit. As used herein, the singular forms "a", "an", and "the" can be intended to include the plural forms unless the context clearly indicates otherwise. The terms "include", "comprise", "contain" and "have" are inclusive and thus indicate the presence of stated features, steps, operations, elements and/or components, but do not exclude the presence or addition of one or more additional features, steps, operations, elements, components, and/or combinations thereof. Method steps, procedures, and operations described herein are not necessarily performed in the particular order described or illustrated, unless explicitly indicated otherwise. It should be understood that additional or alternative steps may be used.

[0050] Although the terms first, second, third, etc. may be used herein to describe a plurality of elements, components, regions, layers and/or sections, these elements, components, regions, layers and/or sections should not be restricted by these terms. These terms may only be used to distinguish one element, component, region, layer or section from another element, component, region, layer or section. Terms such as "first" and "second" and other numerical terms, when used herein, do not imply a sequence or order unless clearly indicated by the context. Thus, a first element, component, region, layer or section discussed below could be referred to as a second element, component, region, layer or section without departing from the teaching of the exemplary embodiments.

[0051] For ease of description, spatially relative relation terms may be used herein to describe the relation of one element or feature to another element or feature as shown in the figures, and examples of the relative relation terms include "interior", "exterior", "inside", "outside", "under", "below", "above", "on", etc. This kind of spatially relative relation terms is intended to include different orientations of the apparatus in use or operation in addition to the orientation depicted in the figures. For example, if the apparatus in the figure is turned over, an element described as being "below" or "under" another element or feature would then be oriented "above" or "on" another

element or feature". Thus, the exemplary term "below" can encompass both upper and lower orientations. The apparatus may be otherwise oriented (rotated by 90 degrees or at other orientations) and the spatially relative relation descriptions used herein should be interpreted accordingly.

[0052] As shown in FIGS. 1 to 6, according to embodiments of the present disclosure, a range hood 30 is provided. The range hood 30 includes a volute 32, a fan, and a fume exhaust pipe 31. The volute 32 has an air outlet and an air inlet that are in communication with an interior thereof. The fan is disposed in the volute 32. The fume exhaust pipe 31 is in communication with the air outlet. The fume exhaust pipe 31 includes a pipe body 311 and a flow diverting member 312 disposed in the pipe body 311. The flow diverting member 312 includes a first flow diverting portion 3121 having a first air guide surface 31211. The first flow diverting portion 3121 is disposed correspondingly to a position through which oil fume with a flowing component passes. The first air guide surface 31211 is configured to adjust a flowing direction of the oil fume with the flowing component in such a manner that the flowing direction of the oil fume with the flowing component is consistent with a length direction of the pipe body 311.

[0053] Specifically, the pipe body 311 of the fume exhaust pipe 31 is in communication with the volute 32 of the range hood 30. Under the action of the fan of the range hood 30, the oil fume enters the volute 32 through the air inlet of the volute 32, and then enters the pipe body 311 through the air outlet of the volute 32. A portion of the oil fume entering into the pipe body 311 has a transverse flowing component. The first air guide surface 31211 guides the flow of the oil fume with the transverse flowing component in such a manner that the flowing direction of the oil fume with the transverse flowing component is consistent with the length direction of the pipe body 311. That is, the oil fume in the pipe body 311 flows along the length direction of the pipe body 311, thereby reducing the loss of flowing energy of the oil fume, improving the discharging effect of the oil fume, and improving the user experience.

[0054] It should be understood that the fan includes a motor and an impeller, and the motor drives the impeller to rotate, so that the oil fume enters the pipe body 311 of the fume exhaust pipe 31 through the volute 32 under the action of a centrifugal force. A portion of the oil fume entering the pipe body 311 is a smooth flow (the flowing direction of the oil fume is consistent with the length direction of the pipe body 311), another portion of the oil fume has a flowing component, and the flowing component is a transverse flowing component (the flowing direction of the oil fume is inconsistent with the length direction of the pipe body 311). The position where the first flow diverting portion 3121 of the flow diverting member 312 is located in the pipe body 311 is disposed correspondingly to the position through which the oil fume with the transverse flowing component passes. When the oil

fume with the transverse flowing component passes, the first air guide surface 31211 guides and diverts the oil fume with the transverse flowing component, so that the oil fume with the transverse flowing component is converted into a smooth flow, thereby reducing the energy loss during the flowing of the oil fume, and ensuring the discharging effect of the oil fume.

[0055] Taking the volute 32 being horizontally placed as an example, the air inlet of the volute 32 is located on a top portion of the volute 32, the air outlet of the volute 32 is located on a side portion of the volute 32, and the fan is disposed in the volute 32. When the fan starts up, the oil fume enters the volute 32 through the air inlet, and then enters the pipe body 311 of the fume exhaust pipe 31 through the air outlet. At this time, the oil fume passing through an upper half of the air outlet (a side close to the top portion of the volute 32) has a transverse flowing component, which is a non-smooth flow, and the oil fume passing through a lower half of the air outlet (a side close to a bottom portion of the volute 32) is a smooth flow. The first flow diverting portion 3121 of the flow diverting member 312 is disposed in the pipe body 311 of the fume exhaust pipe 31 and is disposed correspondingly to the upper half of the air outlet, so that the oil fume with the transverse flowing component is guided and diverted, which reduces the energy loss during the flowing of the oil fume and ensures the discharging effect of the oil fume.

[0056] It is further understood that, as shown in FIGS. 2 and 3, or as shown in FIGS. 4 to 6, a side surface of the first flow diverting portion 3121 close to a volute tongue of the volute 32 is the first air guide surface 31211. Specifically, the flow diverting member 312 is disposed in the pipe body 311, and a side surface of the flow diverting member 312 facing towards (close to) the volute tongue is the first air guide surface 31211. When the oil fume enters the pipe body 311 of the fume exhaust pipe 31 through the air outlet of the volute 32, a portion of the oil fume with a transverse flowing component is guided and diverted by the first air guide surface 31211, so that the oil fume with the transverse flowing component flows along the length direction of the pipe body 311, which further reduces the energy loss during the flowing of the oil fume, and further ensures the discharging effect of the oil fume.

[0057] Further, as shown in FIGS. 3 or 6, the first flow diverting portion 3121 further has a second air guide surface 31212, and the second air guide surface 31212 is a side surface of the first flow diverting portion 3121 facing towards an inflow direction of the oil fume with the flowing component. Specifically, the flow diverting member 312 is disposed in the pipe body 311, the first flow diverting portion 3121 has a side surface facing towards the inflow direction of the oil fume, and the side surface constitutes the second air guide surface 31212. When the oil fume enters the pipe body 311 of the fume exhaust pipe 31 through the volute 32, the oil fume with the transverse flowing component is first guided and diverted by the sec-

ond air guide surface 31212 and then guided and diverted by the first air guide surface 31211, and finally flows along the length direction of the pipe body 311. By the provision of the second air guide surface 31212, the effect of guiding and diverting the oil fume with the transverse flowing component is further improved, the energy loss of the oil fume during the flowing of the oil fume is further avoided, and the discharging effect of the oil fume is further ensured.

[0058] Further, as shown in FIGS. 2 and 3, or as shown in FIGS. 4 to 6, the first flow diverting portion 3121 has a side disposed close to an inner wall of the pipe body 311 and another side close to a middle part of the pipe body 311. Specifically, the pipe body 311 has a fume exhaust channel through which the oil fume passes. The first flow diverting portion 3121 is disposed in the fume exhaust channel of the pipe body 311. The first flow diverting portion 3121 has one end disposed close to and against an inner wall of the fume exhaust channel and another end extending to the middle part of the pipe body 311. When the oil fume with the transverse flowing component passes through the flow diverting member 312, the oil fume with the transverse flowing component can be effectively guided and diverted, so that the discharging effect of the oil fume is further ensured.

[0059] It should be understood that after the oil fume enters the pipe body 311 of the fume exhaust pipe 31 through the air outlet of the volute 32, the oil fume with the transverse flowing component is located on a side (which can be an upper side, a lower side, a left side or a right side) of the fume exhaust channel of the pipe body 311. By setting that the first flow diverting portion 3121 is disposed correspondingly to the oil fume with the transverse flowing component, and the first flow diverting portion 3121 has a side disposed close to the inner wall of the fume exhaust channel, the oil fume with the transverse flowing component is prevented from passing through the space between the first flow diverting portion 3121 and the inner wall of the fume exhaust channel. In this way, the guiding and diverting effect of the oil fume is further improved, and the discharging effect of the oil fume is further improved.

[0060] In addition, the first flow diverting portion 3121 extends along a radial section of the pipe body 311, which further ensures the effect of guiding and diverting the oil fume with the transverse flowing component.

[0061] Specifically, the second air guide surface 31212 is a first curved surface. The first curved surface can be an arc surface, a convex arc surface or a wavy surface, etc. By setting the second air guide surface 31212 as the first curved surface, the smoothness of guiding the oil fume is improved. In the present disclosure, the first curved surface is a first convex arc surface, i.e., the second air guide surface 31212 is a first convex arc surface. When the oil fume with the transverse flowing component enters the pipe body 311 of the fume exhaust pipe 31, the oil fume with the transverse flowing component is guided and diverted by the first convex arc surface and

then guided and diverted again by the first air guide surface 31211, so that the flowing direction of the oil fume with the transverse flowing component is consistent with the length direction of the pipe body 311. In addition, the provision of the first convex arc surface can avoid howling and additional local noise generated when the oil fume with the transverse flowing component is guided and diverted. In this way, the noise during the discharging of the oil fume is reduced, and the user experience is further improved.

[0062] Further, as shown in FIGS. 2 and 3, or as shown in FIGS. 4 to 6, the diverting member 312 further includes a second flow diverting portion 3122. The second flow diverting portion 3122 has two ends respectively connected to the inner wall of the pipe body 311. The second flow diverting portion 3122 is located on a side of the first flow diverting portion 3121 facing away from an inlet of the pipe body 311. Specifically, the second flow diverting portion 3122 has two ends respectively connected to the inner wall of the pipe body 311, the second flow diverting portion 3122 is located on the side of the first flow diverting portion 3121 facing away from the inlet of the pipe body 311, and the first flow diverting portion 3121 is disposed adjacent to the second flow diverting portion 3122. When the oil fume with the transverse flowing component enters the pipe body 311 of the fume exhaust pipe 31, the oil fume with the transverse flowing component is first guided and diverted by the first flow diverting portion 3121 and then guided and diverted by the second flow diverting portion 3122, which further improves the effect of guiding and diverting the oil fume with the transverse flowing component, thereby improving further the discharging effect of the oil fume.

[0063] It should be pointed out that one or more flow diverting members 312 may be provided. When a plurality of diverting members 312 is provided, the flow diverting members 312 are arranged in the pipe body 311 at intervals. The first flow diverting portion 3121 and the second flow diverting portion 3122 in each flow diverting member 312 have same or different linearity.

[0064] Further, the second flow diverting portion 3122 is of a first plate-like structure. The first plate-like structure is disposed along the length direction of the pipe body 311. The first plate-like structure has two ends respectively connected to the inner wall of the pipe body 311 in a detachable manner. Specifically, the second flow diverting portion 3122 is of a first plate-like structure, the first plate-like structure is disposed along the length direction of the pipe body 311 and extends through the middle part of the pipe body 311, the second flow diverting portion 3122 has two ends respectively fitting with and fixed to the inner wall of the pipe body 311. When the oil fume passes through the second flow diverting portion 3122, the second flow diverting portion 3122 guides and diverts the oil fume, so that the oil fume flows along the length direction of the pipe body 311, which further reduces the energy loss during the flowing of the oil fume, and improves the discharging effect of the oil

fume.

[0065] It should be understood that the second flow diverting portion 3122 is detachably connected to the pipe body 311, which facilitates the separate manufacture of the pipe body 311 and the second flow diverting portion 3122. In addition, the second flow diverting portion 3122 can be replaced individually when damaged.

[0066] In other embodiments, the second flow diverting portion 3122 can fit with the pipe body 311 by means of snap connection or screw connection. The specific connection of the second flow diverting portion 3122 and the pipe body 311 is not limited in the present disclosure.

[0067] Further, as shown in FIG. 2 or FIG. 6, the second flow diverting portion 3122 has a third air guide surface 31221. The third air guide surface 31221 is a side surface of the first plate-like structure facing towards the inlet. The third air guide surface 31221 is a second curved surface. The second curved surface can be an arc surface, a convex arc surface or a wavy surface, etc. By setting the third air guide surface 31221 as the second curved surface, the smoothness of guiding the oil fume is improved. In the present disclosure, the second curved surface is a second convex arc surface. Specifically, the first plate-like structure is disposed in the pipe body 311, the first plate-like structure has a side surface facing towards the inlet of the pipe body 311, and the side surface constitutes the third air guide surface 31221. When the oil fume enters the pipe body 311 of the fume exhaust pipe 31 through the volute 32, the third air guide surface 31221 guides and diverts the oil fume, which further ensures that the oil fume flows along the length of the pipe body 311, avoids the energy loss during the flowing of the oil fume, and ensures the discharging effect of the oil fume.

[0068] In addition, the third air guide surface 31221 is a second convex arc surface. When the oil fume enters the pipe body 311 of the fume exhaust pipe 31, the oil fume is guided and diverted by the second convex arc surface, so as to avoid howling generated when the oil fume is guided and diverted. In this way, the noise during the discharging of the oil fume is reduced and the user experience is further improved.

[0069] It should be pointed out that a material of the second flow diverting portion 3122 can be metal or non-metal. When the second flow diverting portion 3122 is non-metal (plastic or nylon, etc.), the second flow diverting portion 3122 of the first plate-like structure has a certain thickness, a side of the first plate-like structure facing towards the inlet of the pipe body 311 also has a certain thickness, and a position with this thickness is rounded to form the third air guide surface 31221 of the second convex arc surface. When the second flow diverting portion 3122 is metal (iron or stainless steel, etc.), the second flow diverting portion 3122 of the first plate-like structure has a relatively small thickness, the side of the first plate-like structure facing towards the inlet of the pipe body 311 has a relatively thin thickness, and the rounding processing is not required.

[0070] In some embodiments, as shown in FIG. 2 and FIG. 3, the first flow diverting portion 3121 is rotatably disposed in the pipe body 311. Specifically, through the rotation of the first flow diverting portion 3121 relative to the pipe body 311, an inclination angle of the first air guide surface 31211 relative to the length direction of the pipe body 311 can be adjusted in such a manner that the oil fume in the pipe body 311 flows along the length direction of the pipe body 311. In this way, the loss of the flowing energy of the oil fume is reduced, the discharging effect of the oil fume is improved, and the use experience of the user is improved. In addition, through the rotation of the first flow diverting portion 3121 relative to the pipe body 311, the discharging effect of the oil fume under different working conditions can be satisfied, and the noise during the discharging of the oil fume is effectively reduced.

[0071] It should be understood that when the working condition of the range hood changes, a flow rate of the oil fume changes with the change of the working condition. By driving the first flow diverting portion 3121 to rotate in the pipe body 311, the inclination angle of the first air guide surface 31211 relative to the length direction of the pipe body 311 changes, so that the first air guide surface 31211 is adapted to the changed flow rate of the oil fume, thereby ensuring the effect of guiding and diverting the oil fume with the transverse flowing component, and reducing the noise during the discharging of the oil fume.

[0072] Further, as shown in FIG. 2 and FIG. 3, the fume exhaust pipe 31 further includes a connecting shaft 3123 and a driving member. The first flow diverting portion 3121 fits with the pipe body 311 through the connecting shaft 3123, and the driving member is disposed at the pipe body 311 and is connected to the connecting shaft 3123 in a transmission manner. Specifically, the first flow diverting portion 3121 fits with the pipe body 311 through the connecting shaft 3123, the driving member is connected to the connecting shaft 3123 in a transmission manner, and when a position of the first air guide surface 31211 needs to be adjusted, the driving member drives the connecting shaft 3123 to rotate, and the first flow diverting portion 3121 rotates synchronously with the connecting shaft 3123, so as to realize the adjustment of the first air guide surface 31211 on the first flow diverting portion 3121. By the provision of the driving member and the connecting shaft 3123, the convenience for adjusting the first air guide surface 31211 is improved, and the discharging effect of the oil fume is further improved.

[0073] It should be pointed out that the driving member can be a servo motor or a stepping motor, etc., thereby improving the control accuracy, making the adjustment of the first air guide surface 31211 more accurate, and further ensuring the discharging effect of the oil fume.

[0074] Further, as shown in FIG. 2 and FIG. 3, the flow diverting member 312 further includes a second flow diverting portion, and the first flow diverting portion 3121 is disposed close to the second flow diverting portion

3122. The second flow diverting portion 2122 is of a first plate-like structure, and the first flow diverting portion 3121 is of a second plate-like structure. The second plate-like structure is disposed close to the first plate-like structure, and a position where the connecting shaft 3123 fits with the second plate-like structure is close to the first plate-like structure, so that the oil fume flows along the second plate-like structure to the first plate-like structure in a continuous way. Specifically, when the fume exhaust pipe 31 is used in the range hood 30, the pipe body 311 of the fume exhaust pipe 31 is in communication with the volute 32 of the range hood 30, and the first flow diverting portion 3121 of the second plate-like structure is rotatably disposed in the pipe body 311. A side surface of the second plate-like structure close to the volute tongue is the first air guide surface 31211 and can be inclined relative to the length direction of the pipe body 311. When the oil fume with the transverse flowing component enters the pipe body 311, the first air guide surface 31211 guides and diverts the oil fume with the transverse flowing component in such a manner that the flowing direction of the oil fume with the transverse flowing component is consistent with the length direction of the pipe body 311, reducing the energy loss during the flowing of the oil fume, and ensuring the discharging effect of the oil fume.

[0075] In addition, the first plate-like structure and the second plate-like structure are disposed adjacent to each other (the gap between the two is sufficiently small). When the second plate-like structure is disposed along the length direction of the pipe body 311 under the action of the driving member, the first plate-like structure and the second plate-like structure are connected to form one and the same plane structure. When the oil fume with the transverse flowing component enters the pipe body 311 of the fume exhaust pipe 31, the oil fume with the transverse flowing component is first guided and diverted by the first flow diverting portion 3121, and then guided and diverted by the second flow diverting portion 3122. Since the first flow diverting portion 3121 and the second flow diverting portion 3122 are disposed adjacent to each other, and the oil fume can be guided and diverted directly by the second flow diverting portion 3122 after passing through the first flow diverting portion 3121, which further ensures the effect of guiding and diverting the oil fume, and improves the discharging effect of the oil fume.

[0076] In addition, the first flow diverting portion 3121 is of the second plate-like structure, and such structure is simple and has a low manufacturing cost. The second plate-like structure is small in volume and light in weight, which can effectively realize the lightweight manufacture of the fume exhaust pipe 31.

[0077] It should be pointed out that the material of the first flow diverting portion 3121 can be metal or non-metal. When the first flow diverting portion 3121 is non-metal (plastic or nylon, etc.), the first flow diverting portion 3121 of the second plate-like structure has a certain thickness, a side of the second plate-like structure facing towards the inlet of the pipe body 311 also has a certain thickness,

and a position with this thickness is rounded to form the second air guide surface 31222 of the first convex arc surface. When the first flow diverting portion 3121 is metal (iron or stainless steel, etc.), the first flow diverting portion 3121 of the second plate-like structure has a relatively small thickness, the side of the second plate-like structure facing towards the inlet of the pipe body 311 has a relatively thin thickness, and the rounding processing is not required.

[0078] In some embodiments, as shown in FIGS. 4 to 6, the first air guide surface 31211 is inclined to the length direction of the pipe body 311 and is disposed away from the volute tongue of the volute 32. Specifically, the flow diverting member 312 is disposed in the pipe body 311, and an end of the first flow diverting portion 3121 facing towards the air outlet of the volute 32 is inclined in a direction away from the volute tongue, so that a side surface of the first flow diverting portion 3121 close to the volute tongue is disposed at an angle with respect to the length direction of the tube body 311, and the side surface of the first flow diverting portion 3121 close to the volute tongue constitutes the first air guide surface 31211. When the oil fume enters the pipe body 311 of the fume exhaust pipe 31 through the air outlet of the volute 32, a portion of the oil fume with a transverse flowing component is guided and diverted by the inclined first air guide surface 31211, so that the oil fume with the transverse flowing component flows along the length direction of the pipe body 311. In this way, the energy loss during the flowing of the oil fume is further reduced, and the discharging effect of the oil fume is further ensured.

[0079] Further, as shown in FIG. 4 to FIG. 6, the second flow diverting portion 3122 has two ends respectively connected to the inner wall of the pipe body 311, and the first flow diverting portion 3121 is connected to the second flow diverting portion 3122. Specifically, the second flow diverting portion 3122 has two ends respectively connected to the inner wall of the pipe body 311, and the first flow diverting portion 3121 is fixedly connected to the second flow diverting portion 3122 and has one side fitting with the inner wall of the pipe body 311. When the oil fume with the transverse flowing component enters the pipe body 311 of the fume exhaust pipe 31, the oily fume with the transverse flowing component is first guided and diverted by the first flow diverting portion 3121, and then guided and diverted by the second flow diverting portion 3122, which further improves the effect of guiding and diverting the oil fume and further improves the discharging effect of the oil fume.

[0080] In addition, the first flow diverting portion 3121 is connected to the second flow diverting portion 3122, which effectively improves the fixing strength and stability of the first flow diverting portion 3121, ensuring the effect of the first flow diverting portion 3121 guiding and diverting the oil fume with the transverse flowing component.

[0081] It should be pointed out that the first flow diverting portion 3121 and the second flow diverting portion 3122 may be formed as an integral structure or a parted

type structure. When the first flow diverting portion 3121 and the second flow diverting portion 3122 are formed as an integral structure, they can be manufactured by means of injection molding, so as to ensure the strength and stability of the connection position between the two. When the first flow diverting portion 3121 and the second flow diverting portion 3122 are formed as a parted type structure, the two are fixedly connected by any one of bonding, riveting, welding, etc. When a certain component fails, the first flow diverting portion 3121 and the second flow diverting portion 3122 can be separated, which effectively reduces the maintenance cost.

[0082] Further, as shown in FIG. 4 to FIG. 6, the first flow diverting portion 3121 is an arc plate, and a convex arc surface of the arc plate is the first air guide surface 31211. Specifically, the arc plate is formed by bending an overall plate-like member. One side surface of the arc plate is a concave arc surface, and a side surface of the arc plate opposite to the concave arc surface is a convex arc surface. When the arc plate is disposed in the pipe body 311, the convex arc surface faces towards the volute tongue, and the entire convex arc surface constitutes the first air guide surface 31211. When the oil fume passes through the first flow diverting portion 3121, the oil fume with the transverse flowing component is guided and diverted by the convex arc surface, so that the oil fume with the transverse flowing component flows along the length direction of the pipe body 311. The convex arc surface constitutes the first air guide surface 31211, which can reduce the resistance generated in the process of guiding and diverting the oil fume with the transverse flowing component, ensure the flow rate of the oil fume, and further improve the discharging effect of the oil fume.

[0083] It should be pointed out that an arc angle of the convex arc surface is related to the flow rate of the oil fume, and a specific arc angle parameter of the convex arc surface is set according to the specific flow rate of the oil fume, which will not be elaborated in detail in present disclosure.

[0084] In a second aspect, the present disclosure provides a combined cooking device 100. As shown in FIGS. 1 to 6, the combined cooking device 100 includes a range hood 30, a case 20, a cooking table 10, and a heating device. The range hood 30 is the range hood 30 as mentioned above, and the range hood 30 is disposed in the case 20. The cooking table 10 has a cooking position 11 provided thereon, and the cooking table 10 fits with the case 20. The heating device fits with the cooking table 10 and is disposed correspondingly to the cooking position 11. Specifically, the pipe body 311 of the fume exhaust pipe 31 of the range hood 30 is in communication with the volute 32 of the range hood 30. Under the action of the fan of the range hood 30, the oil fume enters the volute 32 through the air inlet of the volute 32, and then enters the pipe body 311 through the air outlet of the volute 32. A portion of the oil fume entering into the pipe body 311 has a transverse flowing component. The oil

fume with the transverse flowing component is guided by the first air guide surface 31211, so that the flowing direction of the oil fume with the transverse flowing component is consistent with the length direction of the pipe body 311, that is, the oil fume in the pipe body 311 flows along the length direction of the pipe body 311, thereby reducing the loss of the flowing energy of the oil fume, improving the discharging effect of the oil fume, and improving the user experience.

[0085] It should be pointed out that the heating device can be an electromagnetic heating structure or a gas heating structure. When the heating device is an electromagnetic heating structure, the heating device is disposed in the case 20 and correspondingly to the cooking position 11 of the cooking table 10. When the heating device is a gas heating structure, the heating device is disposed outside the case 20 and correspondingly to the cooking position 11 of the cooking table 10.

[0086] In addition, the above-mentioned combined cooking device 100 is an integrated stove, etc., and reference can be made to the related art for other component structures of the combined cooking device 100, which will not be elaborated in detail here.

[0087] In a third aspect, the present disclosure provides a control method for the range hood 30. The control method for the range hood 30 is implemented according to the above range hood 30, and the usage scenario of the range hood 30 may be an internal circulation scenario where the rear end resistance in normal use does not change significantly, or an independent flue scenario. As shown in FIG. 7, the control method for the range hood 30 includes the following steps.

[0088] At S1, resistance information of the range hood 30 is obtained.

[0089] As an embodiment, a current sensor for detecting a current of the fan and a rotation speed sensor for detecting a rotation speed of the fan may be disposed in the range hood 30, and the resistance of the range hood 30 is calculated using the detected current data and rotation speed data.

[0090] Of course, as another embodiment, an air volume sensor for detecting a flowing air volume and a current sensor for detecting a current of the fan may be disposed in the range hood 30, and the resistance of the range hood 30 is calculated by using the detected current data and the air volume data.

[0091] In the embodiments of the present disclosure, the method for obtaining the resistance information of the range hood 30 is not specifically limited.

[0092] At S2, a working air volume of the fan and a working position of the first flow diverting portion 3121 are determined based on the resistance information.

[0093] In some embodiments, the range hood 30 includes a control apparatus 200, and the control apparatus 200 determines the working air volume of the fan and the specific working position of the first flow diverting portion 3121 in the pipe body 311 based on the calculated resistance information.

[0094] At S3, the range hood 30 is controlled to initiate an oil fume suction procedure.

[0095] Specifically, after determining the working air volume of the fan and the specific working position of the first flow diverting portion 3121 in the pipe body 311, the control apparatus 200 of the range hood 30 controls the fan to adjust the rotation speed, controls the first flow diverting portion 3121 to rotate from an initial position to a desired working position, and then controls the range hood 30 to initiate the oil fume suction procedure.

[0096] In the control method for the range hood 30 according to the embodiments of the present disclosure, the working air volume of the fan and the working position of the first flow diverting portion 3121 are determined and adjusted based on the resistance information, so that the oil fume entering the range hood 30 can be effectively guided. In this way, the flowing direction of the oil fume can be consistent with the length direction of the pipe body 311 as far as possible, that is, the oil fume in the pipe body 311 flows along the length direction of the pipe body 311, thereby reducing the loss of the flowing energy of the oil fume, improving the discharging effect of the oil fume, and improving the user experience.

[0097] For example, through the rotation of the first flow diverting portion 3121 relative to the pipe body 311, the adjustment of the inclination angle of the first flow diverting portion 3121 relative to the length direction of the pipe body 311 is realized, so as to realize the discharging effects of the oil fume under different working conditions, and effectively reduce the noise during the discharging of the oil fume.

[0098] That is to say, by determining and adjusting the working air volume of the fan and the working position of the first flow diverting portion 3121, the actual working condition of the range hood 30 can be prevented from deviating too much from a PQ curve of an air volume and an air pressure of the range hood 30, thereby avoiding the deterioration of the flow conditions to cause greater noise and flow resistance. Therefore, on the one hand, the range hood 30 can work in a better state in a wider working range, and on the other hand, an actual working point of the range hood 30 is closer to the user's optimal working point.

[0099] Therefore, the control method for the range hood 30 according to the embodiments of the present disclosure has the advantages of good oil fume suction effect and low noise.

[0100] The control method for the range hood 30 according to the specific embodiments of the present disclosure is described below with reference to the accompanying drawings.

[0101] As an embodiment, the control method for the range hood 30 includes the following steps, as shown in FIG. 8.

[0102] At S201, completion of installation of the range hood 30 is determined, and the range hood 30 is controlled to issue a prompt message.

[0103] For example, the range hood 30 may be pro-

vided with a detection apparatus. After the detection apparatus detects that the installation or cleaning of the range hood 30 is completed, the detection apparatus of the range hood 30 issues the prompt message. Specifically, the prompt message may be a prompt sound, voice information or brightness display information. Therefore, the user is prompted that the range hood 30 can be used normally.

[0104] At S202, a self-checking instruction is received, and the range hood 30 is controlled to execute a self-checking procedure.

[0105] For example, the range hood 30 has a start button. When the user presses the start button, the control apparatus 200 controls the range hood 30 to initiate the self-checking procedure.

[0106] Specifically, before the resistance information of the range hood 30 is obtained, the range hood 30 is controlled to initiate the self-checking procedure. In the self-checking procedure, the range hood 30 can first detect whether each component can work normally, reset the first flow diverting portion 3121 to an initial state, then control the fan to start to work, and collect the current data and the rotation speed data of the fan for subsequent calculation of the resistance of the range hood 30.

[0107] In this way, it is not only advantageous to improve the working reliability and stability of the range hood 30, but also facilitates accurately obtaining the resistance information of the range hood 30.

[0108] For example, when the installation of the range hood 30 is completed for the first time or after the filtering and purification components are replaced or cleaned, the range hood 30 issues the prompt message. The user presses the start button to start the self-checking procedure. At this time, the first flow diverting portion 3121 is at the initial position, the resistance state of the range hood 30 can be obtained by reading the motor parameters (current, rotation speed) of the fan, and the PQ curve in its vicinity can be matched according to the resistance information of the range hood 30, so as to cope with possible working condition fluctuation and optimize the user experience. The matching includes the movement of the first flow diverting portion 3121, but does not necessarily include the initial position. During the operation of the range hood 30, feedback adjustment is performed according to the actual resistance, and the rotation speed of the motor and the phase of the first flow diverting portion 3121 are adjusted based on the read rotation speed and power of the motor, so as to obtain optimal user experience.

[0109] Specifically, as shown in FIG. 9, the self-checking procedure includes the following steps.

[0110] At S301, the first flow diverting portion 3121 is controlled to be at the initial position.

[0111] It should be understood here that the range hood 30 is provided with a detection sensor. The detection sensor first detects a current position of the first flow diverting portion 3121. If the first flow diverting portion 3121 is at the initial position, the detection sensor sends

a position correct signal to the control apparatus 200. If the first flow diverting portion 3121 is not at the initial position, the detection sensor sends a position error signal to the control apparatus 200. The position error signal includes position information of the current position of the first flow diverting portion 3121. The control apparatus 200 controls the first flow diverting portion 3121 to rotate to the initial position based on the position error information.

[0112] In this way, the calculation of the resistance information of the range hood 30 may not be affected by the setting position of the first flow diverting portion 3121.

[0113] At S302, the fan is controlled to start up, and the detected current and detected rotation speed of the fan are obtained.

[0114] Specifically, after detecting that the first flow diverting portion 3121 is at the initial position, the control apparatus 200 may control the fan to start to rotate, and obtain the detected current and the detected rotation speed of the fan after the fan rotates stably. It should be understood here that data of only one set of the rotation speed and current data of the fan can be obtained, or data of several sets of different rotation speed and corresponding currents of the fan can be obtained.

[0115] At S203, resistance information of the range hood 30 is obtained.

[0116] Specifically, the obtaining the resistance information of the range hood 30 includes: calculating the resistance information based on the detected current and the detected rotation speed of the fan.

[0117] For example, the range hood 30 controls the air volume of the fan by changing the rotation speed of the fan, a current sensor for detecting the current of the fan and a rotation speed sensor for detecting the rotation speed of the fan are disposed in the range hood 30, and the resistance of the range hood 30 is calculated by using the detected current data and the detected rotation speed data.

[0118] In this way, the resistance information of the range hood 30 is calculated, and the rotation speed of the range hood 30 and the working position of the first flow diverting portion 3121 can be controlled by the resistance information of the range hood 30 in combination with the setting environment information of the range hood 30, so as to improve the oil fume suction effect of the range hood 30, reduce the working noise of the range hood 30, and improve the user's comfort in use.

[0119] At S204, the working air volume of the fan and the working position of the first flow diverting portion 3121 are determined based on the resistance information.

[0120] In some embodiments, the range hood 30 includes a control apparatus 200, and the control apparatus 200 determines the working air volume of the fan and the working position of the first flow diverting portion 3121 in the pipe body 311 based on the calculated resistance information.

[0121] In this way, by adjusting the working air volume of the fan and the working position of the first flow divert-

ing portion 3121, the working resistance of the range hood 30 can be reduced, thereby improving the oil fume suction effect of the range hood 30, and reducing the working noise.

[0122] Optionally, said determining the working air volume of the fan based on the resistance information includes: determining a working rotation speed of the fan based on the resistance information, and controlling the working air volume of the fan based on the working rotation speed.

[0123] Further, the fan is a direct current fan, and said determining the working rotation speed of the fan based on the resistance information includes: determining a working current of the fan based on the resistance information, and controlling the working rotation speed of the fan based on the working current. In this way, it is convenient to accurately control the air volume of the fan by controlling the working current of the fan.

[0124] Specifically, as shown in FIG. 10, said determining the working air volume of the fan and the working position of the first flow diverting portion 3121 based on the resistance information includes the following steps.

[0125] At S401, a predetermined air pressure of the range hood 30 is obtained based on the resistance information.

[0126] In this way, the predetermined air pressure of the fan can be determined based on the resistance information, so that the fan can have a suitable predetermined air pressure during operation.

[0127] At S402, a predetermined air volume corresponding to the predetermined air pressure is determined based on the predetermined air pressure.

[0128] In this way, the predetermined air volume of the fan can be determined based on the predetermined air pressure, and the predetermined air pressure of the fan can be matched with the predetermined air volume, so as to improve the oil fume suction efficiency of the range hood 30 and reduce the working noise of the range hood 30.

[0129] At S403, the working air volume of the fan and the working position of the first flow diverting portion 3121 are determined based on the predetermined air pressure and the predetermined air volume.

[0130] In this way, the working air volume of the fan and the working position of the first flow diverting portion 3121 are adjusted based on the predetermined air pressure and the predetermined air volume, so as to reduce the working resistance of the range hood 30, and make the working state of the range hood 30 adapt to the PQ curve of the range hood 30.

[0131] Specifically, the predetermined air pressure and the predetermined air volume of the fan are determined through the resistance information of the range hood 30, so as to be matched with the PQ curve near the air pressure value and the air volume value to cope with possible working condition fluctuation and optimize the user experience.

[0132] Optionally, the determining the working position

of the first flow diverting portion 3121 based on the resistance information includes: determining an included angle between the first flow diverting portion 3121 and an extending direction of the pipe body 311 based on the resistance information in such a manner that the flowing direction of the oil fume is consistent with the extending direction of the pipe body 311. In this way, the first flow diverting portion 3121 can be used to guide the oil fume, so as to facilitate the oil fume smoothly entering the range hood 30, reducing the resistance of the air channel of the range hood 30, improving the oil fume suction effect, and reducing the working noise.

[0133] Further, the determining the included angle between the first flow diverting portion 3121 and the extending direction of the pipe body 311 based on the resistance information includes: driving, through a driving member, the first flow diverting portion 3121 to rotate, so as to control the included angle between the first flow diverting portion 3121 and the extending direction of the pipe body 311. In this way, the automatic rotation of the first flow diverting portion 3121 can be realized, and the positioning accuracy and reliability of the working position of the first flow diverting portion 3121 can be improved.

[0134] At S205, the range hood 30 is controlled to initiate an oil fume suction procedure.

[0135] Specifically, after determining a specific magnitude of the working air volume of the fan and a specific working position of the first flow diverting portion 3121 in the pipe body 311, the control apparatus 200 of the range hood 30 controls the fan to adjust the rotation speed, controls the first flow diverting portion 3121 to rotate from the initial position to the desired working position, and then controls the range hood 30 to initiate the oil fume suction procedure.

[0136] In this way, preparations can be well made for the subsequent accurate calculation of the resistance information of the range hood 30.

[0137] In some embodiments, as shown in FIG. 11, the control method further includes the following steps subsequent to controlling the range hood 30 to initiate the oil fume suction procedure.

[0138] At S501, a working pressure of the range hood 30 is obtained.

[0139] Specifically, the range hood 30 may be provided with a pressure sensor, and the working pressure of the range hood 30 when sucking the oil fume is obtained through the pressure sensor. In this way, the working condition of the range hood 30 can be known in real time, which is convenient to monitor the range hood 30.

[0140] At S502, a situation that the working pressure is greater than a predetermined pressure is determined, and the range hood 30 is controlled to issue an alarm message.

[0141] In this way, when the working pressure of the range hood 30 is excessively high, the user can be prompted of the abnormality of the range hood 30 in time, which is convenient to check or close the range hood 30 in time to avoid damage to the range hood 30.

[0142] In some other embodiments of the present disclosure, as shown in FIG. 12, the control method further includes the following steps prior to controlling the range hood 30 to initiate the oil fume suction procedure.

[0143] At S601, a gear instruction is received.

[0144] For example, the range hood 30 may have an input button or a touch screen input interface, and the user selects a working gear of the range hood 30 based on the setting environment of the range hood 30 or the cooking type.

[0145] In this way, the functionality and applicability of the range hood 30 can be improved, and it is convenient for the user to reasonably select a suitable working state of the range hood 30.

[0146] At S602, the working air volume of the range hood 30 and the working position of the first flow diverting portion 3121 are adjusted based on the gear instruction.

[0147] In this way, by adjusting the working air volume of the range hood 30 and the working position of the first flow diverting portion 3121, the range hood 30 can have different oil fume suction effects and working noises in different gears, so as to meet the diverse needs of users.

[0148] Specifically, the receiving the gear instruction includes: obtaining gear information in the gear instruction. The gear information is determined based on a target noise value, a target oil fume suction effect, and a target cooking type. In this way, it is convenient to reasonably set a plurality of gears of the range hood 30 and improve the user experience.

[0149] More specifically, the adjusting the working air volume of the range hood 30 and the working position of the first flow diverting portion 3121 based on the gear instruction includes: identifying a type of the gear instruction; in accordance with a determination that the gear information is a mute gear, adjusting the working air volume of the range hood 30 to be within a first air volume range, and adjusting a rotation position of the first flow diverting portion 3121 to a first position; in accordance with a determination that the gear information is a balance gear, adjusting the working air volume of the range hood 30 to be within a second air volume range, and adjusting the rotation position of the first flow diverting portion 3121 to a second position; and in accordance with a determination that the gear information is a high-power gear, adjusting the working air volume of the range hood 30 to be within a third air volume range, and adjusting the rotation position of the first flow diverting portion 3121 to a third position. The target noise value in the mute gear is smaller than the target noise value in the balance gear, and the target noise value in the balance gear is smaller than the target noise value in the high-power gear.

[0150] In this way, the gears of the range hood 30 can be classified based on the magnitude of the working noise of the range hood 30, so as to meet the user's requirements for noise in the process of using the range hood 30.

[0151] It should be understood here that, under the same use environment and cooking conditions, the gear of the range hood 30 may not need to be adjusted. There-

fore, the gear adjustment can be used to adapt to different user types (preferences in both noise and fume suction effects) and cooking scenes with different amounts of fume. Therefore, the respective gears may have intersection in air volume.

[0152] In some embodiments of the present disclosure, the first flow diverting portion 3121 is formed as a flow diverting sheet, the pipe body 311 is connected to a rear end of the volute 32 and is a first segment of a fume pipe system of a combined stove. The pipe body 311 is designed with a flow diverting sheet, and a profile of the flow diverting sheet is consistent along a height direction of a flow channel. Each sharp local portion of a front end of the flow diverting sheet is designed with a chamfer to prevent the howling generated by the air flow passing through the sharp edges. A leading edge of the flow diverting sheet is arc-shaped to adapt to a certain width of a working area without flow separation. The flow diverting sheet includes a main body and a variable flow diverting sheet, the variable flow diverting sheet is mounted at a front end of the main body, and the variable flow diverting sheet is controlled by a stepper motor located outside the flow channel. An angle of the variable flow diverting sheet is controlled by the output current and rotation speed parameters of the direct current motor that drives the impeller. The flow rate and pressure parameters of the range hood 30 are determined through the current and the rotation speed, so that the angle of the variable flow diverting sheet is adapted to the flow field of the working condition.

[0153] According to a specific embodiment of the present disclosure, during the working process of the range hood 30, the main benefit brought to the user is that the fume generated during cooking is discharged, and the main cost is the noise generated by the range hood 30 during working. For a same user, the evaluation of the fume suction effect can be completely defined by an actual effective air volume Q and a required effective air volume Q_c of the range hood 30. For a same type of range hood 30, the actual effective air volume Q is determined only by the rotation speed of the impeller n , a fixed back pressure p_s of the pipe caused by the rear end installation, a variable pressure p_f of the pipe caused by factors such as the blockage of the common flue, and an installation condition C of the range hood 30. Q_c is dependent on the cooking method used by the user. Therefore, $S_A = S_A(Q, (Q(n, p_s + p_f), C), Q_c, a)$, where a represents an evaluation criterion of the user, and $Q(n, p_s + p_f)$ represents an actual flow rate of the range hood 30.

[0154] Similarly, the noise is evaluated according to $S_N = S_N(N, (Q(n, p_s + p_f), C), Q_c, a)$, so a user experience function $S = S(S_A, S_N)$ of the range hood 30 can be obtained. A control curve g of the range hood 30 should satisfy $S|_g = \max \{S\}$.

[0155] Generally, the control of the direct current motor adopts the rotation speed-current control, that is, by reading a rotation speed n and a current I of the motor during operation, a working flow rate Q and a working pressure

p of the range hood 30 at this time are calculated, and then feedback adjustment is conducted to enable the working point to be located on a predetermined control curve. Thus, the control curve g can be expressed as $g = g(p(n, I), Q(n, I)) = 0$.

[0156] By simultaneously solving the above equations through $p(n, I) = p_s + p_f$, a unique rotation speed-pressure relation and a current-pressure relation can be obtained under a given user use conditions (C, Q_c, a) , and then the current-rotation speed relation can be obtained, thereby obtaining a control strategy of the direct current motor.

[0157] So far, the control strategy problem of the specific range hood 30 is transformed into a determination problem of the user's use condition. An engineering feasible determination method is as follows. In a general control strategy, the different gears of the range hood 30 are only used to adjust a power output of the motor, i.e., a performance limit of the range hood 30. A relatively low gear limits a maximum air volume, a highest static pressure, and a PQ curve position of the range hood 30. In the present disclosure, different gears are adjusted into usage zones for different users. For example, gear 1, gear 2, and gear 3 are adjusted into the mute gear, the balance gear, and the high-power gear to adapt to the usage preferences a of different users. The required effective air volume Q_c can be determined by an additional oil fume detection device, including but not limited to an infrared probe, a VOC sensor, a smoke sensing module, etc. In another simpler implementation, instead of using the additional detection device, an assumption of a larger Q_c is used, so as to realize the oil fume suction effects in different cooking environments. Further, since the air volume and the noise of the range hood 30 show a simple positive correlation under a given back pressure, the traditional control strategy can be followed to set overlapping areas between different gears. For example, the setting of Q_c in the mute gear only meets a moderate fume discharging requirement, and the user can manually up-shift the gear to satisfy a higher fume discharging requirement. That is, the balance gear satisfies both the moderate requirement of Q_c for a balance type user and a greater requirement of Q_c for a mute type user.

[0158] The installation condition C of the range hood 30 characterizes the influence of the user's kitchen layout on the fume suction effect, and C can be defined by initial settings made when the range hood 30 is installed, or defined by detecting the environment by sensors such as a camera arranged on the range hood 30 or in other linkage devices.

[0159] Further, the control function can be piecewise described and fitted approximately, so as to control the range hood 30 through a piecewise function with little deviation from the optimal control curve, reducing the difficulty of writing the control program and avoid possible problems of many-to-one or saddle points, thus making the control program feasible and reducing the cost of the electronic control module.

[0160] For stand-alone villas and export scenarios, es-

pecially export internal circulation scenarios, p_f is close to 0, and an additional self-checking function can be added to the range hood 30 to obtain the working pressure p at different rotation speeds in advance, thereby greatly simplifying the control program and achieving more precise control for the range hood 30. Further, a difference between the working pressure p obtained by the self-checking and the working pressure p' obtained during actual working can be used to determine whether the working state of the range hood 30 is abnormal, or whether the purification module needs to be replaced or cleaned, and prompt the user to perform corresponding actions.

[0161] For the range hood 30 with the function of changing the flow structure (such as a flow guide member with a variable opening angle, a combined stove with an air inlet that can be moved up and down, a variable flow diverting structure in the flow channel, etc.), the control strategy in the present disclosure can simultaneously performs coupling control on these flow structure change modules. The control strategy is input the parameters to accordingly change the flow structure to change the functions N, Q , and in turn affect the user experience function S , thereby obtaining a better user experience.

[0162] Therefore, the control method for the range hood 30 of the present disclosure maximizes the control potential of the direct current motor, so that the direct current motor can approach the most ideal operating point of the range hood 30 for the user under the real-time use environment to the greatest extent. In this way, the user experience is optimized.

[0163] In a fourth aspect, the present disclosure provides a control apparatus 200 for a range hood 30. The control apparatus 200 for the range hood 30 is used to implement the above control method for the range hood 30. The control apparatus 200 for the range hood 30 includes an obtaining module 21 configured to obtain resistance information of the range hood 30, a determining module 22 configured to determine a working air volume of the fan and a rotation position of the first flow diverting portion 3121 based on the resistance information, and a control module 23 configured to control the range hood 30 to initiate the oil fume suction procedure.

[0164] As shown in FIG. 13, the control apparatus 200 for the range hood 30 according to the embodiments of the present disclosure includes the obtaining module 21, the determining module 22 and the control module 23. The obtaining module 21 is configured to obtain the resistance information of the range hood 30, the determining module 22 is configured to determine the working air volume of the fan and the rotation position of the flow diverting member 312 based on the resistance information, and the control module 23 is configured to control the range hood 30 to initiate the oil fume suction procedure.

[0165] Specifically, the control apparatus 200 for the range hood 30 further includes a self-checking module configured to control the range hood 30 to initiate a self-

checking procedure, and control the flow diverting member 312 to be at an initial position, in such a manner that the resistance information is obtained based on a current and a rotation speed of the fan.

[0166] Specifically, the control module 23 includes a memory 231, a processor 232, and a control program for the range hood 30 that is stored in the memory 231 and executable on the processor 232. The processor 232, when executing the control program for the range hood 30, implements the above control method for the range hood 30. When the processor 232 executes the control program for the range hood 30 that is stored in the memory 231, the control method for the range hood 30 according to the above embodiments of the present disclosure is implemented, which has the advantages of good oil fume suction effect and low noise.

[0167] In a fifth aspect, the present disclosure provides a computer-readable storage medium, the computer-readable storage medium having a control program for the range hood 30 stored thereon. The control program for the range hood 30, when executed by the processor 232, implements the control method for the range hood 30 as mentioned above. In the computer-readable storage medium according to the embodiments of the present disclosure, the stored control program for the range hood 30, when executed by the processor 232, implements the control method for the range hood 30 according to the above-mentioned embodiments of the present disclosure, which has the advantages of good oil fume suction effect and low noise.

[0168] Other structures and operations of the range hood according to the embodiments of the present disclosure are known to those of ordinary skill in the art, and will not be described in detail here.

[0169] It should be understood that in the description of the present disclosure, the orientation or positional relation indicated by the term "center", "longitudinal", "transverse", "length", "width", "thickness", "upper", "lower", "front", "rear", "left", "right", "vertical", "horizontal", "top", "bottom", "inner", "outer", "clockwise", "counterclockwise", "axial", "radial", "circumferential", etc. is based on the orientation or positional relation shown in the accompanying drawing, is only for the convenience of describing the present disclosure and simplifying the description, rather than indicating or implying that the indicated apparatus or element must have a specific orientation or be constructed or operated in a specific orientation, and therefore should not be construed as a limitation of the present disclosure. Furthermore, features delimited with "first" and "second" may expressly or implicitly include one or more of the features. In the description of the present disclosure, unless stated otherwise, "plurality" means two or more. In the description of the present disclosure, a first feature being "above" or "under" a second feature may include that the first and second features are in direct contact, and the first and second features are not in direct contact

but in contact through an additional feature between them.

[0170] It should be noted that in the description of the present disclosure, unless otherwise expressly specified and limited, the terms "installed", "connected" and "connect" should be understood in a broad sense. For example, it can be a fixed connection, a detachable connection, or an integral connection; it can be a mechanical connection, or an electrical connection; and it can be direct connection, or indirect connection through an intermediate, or an internal communication between two elements. For those of ordinary skill in the art, the specific meanings of the above terms in the present disclosure can be understood in specific situations.

[0171] In the description of the specification, description with reference to the terms "an embodiment," "some embodiments," "example," "specific example," or "some examples", etc., mean specific features, structures, materials or characteristics described in connection with the embodiments or examples are included in at least one embodiment or example of the present disclosure. In the specification, schematic representations of the above terms are not necessarily directed to the same embodiment or example. Furthermore, the particular features, structures, materials or characteristics described may be combined in any suitable manner in any one or more embodiments or examples. Furthermore, those skilled in the art may combine the different embodiments or examples described in the specification, as well as the features of the different embodiments or examples, without conflicting each other.

[0172] Although the embodiments of the present disclosure have been shown and described, it will be understood by those of ordinary skill in the art that various changes, modifications, substitutions and alterations can be made to these embodiments without departing from the principles and ideas of the present disclosure. The scope of the present disclosure is defined by the claims and their equivalents.

[0173] Furthermore, any process or method described in the flowchart or described otherwise herein can be understood as a module, segment or part of codes that include one or more executable instructions for implementing steps of specific logical functions or processes. It can be appreciated by those skilled in the art that the scope of the preferred embodiments of the present disclosure includes additional implementations where functions may not be performed in the order as shown or discussed, including implementations where the involved functions are performed substantially simultaneously or even in a reverse order.

[0174] The logic and/or steps represented in flowcharts or otherwise described herein, for example, may be considered an ordered listing of executable instructions for implementing the logical functions, and may be embodied in any computer-readable medium, for use by, or in conjunction with, an instruction execution system, apparatus, or device (such as a computer-based system,

a system including a processor, or other systems that can obtain and execute instructions from an instruction execution system, apparatus, or device). For the purposes of the specification, the "computer-readable medium" can be any apparatus that can contain, store, communicate, propagate, or transport the program for use by or in conjunction with an instruction execution system, apparatus, or device. More specific examples (non-exhaustive list) of the computer-readable medium include: an electrical connection portion with one or more wires (an electronic apparatus), a portable computer disk case (a magnetic apparatus), a random access memory (the control method M for the range hood R), a read only memory (ROM), an erasable editable read only memory (EPROM or Flash Memory), an optical fiber apparatus, and a portable compact disc read only memory (CDROM). In addition, the computer-readable medium may even be a paper or other suitable media on which the program may be printed, as the paper or other media may be optically scanned, for example, followed by editing, interpretation, or processing by other suitable manners as necessary to obtain the program electronically and then store it in a computer memory.

[0175] It should be understood that various parts of the present disclosure may be implemented in hardware, software, firmware, or a combination thereof. In the above-described embodiments, various steps or methods may be implemented in software or firmware stored in memory and executed by a suitable instruction execution system. For example, if implemented in hardware as in another embodiment, it can be implemented by any one of the following techniques known in the art, or a combination thereof: a discrete logic circuit with logic gates for implementing logic functions on data signals, an application-specific integrated circuit with suitable combinational logic gates, a programmable gate array (the control method for the PG range hood), a field programmable gate array (the control method for the FPG range hood), etc.

[0176] The above-mentioned storage medium may be a read-only memory, a magnetic disk or an optical disk, etc. Although the embodiments of the present disclosure have been shown and described above, it should be understood that the above embodiments are exemplary and should not be construed as limitations to the present disclosure. Those of ordinary skill in the art can make changes, modifications, substitutions and variations to the above-described embodiments within the scope of the present disclosure.

[0177] The above are only the preferred specific embodiments of the present disclosure, but the protection scope of the present disclosure is not limited thereto. Any changes or substitutions that any person skilled in the art can easily think of within the technical scope disclosed in the present disclosure should be covered within the protection scope of the present disclosure. Therefore, the protection scope of the present disclosure shall be subject to the protection scope of the claims.

Claims**1.** A range hood, comprising:

a volute having an air inlet and an air outlet that are in communication with an interior of the volute;
 a fan disposed in the volute; and
 a fume exhaust pipe in communication with the air outlet, wherein the fume exhaust pipe comprises a pipe body and a flow diverting member disposed in the pipe body, wherein the flow diverting member comprises a first flow diverting portion having a first air guide surface, the first flow diverting portion being disposed corresponding to a position through which oil fume with a flowing component passes, and the first air guide surface adjusting a flowing direction of the oil fume with the flowing component.

2. The range hood according to claim 1, wherein a side surface of the first flow diverting portion close to a volute tongue of the volute is the first air guide surface.

3. The range hood according to claim 2, wherein the first flow diverting portion further has a second air guide surface, the second air guide surface being a side surface of the first flow diverting portion facing towards an inflow direction of the oil fume with the flowing component.

4. The range hood according to claim 3, wherein the first flow diverting portion has a side close to an inner wall of the pipe body and an other side close to a middle part of the pipe body.

5. The range hood according to claim 3, wherein the second air guide surface is a first curved surface.

6. The range hood according to claim 5, wherein the first curved surface is a first convex arc surface.

7. The range hood according to claim 1, wherein the flow diverting member further comprises a second flow diverting portion, the second flow diverting portion having two ends respectively connected to the inner wall of the pipe body, and the second flow diverting portion being located on a side of the first flow diverting portion facing away from an inlet of the pipe body.

8. The range hood according to claim 7, wherein the second flow diverting portion is of a first plate-like structure disposed along a length direction of the pipe body, the first plate-like structure having two ends respectively connected to the inner wall of the pipe body in a detachable manner.

9. The range hood according to claim 8, wherein the second flow diverting portion has a third air guide surface, the third air guide surface being a side surface of the first plate-like structure facing towards the inlet.

10. The range hood according to claim 9, wherein the third air guide surface is a second curved surface.

11. The range hood according to claim 10, wherein the second curved surface is a second convex arc surface.

12. The range hood according to claim 1, wherein the first flow diverting portion is disposed in the pipe body in a rotatable manner.

13. The range hood according to claim 12, wherein the fume exhaust pipe further comprises:

a connecting shaft through which the first flow diverting portion fits with the pipe body; and
 a driving member disposed at the pipe body and connected to the connecting shaft in a transmission manner.

14. The range hood according to claim 13, wherein the flow diverting member further comprises a second flow diverting portion close to the first flow diverting portion.

15. The range hood according to claim 14, wherein the second flow diverting portion is of a first plate-like structure, and wherein the first flow diverting portion is of a second plate-like structure, a position where the connecting shaft fits with the second plate-like structure being close to the first plate-like structure, so that the oil fume flows along the second plate-like structure to the first plate-like structure in a continuous manner.

16. The range hood according to claim 7, wherein the first air guide surface is inclined to the length direction of the pipe body and is disposed away from the volute tongue of the volute.

17. The range hood according to claim 16, wherein the first flow diverting portion is connected to the second flow diverting portion.

18. The range hood according to claim 17, wherein the first flow diverting portion is an arc plate having a convex arc surface which is the first air guide surface.

19. A combined cooking device, comprising:

a range hood according to any one of claims 1 to 18;

- a case in which the range hood is disposed;
a cooking table provided with a cooking position
and fitting with the case; and
a heating apparatus fitting with the cooking table
and disposed corresponding to the cooking position. 5
- 20.** A control method for a range hood, the control method being implemented in to a range hood according to any one of claims 1 to 15, and the control method comprising: 10
- obtaining a resistance information of the range hood;
determining a working air volume of a fan and a working position of a first flow diverting portion based on the resistance information; and 15
controlling the range hood to initiate an oil fume suction procedure.
- 21.** The control method for the range hood according to claim 20, wherein said obtaining the resistance information of the range hood comprises:
calculating the resistance information based on a detected current and a detected rotation speed of the fan. 25
- 22.** The control method for the range hood according to claim 21, further comprising:
controlling the range hood to enter a self-checking procedure prior to said obtaining the resistance information of the range hood. 30
- 23.** The control method for the range hood according to claim 22, wherein the self-checking procedure comprises: 35
- controlling the first flow diverting portion to be at an initial position; and
controlling the fan to start up, and obtaining the detected current and the detected rotation speed of the fan. 40
- 24.** The control method for the range hood according to claim 22, further comprising: 45
- determining that installation of the range hood is completed, and controlling the range hood to issue a prompt message; and
receiving a self-checking instruction, and controlling the range hood to execute the self-checking procedure. 50
- 25.** The control method for the range hood according to claim 20, wherein said determining the working air volume of the fan and the working position of the first flow diverting portion based on the resistance information comprises: 55
- obtaining a predetermined air pressure of the range hood based on the resistance information;
determining a predetermined air volume corresponding to the predetermined air pressure based on the predetermined air pressure; and
determining the working air volume of the fan and the working position of the first flow diverting portion based on the predetermined air pressure and the predetermined air volume.
- 26.** The control method for the range hood according to claim 20, wherein said determining the working air volume of the fan based on the resistance information comprises:
determining a working rotation speed of the fan based on the resistance information, and controlling the working air volume of the fan based on the working rotation speed.
- 27.** The control method for the range hood according to claim 26, wherein the fan is a direct current fan, and said determining the working rotation speed of the fan based on the resistance information comprises:
determining a working current of the fan based on the resistance information, and controlling the working rotation speed of the fan based on the working current.
- 28.** The control method for the range hood according to claim 20, wherein said determining the working position of the first flow diverting portion based on the resistance information comprises:
determining an included angle between the flow diverting member and an extending direction of the pipe body based on the resistance information in such a manner that the flowing direction of the oil fume is consistent with the extending direction of the pipe body.
- 29.** The control method for the range hood according to claim 28, wherein said determining the included angle between the first flow diverting portion and the extending direction of the pipe body based on the resistance information comprises:
driving, through a driving member, the first flow diverting portion to rotate, so as to control the included angle between the first flow diverting portion and the extending direction of the pipe body.
- 30.** The control method for the range hood according to claim 20, further comprising, subsequent to said controlling the range hood to enter the oil fume suction procedure:
- obtaining a working pressure of the range hood; and
determining that the working pressure is greater than a predetermined pressure, and controlling

the range hood to issue an alarm message.

- 31.** The control method for the range hood according to claim 20, further comprising, prior to said controlling the range hood to enter the oil fume suction procedure:

receiving a gear instruction; and
adjusting the working air volume of the range hood and the working position of the first flow diverting portion based on the gear instruction.

- 32.** The control method for the range hood according to claim 31, wherein said receiving the gear instruction comprises:
obtaining gear information in the gear instruction, the gear information being determined based on a target noise value, a target oil fume suction effect, and a target cooking type.

- 33.** The control method for the range hood according to claim 32, wherein said adjusting the working air volume of the range hood and the working position of the first flow diverting portion based on the gear instruction comprises:

Determining that the gear information is a mute gear, adjusting the working air volume of the range hood to be within a first air volume range, and adjusting a rotation position of the first flow diverting portion to be a first position;
determining that the gear information is a balance gear, adjusting the working air volume of the range hood to be within a second air volume range, and adjusting the rotation position of the first flow diverting portion to be a second position; and
determining that the gear information is a high-power gear, adjusting the working air volume of the range hood to be within a third air volume range, and adjusting the rotation position of the first flow diverting portion to be a third position, wherein the target noise value in the mute gear is smaller than the target noise value in the balance gear, and the target noise value in the balance gear is smaller than the target noise value in the high-power gear.

- 34.** A control apparatus for a range hood, the control apparatus performing a control method for the range hood according to any one of claims 20 to 33, and the control apparatus comprising:

an obtaining module obtaining a resistance information of the range hood;
a determining module determining a working air volume of a fan and a rotation position of a first flow diverting portion based on the resistance

information; and

a control module controlling the range hood to initiate an oil fume suction procedure.

- 35.** The control apparatus for the range hood according to claim 34, further comprising:
a self-checking module configured to control the range hood to enter a self-checking procedure and control the first flow diverting portion to be at an initial position, in such a manner that the resistance information is obtained based on a current and a rotation speed of the fan.

- 36.** The control apparatus for the range hood according to claim 34, wherein the control module comprises:

a memory;
a processor; and
a control program for the range hood stored in the memory and executable on the processor, wherein the processor is configured to, when executing the control program for the range hood, implement the control method for the range hood according to any one of claims 20 to 33.

- 37.** A computer-readable storage medium, having a control program for a range hood stored thereon, wherein the control program for the range hood, when executed by a processor, implements a control method for the range hood according to any one of claims 20 to 33.

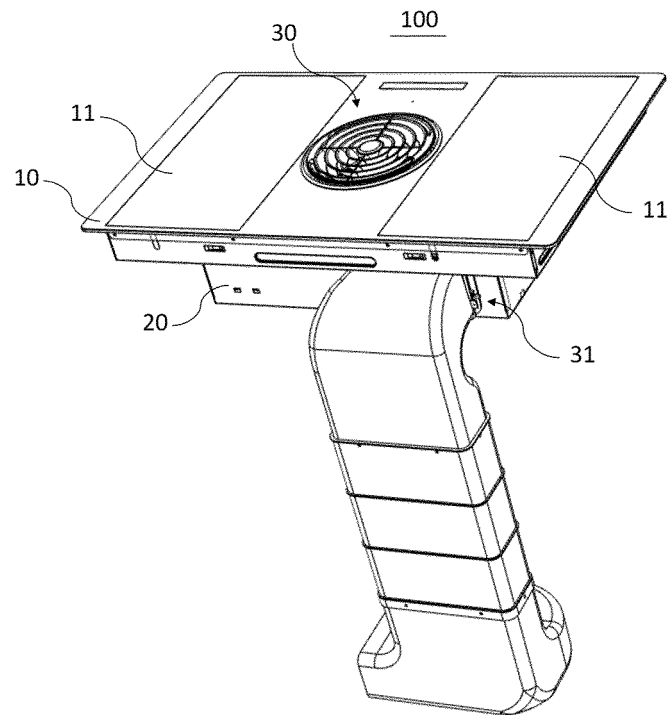


FIG. 1

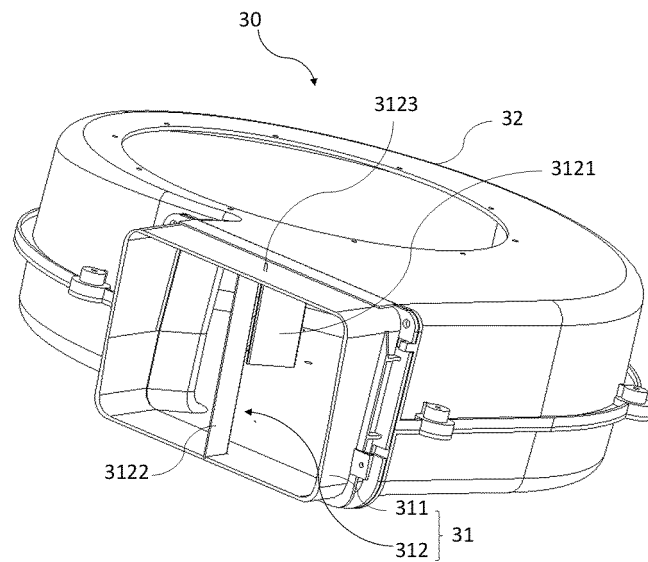


FIG. 2

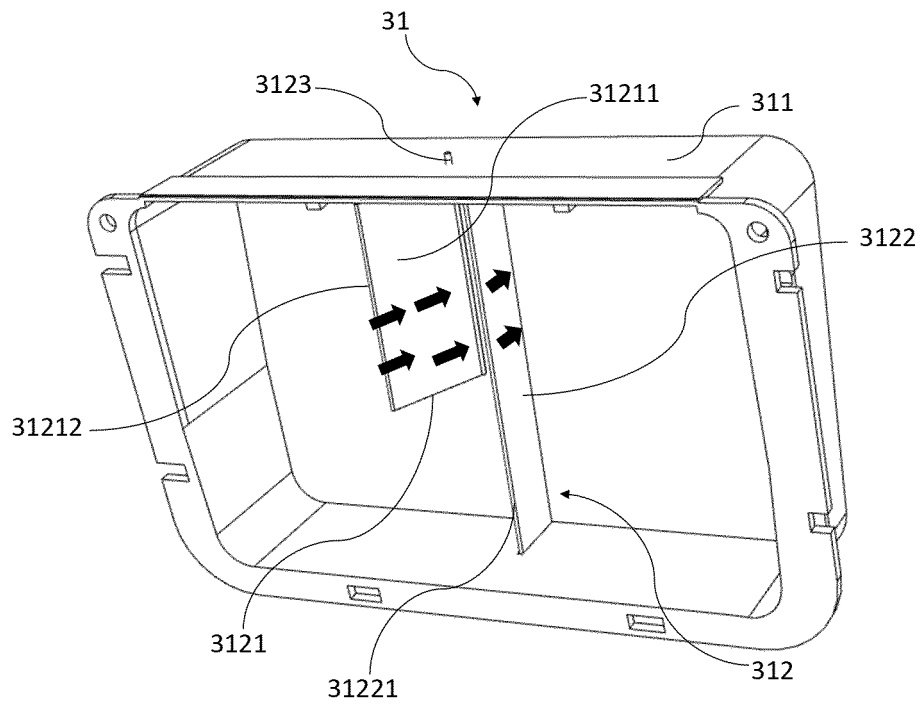


FIG. 3

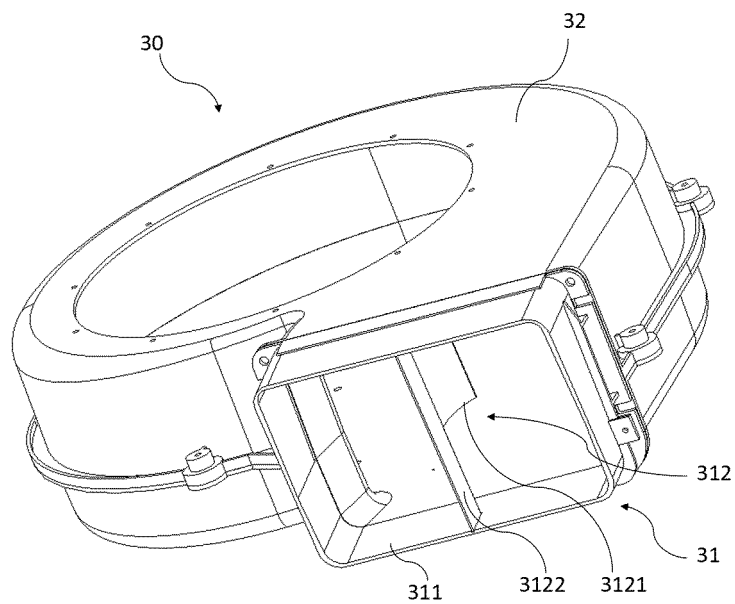


FIG. 4

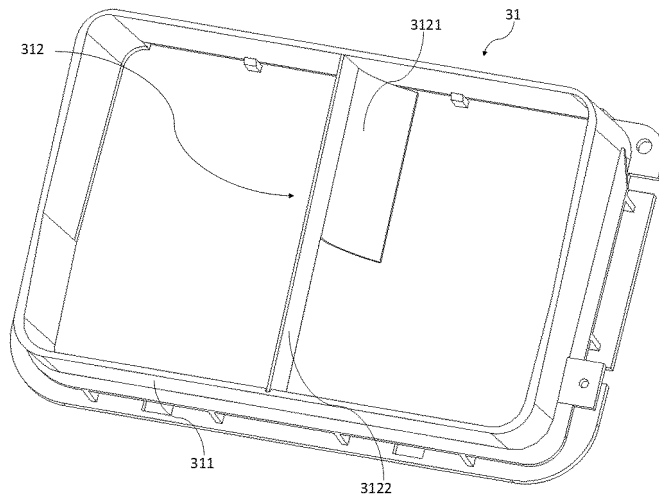


FIG. 5

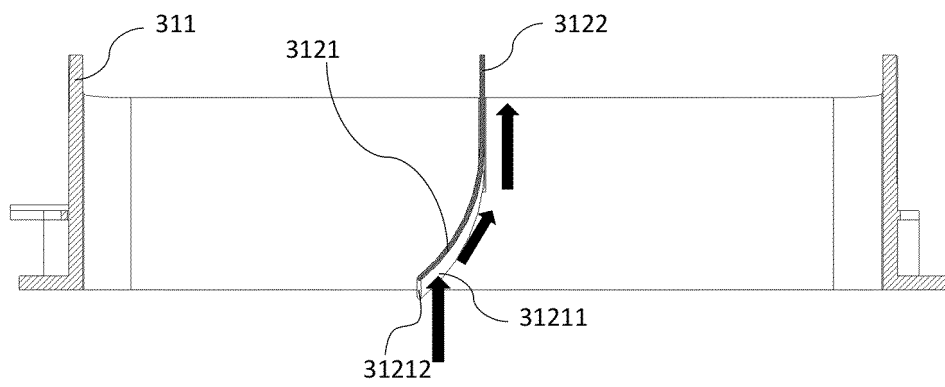


FIG. 6

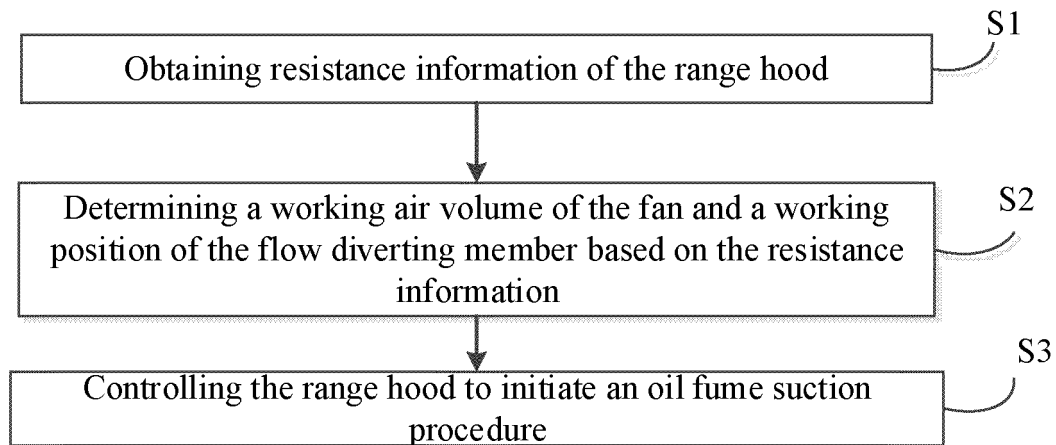


FIG. 7

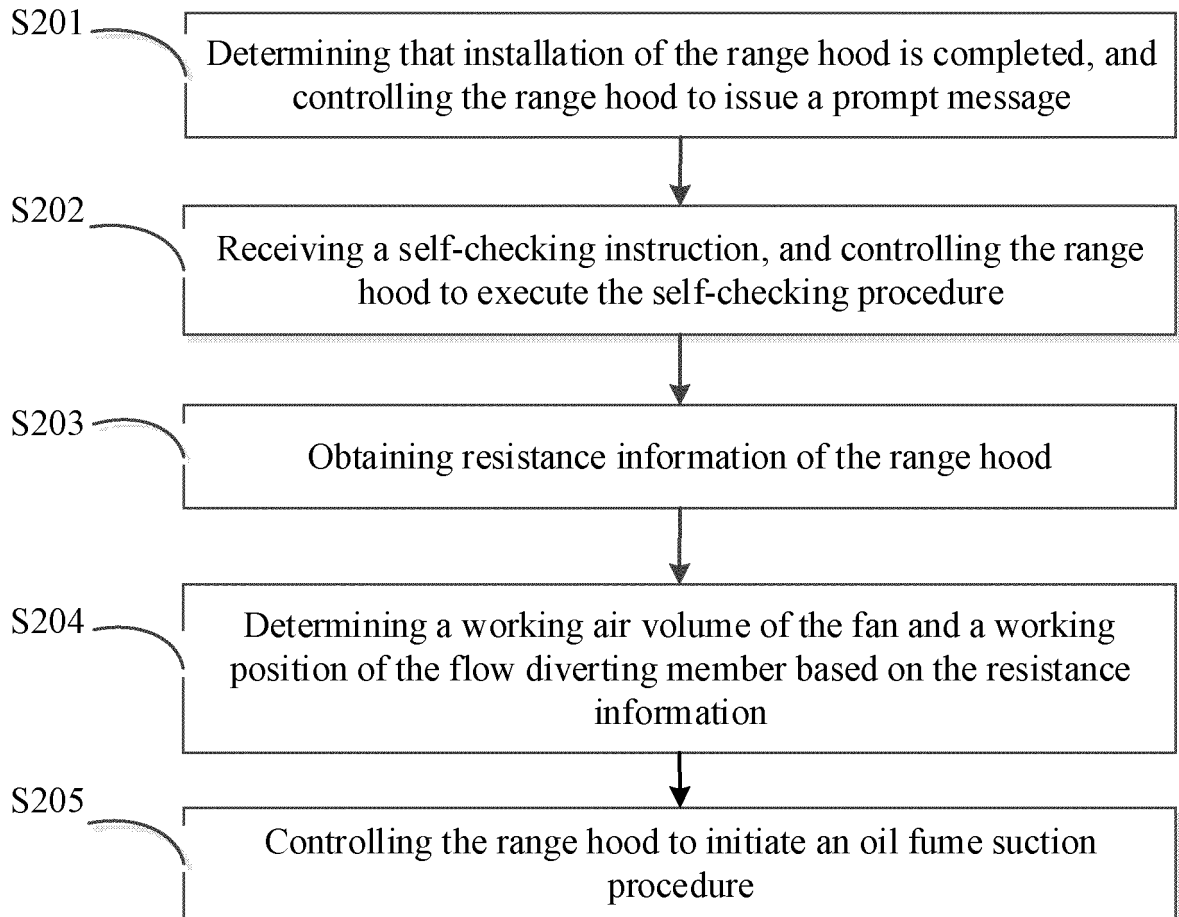


FIG. 8

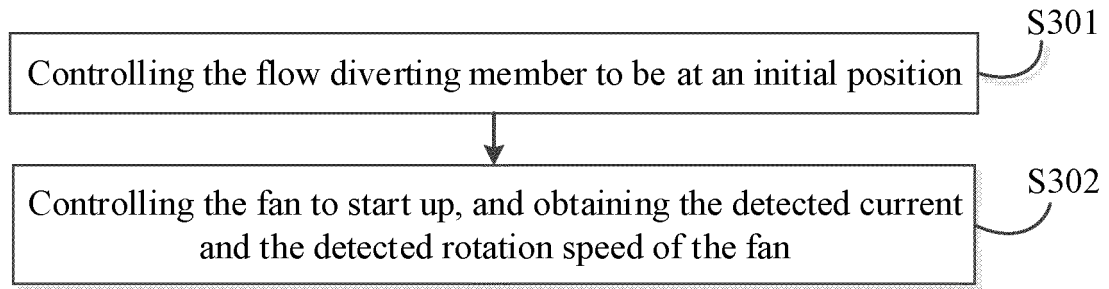


FIG. 9

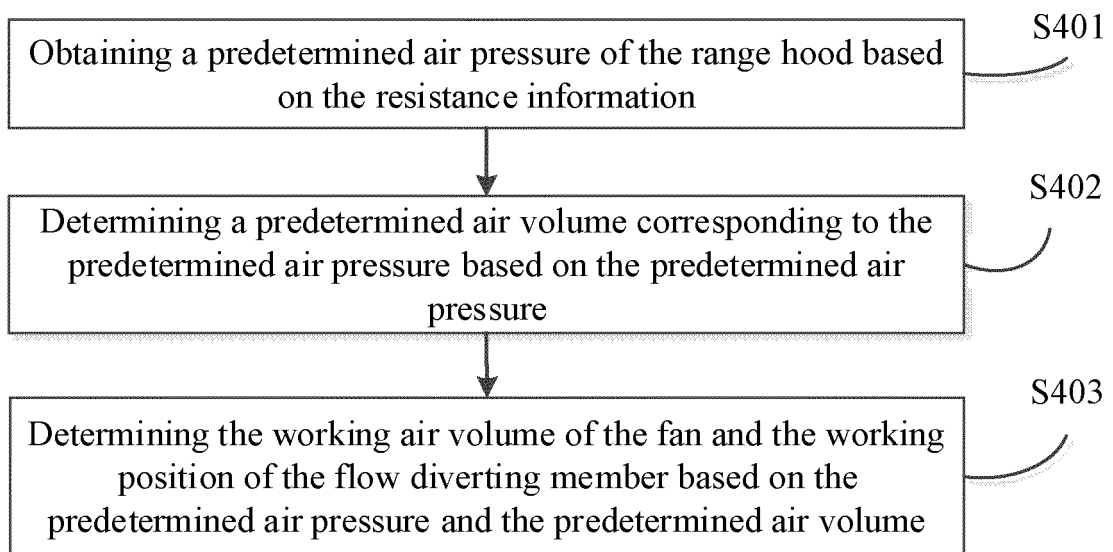


FIG. 10

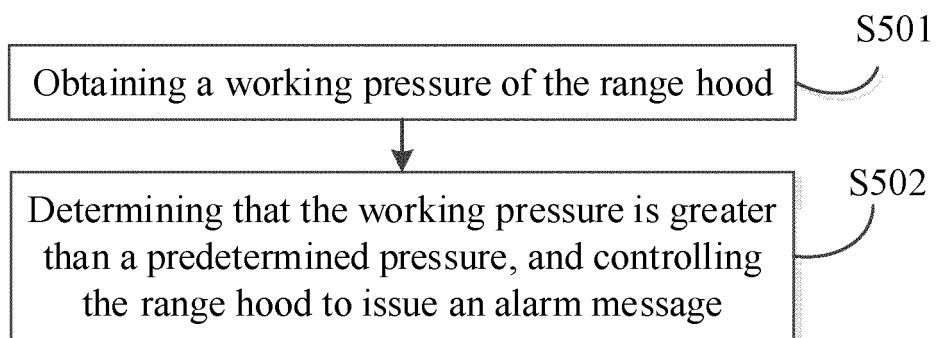


FIG. 11

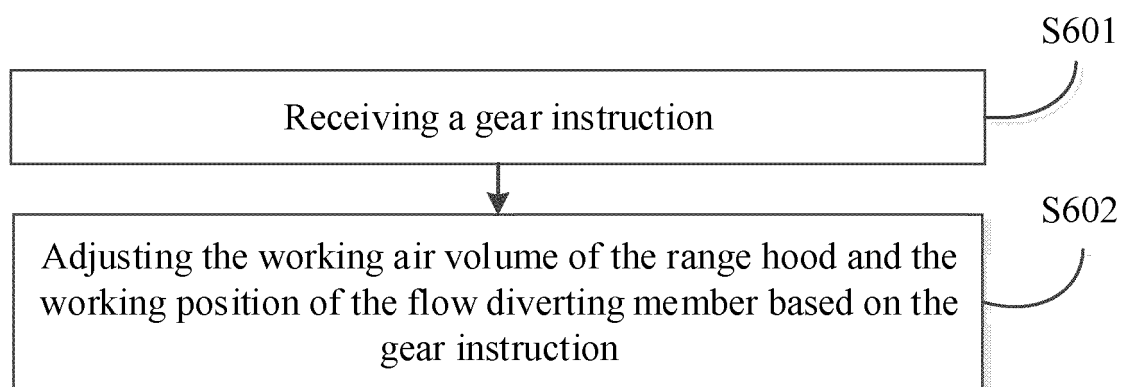


FIG. 12

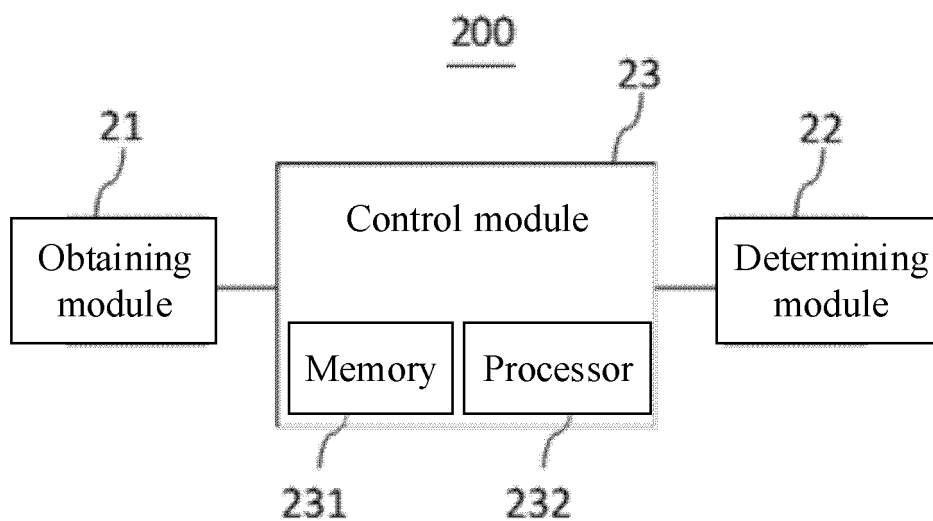


FIG. 13

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2020/138109

A. CLASSIFICATION OF SUBJECT MATTER F24C 15/20(2006.01)i; F04D 29/42(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 15; F04D 29 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) CNABS, CNKI, CNTXT, SIPOABS, VEN: 油烟机, 风机, 蜗壳, 导板, 导流板, 挡板, 引导, 导风, 风阻, 风压, 分流, 出风, 控制, 灶, hood, fan, blower, guiding, baffle, vane, resistance, drag, outlet, control, oven																					
C. DOCUMENTS CONSIDERED TO BE RELEVANT																					
<table border="1"> <thead> <tr> <th>Category*</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>PX</td> <td>CN 111503699 A (FOSHAN SHUNDE MIDEA WASHING APPLIANCES MFG CO., LTD.) 07 August 2020 (2020-08-07) claims 1-10, description paragraphs [0045]-[0075], figures 1-4</td> <td>1-19</td> </tr> <tr> <td>PX</td> <td>CN 111503697 A (FOSHAN SHUNDE MIDEA WASHING APPLIANCES MFG CO., LTD.) 07 August 2020 (2020-08-07) claims 1-13, description paragraphs [0049]-[0079], figures 1-3</td> <td>1-19</td> </tr> <tr> <td>Y</td> <td>CN 207778531 U (GUANGDONG MIDEA KITCHEN APPLIANCES MANUFACTURING CO., LTD. et al.) 28 August 2018 (2018-08-28) description, paragraphs [0038]-[0062], and figures 1-4</td> <td>1-6, 12-13, 19-22, 24, 26, 34, 36-37</td> </tr> <tr> <td>Y</td> <td>KR 20040019588 A (WOONGJIN COWAY CO., LTD.) 06 March 2004 (2004-03-06) abstract, and figures 1-4</td> <td>1-6, 12-13, 19-22, 24, 26, 34, 36-37</td> </tr> <tr> <td>Y</td> <td>CN 106705160 A (HANGZHOU ROBAM APPLIANCES CO., LTD.) 24 May 2017 (2017-05-24) description, paragraphs [0015]-[0020], and figures 1-2</td> <td>19-22, 24, 26, 34, 36-37</td> </tr> <tr> <td>Y</td> <td>CN 103672995 A (WH MEDIA KITCHEN & BATH APPLIANCES MANUFACTURING CO., LTD.) 26 March 2014 (2014-03-26) description, paragraphs [0052]-[0135], and figures 1-12</td> <td>36-37</td> </tr> </tbody> </table>	Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	PX	CN 111503699 A (FOSHAN SHUNDE MIDEA WASHING APPLIANCES MFG CO., LTD.) 07 August 2020 (2020-08-07) claims 1-10, description paragraphs [0045]-[0075], figures 1-4	1-19	PX	CN 111503697 A (FOSHAN SHUNDE MIDEA WASHING APPLIANCES MFG CO., LTD.) 07 August 2020 (2020-08-07) claims 1-13, description paragraphs [0049]-[0079], figures 1-3	1-19	Y	CN 207778531 U (GUANGDONG MIDEA KITCHEN APPLIANCES MANUFACTURING CO., LTD. et al.) 28 August 2018 (2018-08-28) description, paragraphs [0038]-[0062], and figures 1-4	1-6, 12-13, 19-22, 24, 26, 34, 36-37	Y	KR 20040019588 A (WOONGJIN COWAY CO., LTD.) 06 March 2004 (2004-03-06) abstract, and figures 1-4	1-6, 12-13, 19-22, 24, 26, 34, 36-37	Y	CN 106705160 A (HANGZHOU ROBAM APPLIANCES CO., LTD.) 24 May 2017 (2017-05-24) description, paragraphs [0015]-[0020], and figures 1-2	19-22, 24, 26, 34, 36-37	Y	CN 103672995 A (WH MEDIA KITCHEN & BATH APPLIANCES MANUFACTURING CO., LTD.) 26 March 2014 (2014-03-26) description, paragraphs [0052]-[0135], and figures 1-12	36-37
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.																			
PX	CN 111503699 A (FOSHAN SHUNDE MIDEA WASHING APPLIANCES MFG CO., LTD.) 07 August 2020 (2020-08-07) claims 1-10, description paragraphs [0045]-[0075], figures 1-4	1-19																			
PX	CN 111503697 A (FOSHAN SHUNDE MIDEA WASHING APPLIANCES MFG CO., LTD.) 07 August 2020 (2020-08-07) claims 1-13, description paragraphs [0049]-[0079], figures 1-3	1-19																			
Y	CN 207778531 U (GUANGDONG MIDEA KITCHEN APPLIANCES MANUFACTURING CO., LTD. et al.) 28 August 2018 (2018-08-28) description, paragraphs [0038]-[0062], and figures 1-4	1-6, 12-13, 19-22, 24, 26, 34, 36-37																			
Y	KR 20040019588 A (WOONGJIN COWAY CO., LTD.) 06 March 2004 (2004-03-06) abstract, and figures 1-4	1-6, 12-13, 19-22, 24, 26, 34, 36-37																			
Y	CN 106705160 A (HANGZHOU ROBAM APPLIANCES CO., LTD.) 24 May 2017 (2017-05-24) description, paragraphs [0015]-[0020], and figures 1-2	19-22, 24, 26, 34, 36-37																			
Y	CN 103672995 A (WH MEDIA KITCHEN & BATH APPLIANCES MANUFACTURING CO., LTD.) 26 March 2014 (2014-03-26) description, paragraphs [0052]-[0135], and figures 1-12	36-37																			
☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex. * Special categories of cited documents: “A” document defining the general state of the art which is not considered to be of particular relevance “E” earlier application or patent but published on or after the international filing date “L” document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) “O” document referring to an oral disclosure, use, exhibition or other means “P” document published prior to the international filing date but later than the priority date claimed “T” later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention “X” document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone “Y” document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art “&” document member of the same patent family																					
Date of the actual completion of the international search 08 March 2021	Date of mailing of the international search report 16 March 2021																				
Name and mailing address of the ISA/CN China National Intellectual Property Administration (ISA/CN) No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088 China Facsimile No. (86-10)62019451	Authorized officer Telephone No.																				

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

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2020/138109

C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CN 106122101 A (GREE ELECTRIC APPLIANCES, INC. OF ZHUHAI) 16 November 2016 (2016-11-16) entire document	1-37
A	CN 207778531 U (GUANGDONG MIDEA KITCHEN APPLIANCES MANUFACTURING CO., LTD.; MIDEA GROUP CO., LTD.) 28 August 2018 (2018-08-28) entire document	1-37
A	WO 2015048231 A1 (BORGWARNER INC. et al.) 02 April 2015 (2015-04-02) entire document	1-37

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

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/CN2020/138109

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN 111503699 A	07 August 2020	None	
CN 111503697 A	07 August 2020	None	
CN 207778531 U	28 August 2018	None	
KR 20040019588 A	06 March 2004	KR 100472867 B1	08 March 2005
CN 106705160 A	24 May 2017	CN 106705160 B	25 September 2018
CN 103672995 A	26 March 2014	CN 103672995 B	10 February 2016
CN 106122101 A	16 November 2016	CN 106122101 B	30 October 2018
WO 2015048231 A1	02 April 2015	US 2016230651 A1	11 August 2016
		US 10480398 B2	19 November 2019
		DE 112014004513 T5	28 July 2016

Form PCT/ISA/210 (patent family annex) (January 2015)

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- CN 202010462387 **[0001]**
- CN 202020930573 **[0001]**
- CN 202010463696 **[0001]**
- CN 202020930634 **[0001]**