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(71) Applicant: **Foshan Shunde Midea Electrical Heating Appliances Manufacturing Co., Ltd.**
Foshan, Guangdong 528311 (CN)

(72) Inventors:
- **LEI, Guomao**
  Foshan, Guangdong 528311 (CN)
- **WU, Huimin**
  Foshan, Guangdong 528311 (CN)
- **SHAN, Shujun**
  Foshan, Guangdong 528311 (CN)
- **WANG, Kai**
  Foshan, Guangdong 528311 (CN)
- **LIU, Xiaokai**
  Foshan, Guangdong 528311 (CN)
- **ZHENG, Liang**
  Foshan, Guangdong 528311 (CN)

(74) Representative: **Ran, Handong et al**
Maucher Jenkins
Seventh Floor Offices
Artillery House
11-19 Artillery Row
London SW1P 1RT (GB)

(54) **RANGE HOOD ASSEMBLY AND INTEGRATED COOKER**

(57) The present application provides a range hood assembly and an integrated cooker. The range hood assembly comprises: a volute comprising an air inlet and an air outlet; and a flow collecting part arranged on the volute and comprising an air duct, an outlet of the air duct being communicated with the air inlet, wherein the inner surface of the air duct is a curved surface; and the flow area of the air duct is gradually reduced in the flow direction of the air duct. By defining the described features, a tapered air duct of which the inner surface is a smooth curved surface is formed in the flow collecting part. By providing the smooth curved surface, the impact of airflow on the inner wall of the air duct can be reduced, and the possibility that the airflow flows back or generates vortexes due to impact can be reduced in the airflow collecting process, thereby overcoming the technical defects in the prior art of backflow and vortexes being prone to occurring, the airflow being prone to leakage, and aerodynamic noise being large. On this basis, by providing an air duct in which the flow area is gradually reduced in the airflow direction, oil fumes can be compressed and accelerated by means of the air duct, so that range hood flow volume is increased, thereby solving the technical problem of being unable to meet fume exhaust requirements due to small range hood flow volume.

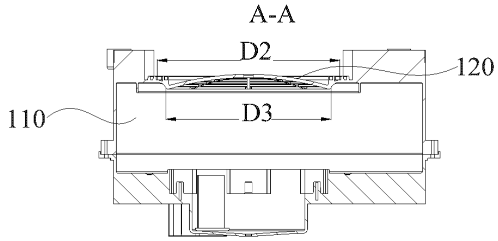

FIG. 6

EP 4 585 859 A1

Description

[0001] This application claims priority to Chinese Patent Application No. 202222438708.8 filed with China National Intellectual Property Administration on September 15, 2022 and entitled "RANGE HOOD ASSEMBLY AND INTEGRATED COOKER", the entire contents of which are herein incorporated by reference.

FIELD

[0002] The present application relates to the technical field of cooking utensils, and particularly relates to a range hood assembly and an integrated cooker.

BACKGROUND

[0003] In related art, airflow is often guided with a straight tube structure at the volute inlet of a range hood assembly, but the straight tube structure is prone to backflow and vortex, which leads to airflow leakage. Leakage can lead to a decrease in the flow rate of a range hood, and affect the oil fume extraction efficiency of the range hood. Backflow and vortex can cause significant aerodynamic noise, and result in an increase in the working noise of a fan.

[0004] Therefore, how to design a range hood assembly and an integrated cooker that can effectively solve the above technical defects has become an urgent technical problem to be solved.

SUMMARY

[0005] The present application aims to solve at least one of the technical problems in the prior art.

[0006] Therefore, the first aspect of the present application provides a range hood assembly.

[0007] The second aspect of the present application provides an integrated cooker.

[0008] In view of this, according to the first aspect of the present application, a range hood assembly is provided, and the range hood assembly comprises: a volute comprising an air inlet and an air outlet; and a flow collecting portion arranged on the volute , comprising an air duct, and an outlet of the air duct is communicated with the air inlet, and the inner surface of the air duct is a curved surface; and the flow area of the air duct is gradually reduced in the flow direction of the air duct.

[0009] The present application provides a range hood assembly, which belongs to the power structure on a fume exhaust stove. The specific range hood assembly can suck oil fume and discharge the sucked oil fume through a flue to a designated area.

[0010] The range hood assembly comprises the volute and the flow collecting portion; the volute is the main structure of the range hood assembly, and is firstly configured to locate and support other structures on the range hood assembly, and secondly, the volute encloses a flow channel for the oil fume to flow. The volute is formed with the air inlet and the air outlet. The air inlet is provided at the end face of the volute and is coaxial with the volute, and the air outlet is provided in the side face of the volute. The flow collecting portion is provided at the air inlet of the volute, and the outlet of the flow collecting portion is communicated with the air inlet. During the working process, the oil fume flows into the air inlet under the collection effect of the flow collecting portion. The oil fume is pressurized and expanded by the volute in the flow channel, and then discharged out of the volute through the air outlet, thus achieving the extraction and directional discharge of oil fume.

[0011] In related art, the flow collecting portion at the air inlet of the range hood has a tubular structure. The tubular flow collecting portion is prone to backflow and vortex, which can lead to air leakage. The leakage can cause a reduction in the flow rate of the range hood, and affect the oil fume extraction effect of the range hood. The backflow and vortex will cause obvious aerodynamic noise, resulting in an increase in the working noise of the fan.

[0012] Therefore, in the range hood assembly defined in the present application, the inner surface of the air duct enclosed by the flow collecting portion is a curved surface. Moreover, in the flow direction of the air duct, the flow area of the air duct gradually decreases. The flow direction refers to the travel direction in which the air flows from the inlet to the outlet. When the air duct is intercepted by a plane perpendicular to the flow direction, the area of the air duct on the cross section is a flow area.

[0013] By defining the above features, an air duct which inner surface is a smooth curved surface and is tapered is formed in the flow collecting portion. Setting a smooth surface can reduce the impact of airflow on the inner wall of the air duct, and reduce the possibility of impact backflow or vortex during the process of collecting airflow, thus overcoming the technical defects of easy backflow and vortex, easy leakage of airflow, and high aerodynamic noise in related technologies. On this basis, by setting an air duct with a gradually decreasing flow area in the direction of the airflow, the oil fume can be accelerated through the air duct, to increase the flow rate of the range hood and solving the technical problem of low flow rate that cannot meet the smoke exhaust requirements. Exemplarily, by limiting the above-mentioned flow collecting portion, the flow rate of the range hood assembly can be increased by more than 10%, and the single point boost stage at the air outlet of a fan can be reduced by more than 2dB. Furthermore, the technical effects of optimizing the fan structure, improving the oil fume exhaust performance of the fan, reducing the aerodynamic noise of the fan, and enhancing user experience are achieved.

[0014] In addition, the above range hood assembly provided by the present application may further have the following additional technical features:

[0015] In the above technical solution, the range hood assembly further comprises: an impeller, which is arranged inside the volute. The air outlet is located in the circumferential side of the impeller, and the air inlet is located in the end side of the impeller. The diameter of the impeller is a first diameter D1.

[0016] In this technical solution, the range hood assembly further comprises an impeller. The impeller is installed inside the volute. The air inlet is opposite to the end face of the impeller, and the air outlet is located in the circumferential side of the impeller. The range hood assembly further comprises a motor. The motor is installed on the volute, and the power output end of the motor is connected to the impeller. After being energized, the motor drives the impeller to rotate. The rotating impeller sucks oil fume into the interior of the impeller through the air inlet in the end side, then discharges it into the interior of the volute from the circumferential side of the impeller, and finally the oil fume is discharged through the air outlet under the pressurizing and expanding effects of the volute. The outer diameter of the impeller is the first diameter.

[0017] In any of the above technical solutions, the inner surface of the air duct is a conical surface.

[0018] In this technical solution, the inner surface of the air duct is a conical surface. The flared opening of the conical surface serves as an inlet, and the narrow opening serves as the outlet. By configuring the inner surface of the air duct into a conical surface, the airflow path profile inside the air duct can be optimized, and the impact of the oil fume on the inner surface of the air duct can be reduced, thus reducing aerodynamic noise. Meanwhile, setting the inner surface of the air duct as a conical surface can further enhance the compression and acceleration effect of the air duct on the oil fume, and then, by accelerating the oil fume, the flow rate of the range hood assembly can be increased, and the flow rate of the range hood assembly meets the demand for extracting oil fume. In this way, the technical effects of optimizing the shape of the air duct, improving the oil fume extraction performance of the range hood assembly, and reducing the operating noise of the range hood assembly can be achieved.

[0019] In any of the above technical solutions, the generatrix of the conical surface is an arc line segment.

[0020] In this technical solution, following the previous technical solution, the generatrix of the inner surface of the air duct is an arc line segment. Configuring the generatrix of the aforementioned conical surface as an arc line segment can further optimize the smooth characteristics inside the air duct. Specifically, by further reducing the impact and friction between the airflow and the inner surface of the air duct, the aerodynamic noise of the range hood assembly can be further decreased. Meanwhile, by configuring the generatrix as an arc line segment, the compressing and accelerating effects of the flow collecting portion to the oil fume are enhanced, to further increase the flow rate of the range hood assembly. Furthermore, the technical effects of optimizing the shape of the air duct, improving the oil fume extraction performance of the range hood assembly, and reducing the operating noise of the range hood assembly are achieved.

[0021] In any of the above technical solutions, the diameter of the inlet of the air duct is a second diameter D2, and the range of the ratio of the second diameter to the first diameter is greater than or equal to 0.71 and less than or equal to 0.97.

[0022] In this technical solution, the size of the inlet of the air duct is defined. Exemplarily, the diameter of the inlet of the air duct is the second diameter, and the ratio of the second diameter to the first diameter should be greater than or equal to 0.71. By defining that the ratio of the second diameter to the first diameter is greater than or equal to 0.71, it is avoided that an inlet with too small a size affects the flow rate of the range hood assembly, thus ensuring that the flow rate of the range hood assembly meets the need of oil fume extraction. On this basis, the ratio of the second diameter to the first diameter should further be less than or equal to 0.97. By defining that the ratio of the second diameter to the first diameter is less than or equal to 0.97, the size of the inlet can be reduced on the basis of ensuring that the size of the inlet of the air duct can match the performance of the impeller, to provide convenient conditions for the miniaturized design of the range hood assembly. At the same time, limiting the size of the inlet of the air duct within the above range is conducive to further reducing the aerodynamic noise of the range hood assembly.

[0023] In any of the above technical solutions, the diameter of the outlet of the air duct is a third diameter D3. The range of the ratio of the third diameter to the first diameter is greater than or equal to 0.64 and less than or equal to 0.88.

[0024] In this technical solution, the size of the outlet of the air duct is defined. Exemplarily, the diameter of the outlet of the air duct is the third diameter. The ratio of the third diameter to the first diameter should be greater than or equal to 0.64. By limiting that the ratio of the third diameter to the first diameter is greater than or equal to 0.64, it is avoided that an outlet with too small a size affects the flow rate of the range hood assembly, thus ensuring that the flow rate of the range hood assembly meets the need of oil fume extraction. On this basis, the ratio of the third diameter to the first diameter should further be less than or equal to 0.88. By defining that the ratio of the third diameter to the first diameter is less than or equal to 0.88, the size of the outlet can be reduced on the basis of ensuring that the size of the outlet of the air duct can match the performance of the impeller, to provide convenient conditions for the miniaturized design of the range hood assembly. At the same time, limiting the size of the outlet of the air duct within the above range is conducive to further reducing the aerodynamic noise of the range hood assembly.

[0025] In any of the above technical solutions, the volute further comprises a volute tongue, and the end face of the volute tongue is a circular arc surface. The range of the ratio of the radius R1 of the end face of the volute tongue to the first diameter is greater than or equal to 0.04 and less than or equal to 0.07.

[0026] In this technical solution, the volute is formed with a volute tongue, the volute tongue is recessed towards the intersection area of a pressurization section and an expansion section inside the volute, and the end face of the volute tongue is located inside the volute. The end face of the volute tongue is a circular arc surface, and the ratio of the radius of this end face to the first diameter should be greater than or equal to 0.04 and less than or equal to 0.07. Limiting the size of the volute tongue through this ratio range can enhance the matching degree between the volute tongue and the impeller, which is beneficial to improving the flow rate of the range hood assembly and reducing the aerodynamic noise of the range hood assembly. Moreover, limiting the size of the volute tongue through this ratio range can further eliminate the whistling and humming sounds of the oil fume. Thus, the technical effects of optimizing the size of the volute tongue, improving the oil fume extraction performance of the range hood assembly, and reducing the operating noise of the range hood assembly can be achieved.

[0027] In any of the above technical solutions, the distance between the volute tongue and the impeller is a first distance L1. The range of the ratio of the first distance to the first diameter is greater than or equal to 0.03 and less than or equal to 0.07.

[0028] In this technical solution, following the previous technical solutions, the distance between the volute tongue and the impeller is defined. Exemplarily, the minimum distance between the volute tongue and the impeller is the first distance, and, the ratio of the first distance to the first diameter should be greater than or equal to 0.03 and less than or equal to 0.07. Limiting the distance between the volute tongue and the impeller through this ratio range can avoid significant turbulent noise of the oil fume between the volute tongue and the impeller on the basis of meeting the requirements of pressure increase and flow rate improvement. Moreover, limiting this ratio range is further beneficial for further increasing the flow rate of the range hood assembly. Meanwhile, limiting the size of the volute tongue through this ratio range can further eliminate the whistling and humming sounds of the oil fume. Thus, the technical effects of optimizing the size of the volute tongue, enhancing the oil fume extraction performance of the range hood assembly, and reducing the operating noise of the range hood assembly can be achieved.

[0029] In any of the above technical solutions, the volute comprises a flow channel, and the flow channel comprises the pressurization section and the expansion section communicating with each other. The impeller is located within the pressurization section. The air inlet is communicated with the pressurization section, and the air outlet is communicated with the expansion section.

[0030] In this technical solution, the interior of the volute encloses a flow channel for the circulation of oil fume, and, the flow channel comprises the pressurization section and the expansion section, the impeller is arranged within the pressurization section, and the axis of the impeller coincides with that of the volute. After the impeller rotates, the oil fume drawn in from the end face of the impeller is thrown into the pressurization section, where it is compressed and pressurized. Subsequently, the oil fume flows from the pressurization section into the expansion section. In the expansion section, the oil fume is expanded in the expansion section to reduce speed, and its flow direction is reversed in the expansion section. Finally, the oil fume is discharged from the air outlet.

[0031] In any of the above technical solutions, the range hood assembly further comprises: a cross section obtained through sectioning the volute by a plane perpendicular to the axis of the volute; on this cross section, the volute enclosing the pressurization section presents a spiral line; the volute enclosing the expansion section consists of a first line segment and a second line segment. The first line segment is connected to the inner end of the spiral line, and the second line segment is connected to the outer end of the spiral line. The second line segment is tangent to the spiral line.

[0032] In this technical solution, the shape of the volute is defined. Exemplarily, the volute is sectioned by a plane perpendicular to its axis to obtain a cross section. On this cross section, the part of the volute enclosing the pressurization section is sectioned into a spiral line. The spiral line expands spirally from the inside to the outside, and the inner end of the spiral line is connected to the volute tongue. Further on this cross section, the part of the volute enclosing the expansion section is cut into the first line segment and the second line segment. The first line segment is connected to the inner end of the aforementioned spiral line, and the first line segment forms the volute tongue. The second line segment is connected to the outer end of the spiral line.

[0033] On this basis, on the cross section, the second line segment is tangent to the end of the spiral line. By setting the second line segment tangent to the spiral line, firstly, it can reduce the impact and friction of the oil fume on the inner wall of the expansion section, and secondly, it can weaken the vortex in the expansion section, thus reducing the energy loss of the oil fume during flowing through the expansion section. As a result, the technical effects of optimizing the shape of the volute, increasing the flow rate of the range hood assembly, and reducing the aerodynamic noise of the range hood assembly can be achieved.

[0034] In any of the above technical solutions, the range hood assembly further comprises: a first baffle rib, which is arranged at the air outlet; a second baffle rib, which is arranged on the expansion section and connected to the first baffle rib. On the cross section, the first baffle rib is connected to the end of the first line segment, and the second baffle rib is connected to the intersection area of the first line segment and the spiral line.

[0035] In this technical solution, the range hood assembly further comprises a first baffle rib and a second baffle rib. Exemplarily, the first baffle rib is arranged at the air outlet and can block part of the air outlet. The second baffle rib is arranged inside the expansion section and is connected to the first baffle rib. On the aforementioned cross section, the first end of the first baffle rib is connected to the end of the first line segment, the second end of the first baffle rib is connected to the first end of the second baffle rib, and the second end of the second baffle rib is connected to the intersection area of the first line segment and the spiral line, that is, the volute tongue, thus partitioning part of the expansion section.

[0036] By arranging the first baffle rib and the second baffle rib, the deflection angle of the oil fume within the expansion section can be reduced, thus the vortex in the expansion section can be weakened, and then the energy loss of the oil fume during flowing through the expansion section is reduced. Consequently, the technical effects of optimizing the shape of the volute, increasing the flow rate of the range hood assembly, and reducing the aerodynamic noise of the range hood assembly are achieved. Exemplarily, when the first baffle rib and the second baffle rib are combined with the tangential design provided in the previous technical solution, it is possible to achieve the effect of eliminating the vortex inside the expansion section, and then the influence of the vortex on the flow rate can be eliminated, and the aerodynamic noise caused by the vortex can be eliminated.

[0037] In any of the above technical solutions, the range of the expansion angle of the expansion section is greater than or equal to 5°and less than or equal to 12°.

[0038] In this technical solution, the expansion angle of the expansion section is defined, and this expansion angle is the angle between the straight line segments at the ends of the first line segment and the second line segment. Exemplarily, the expansion angle of the expansion section should be greater than or equal to 5° and less than or equal to 12°. By limiting the expansion angle within this range, it is possible to avoid forming vortex inside the expansion section on the basis of ensuring that the expansion section can provide a good expanding effect for the oil fume. Consequently, the influence of the vortex on the flow rate can be eliminated, and the aerodynamic noise caused by the vortex can further be removed.

[0039] Exemplarily, the expansion angle can be 8°.

[0040] In any of the above technical solutions, according to the second aspect of the present application, an integrated cooker is provided. The integrated cooker comprises: a heating assembly, which is configured to support and heat a container and comprises a flue; and a range hood assembly as described in any of the above technical solutions, and the air inlet is connected to the flue and is configured to extract oil fume through the flue.

[0041] In this technical solution, an integrated cooker provided with the range hood assembly in any of the above technical solutions is provided. Therefore, the integrated cooker has the advantages of the range hood assembly in any of the above technical solutions and can achieve the technical effects that the range hood assembly in any of the above technical solutions can achieve. To avoid repetition, details are not described here.

[0042] On this basis, the integrated cooker is of an internal circulation type. The integrated cooker can centrally extract the oil fume generated during cooking into the interior of the integrated cooker, the oil fume is subjected to grease filtering and odor filter and then discharged back into the indoor environment where the user is located, to achieve the internal circulation of the oil fume, and this eliminates the need to provide a complex external exhaust structure.

[0043] The integrated cooker comprises a heating assembly. The heating assembly serves as the main structure of the integrated cooker and is configured to position and support other structures on the integrated cooker. The top of the heating assembly provides a cooking operation surface for users, and containers for holding food ingredients are placed above the heating assembly to support and heat the containers through the heating assembly. This enables the preparation of finished food that meets the user’s needs on the heating assembly.

[0044] Inside the heating assembly, a flue is formed. The first end of the flue is communicated with the space above the heating assembly, during the food cooking process, oil fume is generated centrally above the heating assembly, and this flue allows the oil fume above the heating assembly to flow into the integrated cooker. The housing is connected to the heating assembly, and the second end of the flue is communicated with the air inlet in the housing. A fan is provided in the cavity, and the fan can extract the oil fume above the heating assembly through the cavity and the flue. Exemplarily, after the fan is turned on, the fan sucks the gas in the flue into the fan through the cavity to form a negative pressure environment in the flue area. Under the effect of this negative pressure environment, the oil fume above the heating assembly is pressed into the flue, to complete the extraction of the oil fume and prevent the oil fume from diffusing into the indoor environment.

[0045] In any of the above technical solutions, the integrated cooker further comprises a filtering assembly provided in the flue and is configured to filter oil fume.

[0046] In this technical solution, a filtering assembly is further provided on the integrated cooker, and the filtering assembly is provided within the flue. During operation, the oil fume flowing into the flue first flows into the filtering assembly, and the filtering assembly separates the grease in the oil fume from the air, to prevent the grease from continuing to flow into the range hood along with the air. By providing the filtering assembly, it can prevent the grease in the oil fume from adhering to the internal working structures of the integrated cooker, thus, firstly, this prevents the grease from blocking the flue and the filtering assembly, and secondly, it avoids the grease sucked into the fan from damaging the fan. Additionally, it eliminates the need for frequent cleaning of the internal grease in the integrated cooker. Thus, it solves the technical problems that the fan is easily damaged by oil stains and the sucked oil stains increase the burden of cleaning the interior of the integrated cooker.

[0047] In any of the above technical solutions, the integrated cooker further comprises a pipeline assembly which is connected to the air outlet.

[0048] In this technical solution, the integrated cooker further comprises a pipeline assembly. The pipeline assembly comprises a pipe joint and at least one exhaust duct. When there are multiple exhaust ducts, they are connected in series. The first end of the pipe joint is connected to the air outlet in the housing, and the second end of the pipe joint is connected to the pipe mouth of the exhaust duct. By providing the pipeline assembly, the oil fume that has undergone grease separation and odor filtration can be discharged to a designated area through the pipeline assembly. Specifically, a vertically extending pipeline assembly can be provided, and the filtered air is discharged close to the ground, to reduce the possibility of disturbing the user by the discharged air. Therefore, the practicality and reliability of the integrated cooker are improved and user experience is optimized.

[0049] The additional aspects and advantages of the present application will be partially obvious in the following description, or learned through practice of the present application.

BRIEF DESCRIPTION OF THE DRAWINGS

[0050] The above and/or additional aspects and advantages of the present application will become apparent and easily understood from the description of the embodiments in combination with the following figures, and:

FIG. 1 is a first schematic view of the structure of a range hood assembly according to an embodiment of the present application;
FIG. 2 is an exploded view of a range hood assembly according to an embodiment of the present application;
FIG. 3 is a first schematic view of the structure of an impeller according to an embodiment of the present application;
FIG. 4 is a second schematic view of the structure of an impeller according to an embodiment of the present application;
FIG. 5 is a second schematic view of the structure of a range hood assembly according to an embodiment of the present application;
FIG. 6 shows a cross-sectional view of the range hood assembly shown in FIG. 5 in the direction A-A;
FIG. 7 is a schematic view of the structure of a range hood assembly in related art;
FIG. 8 is a schematic view of the air flow of the range hood assembly in the related art shown in FIG. 7;
FIG. 9 is a third schematic view of the structure of a range hood assembly according to an embodiment of the present application;
FIG. 10 is a schematic view of the air flow of the range hood assembly in the embodiment shown in FIG. 9;
FIG. 11 is a fourth schematic view of the structure of a range hood assembly according to an embodiment of the present application;
FIG. 12 is a schematic view of the air flow of the range hood assembly in the embodiment shown in FIG. 11;
FIG. 13 is a fifth schematic view of the structure of a range hood assembly according to an embodiment of the present application;
FIG. 14 shows a cross-sectional view of the range hood assembly shown in FIG. 13 in the direction B-B;
FIG. 15 is a sixth schematic view of the structure of a range hood assembly according to an embodiment of the present application;
FIG. 16 is a schematic view of the air flow of the range hood assembly in the embodiment shown in FIG. 15;
FIG. 17 is a seventh schematic view of the structure of a range hood assembly according to an embodiment of the present application;
FIG. 18 is a schematic view of the air flow of the range hood assembly in the embodiment shown in FIG. 17;
FIG. 19 is an eighth schematic view of the structure of a range hood assembly according to an embodiment of the present application;
FIG. 20 is a schematic view of the air flow of the range hood assembly in the embodiment shown in FIG. 19; and
FIG. 21 is a schematic view of the structure of an integrated cooker according to an embodiment of the present application.

[0051] And, the corresponding relationships between the reference signs and the component names in FIG. 1 to FIG. 21 are as follows:
100 range hood assembly, 110 volute, 112 air inlet, 114 air outlet, 116 volute tongue, 118 pressurization section, 1182 spiral line, 119 expansion section, 1192 first line segment, 1194 second line segment, 120 flow collecting portion, 122 generatrix, 130 impeller, 140 first baffle rib, 142 second baffle rib, 200 integrated cooker, 210 heating assembly, 220 filtering assembly, 230 pipeline assembly.

DETAILED DESCRIPTION OF THE APPLICATION

[0052] To more clearly understand the above aspects, features and advantages of the present application, the present application will be further detailed hereinafter in combination with the accompanying drawings and embodiments. It should be indicated that the embodiments and the features in the embodiments can be combined with each other in the case of no conflict.

[0053] Many details are illustrated in the following description for the convenience of a thorough understand-ing of the present application, but the present application can further be implemented using other embodiments other than these described herein. Therefore, the protection scope of the present application is not limited to the specific embodiments disclosed in the following text.

[0054] A range hood assembly and an integrated cooker according to some embodiments of the present application are described hereinafter by referring to FIG. 1 to FIG. 21.

[0055] As shown in FIG. 1, FIG. 2, and FIG. 6, an embodiment of the present application provides a range hood assembly 100, and the range hood assembly 100 comprises: a volute 110 comprising an air inlet 112 and an air outlet 114; and a flow collecting portion 120 arranged on the volute 110, comprising an air duct 121, and an outlet of the air duct 121 is communicated with the air inlet 112, and the inner surface of the air duct 121 is a curved surface; and the flow area of the air duct 121 is gradually reduced in the flow direction of the air duct 121.

[0056] The present application provides a range hood assembly 100, which belongs to the power structure on a fume exhaust stove. The specific range hood assembly 100 can suck oil fume and discharge the sucked oil fume through a flue to a designated area.

[0057] The range hood assembly 100 comprises the volute 110 and the flow collecting portion 120; the volute 110 is the main structure of the range hood assembly 100, and is firstly configured to locate and support other structures on the range hood assembly 100, and secondly, the volute 110 encloses a flow channel for the oil fume to flow. The volute 110 is formed with the air inlet 112 and the air outlet 114. The air inlet 112 is provided at the end face of the volute 110 and is coaxial with the volute 110, and the air outlet 114 is provided in the side face of the volute 110. The flow collecting portion 120 is provided at the air inlet 112 of the volute 110, and the outlet of the flow collecting portion 120 is communicated with the air inlet 112. During the working process, the oil fume flows into the air inlet 112 under the collection effect of the flow collecting portion 120. The oil fume is pressurized and expanded by the volute 110 in the flow channel, and then discharged out of the volute 110 through the air outlet 114, thus achieving the extraction and directional discharge of oil fume.

[0058] In related art, the flow collecting portion at the air inlet of the range hood has a tubular structure. The tubular flow collecting portion is prone to backflow and vortex, which can lead to air leakage. The leakage can cause a reduction in the flow rate of the range hood, and affect the oil fume extraction effect of the range hood. The backflow and vortex will cause obvious aerodynamic noise, and result in an increase of the working noise of the fan.

[0059] Therefore, in the range hood assembly 100 defined in the present application, the inner surface of the air duct 121 enclosed by the flow collecting portion 120 is a curved surface. Moreover, in the flow direction of the air duct 121, the flow area of the air duct 121 gradually decreases. The flow direction refers to the travel direction in which the air flows from the inlet to the outlet. When the air duct 121 is intercepted by a plane perpendicular to the flow direction, the area of the air duct 121 on the cross section is a flow area.

[0060] By defining the above features, an air duct 121 which inner surface is a smooth curved surface and is tapered is formed in the flow collecting portion 120. Setting a smooth surface can reduce the impact of airflow on the inner wall of the air duct 121, and reduce the possibility of impact backflow or vortex generation during the process of collecting airflow, thus overcoming the technical defects of easy backflow and vortex, easy leakage of airflow, and high aerodynamic noise in related technologies. On this basis, by setting an air duct 121 with a gradually decreasing flow area in the direction of the airflow, the oil fume can be accelerated through the air duct 121, to increase the flow rate of the range hood and solving the technical problem of low flow rate that cannot meet the smoke exhaust requirements. Exemplarily, by defining the above-mentioned flow collecting portion 120, the flow rate of the range hood assembly 100 can be increased by more than 10%, and the single point boost stage at the air outlet 114 of a fan can be reduced by more than 2dB. Furthermore, the technical effects of optimizing the fan structure, improving the oil fume exhaust performance of the fan, reducing the aerodynamic noise of the fan, and enhancing user experience are achieved.

[0061] As shown in FIG. 3, FIG. 4, the range hood assembly 100 further comprises: an impeller 130, which is arranged inside the volute 110. The air outlet 114 is located in the circumferential side of the impeller 130, and the air inlet 112 is located in the end side of the impeller 130. The diameter of the impeller 130 is a first diameter D1.

[0062] In this embodiment, the range hood assembly 100 further comprises an impeller 130. The impeller 130 is installed inside the volute 110. The air inlet 112 is opposite to the end face of the impeller 130, and the air outlet 114 is located in the circumferential side of the impeller 130. The range hood assembly 100 further comprises a motor. The motor is installed on the volute 110, and the power output end of the motor is connected to the impeller 130. After being energized, the motor drives the impeller 130 to rotate. The rotating impeller 130 sucks oil fume into the interior of the impeller 130 through the air inlet 112 in the end side, then discharges it into the interior of the volute 110 from the circumferential side of the impeller 130, and finally the oil fume is discharged through the air outlet 114 under the pressurizing and expanding effects of the volute 110. The outer diameter of the impeller 130 is the first diameter.

[0063] As shown in FIG. 5 and FIG. 6, in an embodiment of the present application, the inner surface of the air duct 121 is a conical surface.

[0064] In this embodiment, the inner surface of the air duct 121 is a conical surface. The flared opening of the conical surface serves as an inlet, and the narrow opening serves as the outlet.

[0065] Compared with FIG. 7, FIG. 8, FIG. 9 and FIG. 10, by configuring the inner surface of the air duct 121 into a conical surface, the airflow path profile inside the air duct 121 can be optimized, and the impact of the oil fume on the inner surface of the air duct 121 can be reduced, thus reducing aerodynamic noise. Meanwhile, setting the inner surface of the air duct 121 as a conical surface can further enhance the compression and acceleration effect of the air duct 121 on the oil fume, and then, by accelerating the oil fume, the flow rate of the range hood assembly 100 can be increased, and the flow rate of the range hood assembly 100 meets the demand for extracting oil fume. In this way, the technical effects of optimizing the shape of the air duct 121, improving the oil fume extraction performance of the range hood assembly 100, and reducing the operating noise of the range hood assembly 100 can be achieved.

[0066] In any of the above embodiments, the generatrix 122 of the conical surface is an arc line segment.

[0067] In this embodiment, following the previous embodiment, the generatrix 122 of the inner surface of the air duct 121 is an arc line segment.

[0068] Compared with FIG. 9, FIG. 10, FIG. 11 and FIG. 12, it can be seen that configuring the generatrix 122 of the aforementioned conical surface as an arc line segment can further optimize the smooth characteristics inside the air duct 121. Specifically, by further reducing the impact and friction between the airflow and the inner surface of the air duct 121, the aerodynamic noise of the range hood assembly 100 can be further decreased. Meanwhile, by configuring the generatrix 122 as an arc line segment, the compressing and accelerating effects of the flow collecting portion 120 to the oil fume are enhanced, to further increase the flow rate of the range hood assembly 100. Furthermore, the technical effects of optimizing the shape of the air duct 121, improving the oil fume extraction performance of the range hood assembly 100, and reducing the operating noise of the range hood assembly 100 are achieved.

[0069] As shown in FIG. 6, in any of the above embodiments, the diameter of the inlet of the air duct 121 is a second diameter D2, and the range of the ratio of the second diameter to the first diameter is greater than or equal to 0.71 and less than or equal to 0.97.

[0070] In this embodiment, the size of the inlet of the air duct 121 is defined. Exemplarily, the diameter of the inlet of the air duct 121 is the second diameter, and the ratio of the second diameter to the first diameter should be greater than or equal to 0.71. By defining that the ratio of the second diameter to the first diameter is greater than or equal to 0.71, it is avoided that an inlet with too small a size affects the flow rate of the range hood assembly 100, thus ensuring that the flow rate of the range hood assembly 100 meets the need of oil fume extraction. On this basis, the ratio of the second diameter to the first diameter should further be less than or equal to 0.97. By defining that the ratio of the second diameter to the first diameter is less than or equal to 0.97, the size of the inlet can be reduced on the basis of ensuring that the size of the inlet of the air duct 121 can match the performance of the impeller 130, to provide convenient conditions for the miniaturized design of the range hood assembly 100. At the same time, limiting the size of the inlet of the air duct 121 within the above range is conducive to further reducing the aerodynamic noise of the range hood assembly 100.

[0071] In any of the above embodiments, the diameter of the outlet of the air duct 121 is a third diameter D3. The range of the ratio of the third diameter to the first diameter is greater than or equal to 0.64 and less than or equal to 0.88.

[0072] In this embodiment, the size of the outlet of the air duct 121 is defined. Exemplarily, the diameter of the outlet of the air duct 121 is the third diameter. The ratio of the third diameter to the first diameter should be greater than or equal to 0.64. By limiting that the ratio of the third diameter to the first diameter is greater than or equal to 0.64, it is avoided that an outlet with too small a size affects the flow rate of the range hood assembly 100, thus ensuring that the flow rate of the range hood assembly 100 meets the need of oil fume extraction. On this basis, the ratio of the third diameter to the first diameter should further be less than or equal to 0.88. By defining that the ratio of the third diameter to the first diameter is less than or equal to 0.88, the size of the outlet can be reduced on the basis of ensuring that the size of the outlet of the air duct 121 can match the performance of the impeller 130, to provide convenient conditions for the miniaturized design of the range hood assembly 100. At the same time, limiting the size of the outlet of the air duct 121 within the above range is conducive to further reducing the aerodynamic noise of the range hood assembly 100.

[0073] As shown in FIG. 13 and FIG. 14, in an embodiment of the present application, the volute 110 further comprises a volute tongue 116, and the end face of the volute tongue 116 is a circular arc surface. The range of the ratio of the radius R1 of the end face of the volute tongue 116 to the first diameter is greater than or equal to 0.04 and less than or equal to 0.07.

[0074] In this embodiment, the volute 110 is formed with a volute tongue 116, the volute tongue 116 is recessed towards the intersection area of a pressurization section 118 and an expansion section 119 inside the volute 110, and the end face of the volute tongue 116 is located inside the volute 110. The end face of the volute tongue 116 is a circular arc surface, and the ratio of the radius of this end face to the first diameter should be greater than or equal to 0.04 and less than or equal to 0.07. Limiting the size of the volute tongue 116 through this ratio range can enhance the matching degree between the volute tongue 116 and the impeller 130, which is beneficial to improving the flow rate of the range hood assembly 100 and reducing the aerodynamic noise of the range hood assembly 100. Moreover, limiting the size of the volute tongue 116 through this ratio range can further eliminate the whistling and humming sounds of the oil fume. Thus, the technical effects of optimizing the size of the volute tongue 116, improving the oil fume extraction performance of the range hood assembly 100, and reducing the operating noise of the range hood assembly 100 can be achieved.

[0075] In any of the above embodiments, the distance between the volute tongue 116 and the impeller 130 is a first distance L1. The range of the ratio of the first distance to the first diameter is greater than or equal to 0.03 and less than or equal to 0.07.

[0076] In this embodiment, following the previous embodiments, the distance between the volute tongue 116 and the impeller 130 is defined. Exemplarily, the minimum distance between the volute tongue 116 and the impeller 130 is the first distance, and, the ratio of the first distance to the first diameter should be greater than or equal to 0.03 and less than or equal to 0.07. Limiting the distance between the volute tongue 116 and the impeller 130 through this ratio range can avoid significant turbulent noise of the oil fume between the volute tongue 116 and the impeller 130 on the basis of meeting the requirements of pressure increase and flow rate improvement. Moreover, limiting this ratio range is further beneficial for further increasing the flow rate of the range hood assembly 100. Meanwhile, limiting the size of the volute tongue 116 through this ratio range can further eliminate the whistling and humming sounds of the oil fume. Thus, the technical effects of optimizing the size of the volute tongue 116, enhancing the oil fume extraction performance of the range hood assembly 100, and reducing the operating noise of the range hood assembly 100 can be achieved.

[0077] As shown in FIG. 13 and FIG. 14, in an embodiment of the present application, the volute 110 comprises a flow channel, and the flow channel comprises the pressurization section 118 and the expansion section 119 communicating with each other. The impeller 130 is located within the pressurization section 118. The air inlet 112 is communicated with the pressurization section 118, and the air outlet 114 is communicated with the expansion section 119.

[0078] In this embodiment, the interior of the volute 110 encloses a flow channel for the circulation of oil fume, and, the flow channel comprises the pressurization section 118 and the expansion section 119, the impeller 130 is arranged within the pressurization section 118, and the axis of the impeller 130 coincides with that of the volute 110. After the impeller 130 rotates, the oil fume drawn in from the end face of the impeller 130 is thrown into the pressurization section 118, where it is compressed and pressurized. Subsequently, the oil fume flows from the pressurization section 118 into the expansion section 119. In the expansion section 119, the oil fume is expanded in the expansion section 119 to reduce speed, and its flow direction is reversed in the expansion section 119. Finally, the oil fume is discharged from the air outlet 114.

[0079] As shown in FIG. 17, in any of the above embodiments, a cross section is obtained through sectioning the volute 110 by a plane perpendicular to the axis of the volute 110; on this cross section, the volute 110 enclosing the pressurization section 118 presents a spiral line 1182; the volute 110 enclosing the expansion section 119 consists of a first line segment 1192 and a second line segment 1194. The first line segment 1192 is connected to the inner end of the spiral line 1182, and the second line segment 1194 is connected to the outer end of the spiral line 1182. The second line segment 1194 is tangent to the spiral line 1182.

[0080] In this embodiment, the shape of the volute 110 is defined.

[0081] Compared with FIG. 15, FIG. 16, FIG. 17 and FIG. 18, it can be seen that the volute 110 is sectioned by a plane perpendicular to its axis to obtain a cross section. On this cross section, the part of the volute 110 enclosing the pressurization section 118 is sectioned into a spiral line 1182. The spiral line 1182 expands spirally from the inside to the outside, and the inner end of the spiral line 1182 is connected to the volute tongue 116. Further on this cross section, the part of the volute 110 enclosing the expansion section 119 is cut into the first line segment 1192 and the second line segment 1194. The first line segment 1192 is connected to the inner end of the aforementioned spiral line 1182, and the first line segment 1192 forms the volute tongue 116. The second line segment 1194 is connected to the outer end of the spiral line 1182.

[0082] On this basis, on the cross section, the second line segment 1194 is tangent to the end of the spiral line 1182. By setting the second line segment1194 tangent to the spiral line 1182, firstly, it can reduce the impact and friction of the oil fume on the inner wall of the expansion section 119, and secondly, it can weaken the vortex in the expansion section 119, thus reducing the energy loss of the oil fume during flowing through the expansion section 119. As a result, the technical effects of optimizing the shape of the volute 110, increasing the flow rate of the range hood assembly 100, and reducing the aerodynamic noise of the range hood assembly 100 can be achieved.

[0083] As shown in FIG. 19, in any of the above embodiments, the range hood assembly 100 further comprises: a first baffle rib 140, which is arranged at the air outlet 114; a second baffle rib 142, which is arranged on the expansion section 119 and connected to the first baffle rib 140. On the cross section, the first baffle rib 140 is connected to the end of the first line segment 1192, and the second baffle rib 142 is connected to the intersection area of the first line segment 1192 and the spiral line 1182.

[0084] In this embodiment, the range hood assembly 100 further comprises a first baffle rib 140 and a second baffle rib 142. Exemplarily, the first baffle rib 140 is arranged at the air outlet 114 and can block part of the air outlet 114. The second baffle rib 142 is arranged inside the expansion section 119 and is connected to the first baffle rib 140. On the aforementioned cross section, the first end of the first baffle rib 140 is connected to the end of the first line segment 1192, the second end of the first baffle rib 140 is connected to the first end of the second baffle rib 142, and the second end of the second baffle rib 142 is connected to the intersection area of the first line segment 1192 and the spiral line 1182, that is, the volute tongue 116, thus partitioning part of the expansion section 119.

[0085] Compared with FIG. 17, FIG. 18, FIG. 19 and FIG. 20, it can be seen that by arranging the first baffle rib 140 and the second baffle rib 142, the deflection angle of the oil fume within the expansion section 119 can be reduced, thus the vortex in the expansion section 119 can be weakened, and then the energy loss of the oil fume during flowing through the expansion section 119 is reduced. Consequently, the technical effects of optimizing the shape of the volute 110, increasing the flow rate of the range hood assembly 100, and reducing the aerodynamic noise of the range hood assembly 100 are achieved. Exemplarily, when the first baffle rib 140 and the second baffle rib 142 are combined with the tangential design provided in the previous embodiment, it is possible to achieve the effect of eliminating the vortex inside the expansion section 119, and then the influence of the vortex on the flow rate can be eliminated, and the aerodynamic noise caused by the vortex can be eliminated.

[0086] In any of the above embodiments, the range of the expansion angle of the expansion section 119 is greater than or equal to 5°and less than or equal to 12°.

[0087] In this embodiment, the expansion angle of the expansion section 119 is defined, and this expansion angle is the angle between the straight line segments at the ends of the first line segment 1192 and the second line segment 1194. Exemplarily, the expansion angle of the expansion section 119 should be greater than or equal to 5° and less than or equal to 12°. By limiting the expansion angle within this range, it is possible to avoid forming vortex inside the expansion section 119 on the basis of ensuring that the expansion section 119 can provide a good expanding effect for the oil fume. Consequently, the influence of the vortex on the flow rate can be eliminated, and the aerodynamic noise caused by the vortex can further be removed.

[0088] Exemplarily, the expansion angle can be 8°.

[0089] As shown in FIG. 21, an embodiment of the present application provides an integrated cooker 200. The integrated cooker 200 comprises: a heating assembly 210, which is configured to support and heat a container and comprises a flue 212; and a range hood assembly 100 as described in any of the above embodiments, and the air inlet 112 is connected to the flue 212 and is configured to extract oil fume through the flue 212.

[0090] In this embodiment, an integrated cooker 200 provided with the range hood assembly 100 in any of the above embodiments is provided. Therefore, the integrated cooker 200 has the advantages of the range hood assembly 100 in any of the above embodiments and can achieve the technical effects that the range hood assembly 100 in any of the above embodiments can achieve. To avoid repetition, details are not described here.

[0091] On this basis, the integrated cooker 200 is of an internal circulation type. The integrated cooker 200 can centrally extract the oil fume generated during cooking into the interior of the integrated cooker 200, the oil fume is subjected to grease filtering and odor filter and then discharged back into the indoor environment where the user is located, to achieve the internal circulation of the oil fume, and this eliminates the need to provide a complex external exhaust structure.

[0092] The integrated cooker 200 comprises a heating assembly 210. The heating assembly 210 serves as the main structure of the integrated cooker 200 and is configured to position and support other structures on the integrated cooker 200. The top of the heating assembly 210 provides a cooking operation surface for users, and containers for holding food ingredients are placed above the heating assembly 210 to support and heat the containers through the heating assembly 210. This enables the preparation of finished food that meets the user's needs on the heating assembly 210.

[0093] Inside the heating assembly 210, a flue 212 is formed. The first end of the flue 212 is communicated with the space above the heating assembly 210, during the food cooking process, oil fume is generated centrally above the heating assembly 210, and this flue 212 allows the oil fume above the heating assembly 210 to flow into the integrated cooker 200. The housing is connected to the heating assembly 210, and the second end of the flue 212 is communicated with the air inlet 112 in the housing. A fan is provided in the cavity, and the fan can extract the oil fume above the heating assembly 210 through the cavity and the flue 212. Exemplarily, after the fan is turned on, the fan sucks the gas in the flue 212 into the fan through the cavity to form a negative pressure environment in the area of the flue 212. Under the effect of this negative pressure environment, the oil fume above the heating assembly 210 is pressed into the flue 212, to complete the extraction of the oil fume and prevent the oil fume from diffusing into the indoor environment.

[0094] In any of the above embodiments, the integrated cooker 200 further comprises a filtering assembly 220 provided in the flue 212 and is configured to filter oil fume.

[0095] In this embodiment, a filtering assembly 220 is further provided on the integrated cooker 200, and the filtering assembly 220 is provided within the flue 212. During operation, the oil fume flowing into the flue 212 first flows into the filtering assembly 220, and the filtering assembly 220 separates the grease in the oil fume from the air, to prevent the grease from continuing to flow into the range hood along with the air. By providing the filtering assembly 220, it can prevent the grease in the oil fume from adhering to the internal working structures of the integrated cooker 200, thus, firstly, this prevents the grease from blocking the flue 212 and the filtering assembly, and secondly, it avoids the grease sucked into the fan from damaging the fan. Additionally, it eliminates the need for frequent cleaning of the internal grease in the integrated cooker 200. Thus, it solves the technical problems that the fan is easily damaged by oil stains and the sucked oil stains increase the burden of cleaning the interior of the integrated cooker 200.

[0096] In any of the above embodiments, the integrated cooker 200 further comprises a pipeline assembly 230 which is connected to the air outlet 114.

[0097] In this embodiment, the integrated cooker 200 further comprises a pipeline assembly 230. The pipeline assembly 230 comprises a pipe joint and at least one exhaust duct. When there are multiple exhaust ducts, they are connected in series. The first end of the pipe joint is connected to the air outlet 114 in the housing, and the second end of the pipe joint is connected to the pipe mouth of the exhaust duct. By providing the pipeline assembly 230, the oil fume that has undergone grease separation and odor filtration can be discharged to a designated area through the pipeline assembly 230. Specifically, a vertically extending pipeline assembly 230 can be provided, and the filtered air is discharged close to the ground, to reduce the possibility of disturbing the user by the discharged air. Therefore, the practicality and reliability of the integrated cooker 200 are improved and user experience is optimized.

[0098] It needs to be indicated that in the claims, specification and accompanying drawings of the specification of the present application, the term of "multiple" refers to two or more than two, unless otherwise clearly defined. The orientation or position relations indicated by the terms of "upper", "lower" and the like are based on the orientation or position relations shown in the accompanying drawings, and are just intended to conveniently describe the present application and simplify the description, and are not intended to indicate or imply that the devices or units as indicated should have specific orientations or should be configured or operated in specific orientations, and then such description should not be construed as limitations to the present application. The terms "connect", "mount", "fix" and the like should be understood in a broad sense, for example, the term "connect" can be a fixed connection between multiple objects, a detachable connection between multiple objects, or an integral connection; it can be a direct connection between multiple objects, or an indirect connection between multiple objects through an intermediate medium. For those of ordinary skills in this field, the specific meanings of the above terms in the present application can be understood according to the specific situations of the above data.

[0099] In the claims, specification and accompanying drawings of the present application, the descriptions of the phrases "one embodiment", "some embodiments" or "specific embodiments" and the like mean that the specific features, structures, materials or characteristics described in combination with the embodiment or example are included in at least one embodiment or example of the present application. In the claims, specification and accompanying drawings of the present application, the illustrative expressions of the above terms may not necessarily refer to the same embodiments or examples. Moreover, the described specific features, structures, materials, or characteristics can be combined in any one or more embodiments or examples in a suitable manner.

[0100] Described above are some embodiments of the present application and are not intended to limit the present application. For those skilled in the art, the present application may have various modifications and variations. Any modifications, equivalent substitutions, improvements, etc. made within the spirit and principles of this application shall be included within the scope of protection of this application.

Claims

1. A range hood assembly, comprising:

a volute comprising an air inlet and an air outlet; and
a flow collecting portion, arranged on the volute, and comprising an air duct, wherein
an outlet of the air duct is communicated with the air inlet;
the inner surface of the air duct is a curved surface; and
the flow area of the air duct is gradually reduced in the flow direction of the air duct.

2. The range hood assembly according to claim 1, further comprising:
an impeller, arranged inside the volute, wherein the air outlet is located in the circumferential side of the impeller, and the air inlet is located in the end side of the impeller, and the diameter of the impeller is a first diameter.

3. The range hood assembly according to claim 2, wherein the inner surface of the air duct is a conical surface.

4. The range hood assembly according to claim 3, wherein the generatrix of the conical surface is an arc line segment.

5. The range hood assembly according to claim 3, wherein
the diameter of the inlet of the air duct is a second diameter, and the range of the ratio of the second diameter to the first diameter is greater than or equal to 0.71 and less than or equal to 0.97.

6. The range hood assembly according to claim 3, wherein
the diameter of the outlet of the air duct is a third diameter, and the range of the ratio of the third diameter to the first diameter is greater than or equal to 0.64 and less than or equal to 0.88.

7. The range hood assembly according to claim 2, wherein

the volute further comprises a volute tongue, and the end face of the volute tongue is a circular arc surface; and
the range of the ratio of the radius of the end face of the volute tongue to the first diameter is greater than or equal to 0.04 and less than or equal to 0.07.

8. The range hood assembly according to claim 7, wherein

the distance between the volute tongue and the impeller is a first distance; and
the range of the ratio of the first distance to the first diameter is greater than or equal to 0.03 and less than or equal to 0.07.

9. The range hood assembly according to any one of claims 2 to 8, wherein

the volute comprises a flow channel, and the flow channel comprises a pressurization section and an expansion section communicating with each other; and
the impeller is located within the pressurization section, the air inlet is communicated with the pressurization section, and the air outlet is communicated with the expansion section.

10. The range hood assembly according to claim 9, wherein

a cross section is obtained through sectioning the volute by a plane perpendicular to the axis of the volute;
on the cross section, the volute enclosing the pressurization section presents a spiral line, the volute enclosing the expansion section consists of a first line segment and a second line segment, the first line segment is connected to the inner end of the spiral line, and the second line segment is connected to the outer end of the spiral line; and
the second line segment is tangent to the spiral line.

11. The range hood assembly according to claim 10, further comprising:

a first baffle rib, arranged at the air outlet;
a second baffle rib, arranged on the expansion section and connected to the first baffle rib;
on the cross section, the first baffle rib is connected to the end of the first line segment, and the second baffle rib is connected to the intersection area of the first line segment and the spiral line.

12. The range hood assembly according to claim 9, wherein the range of the expansion angle of the expansion section is greater than or equal to 5° and less than or equal to 12°.

13. An integrated cooker, comprising:

a heating assembly, configured to support and heat a container, and comprising a flue; and
the range hood assembly according to any one of claims 1 to 12, wherein the air inlet is communicated with the flue and is configured to extract oil fume through the flue.

14. The integrated cooker according to claim 13, further comprising:
a filtering assembly, provided in the flue and configured to filter oil fume.

15. The integrated cooker according to claim 13, further comprising:
a pipeline assembly, connected to the air outlet.

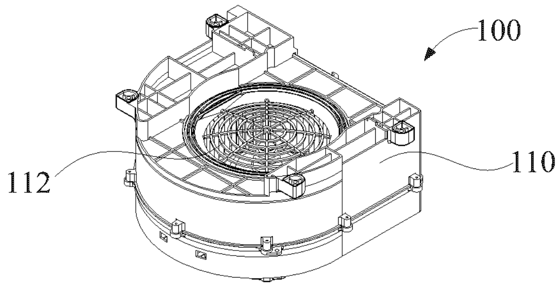

FIG. 1

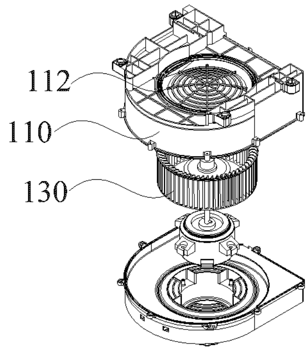

FIG. 2

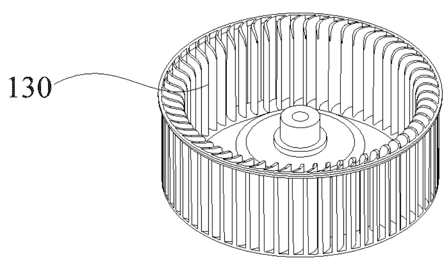

FIG. 3

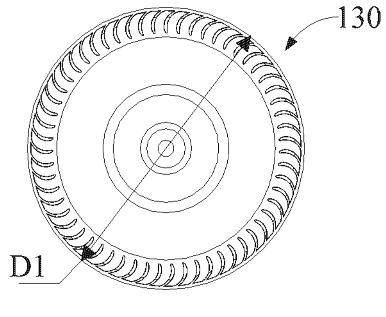

FIG. 4

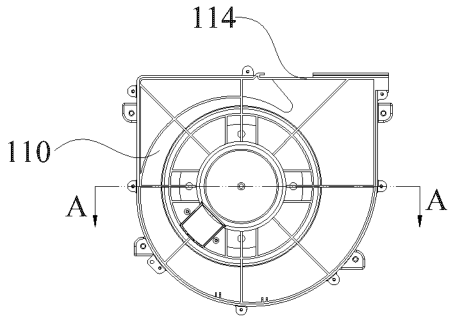

FIG. 5

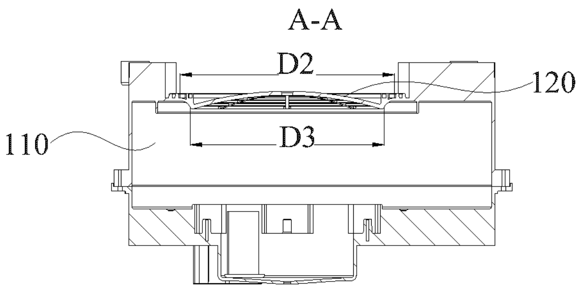

FIG. 6

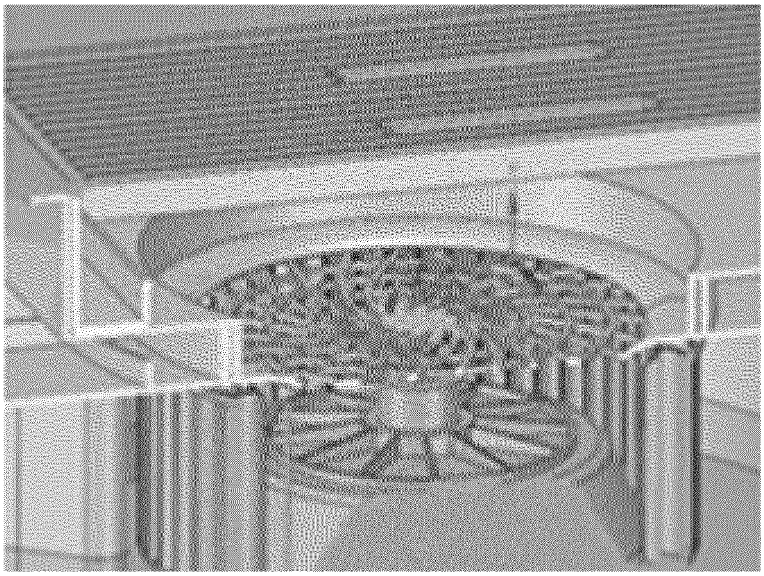

FIG. 7

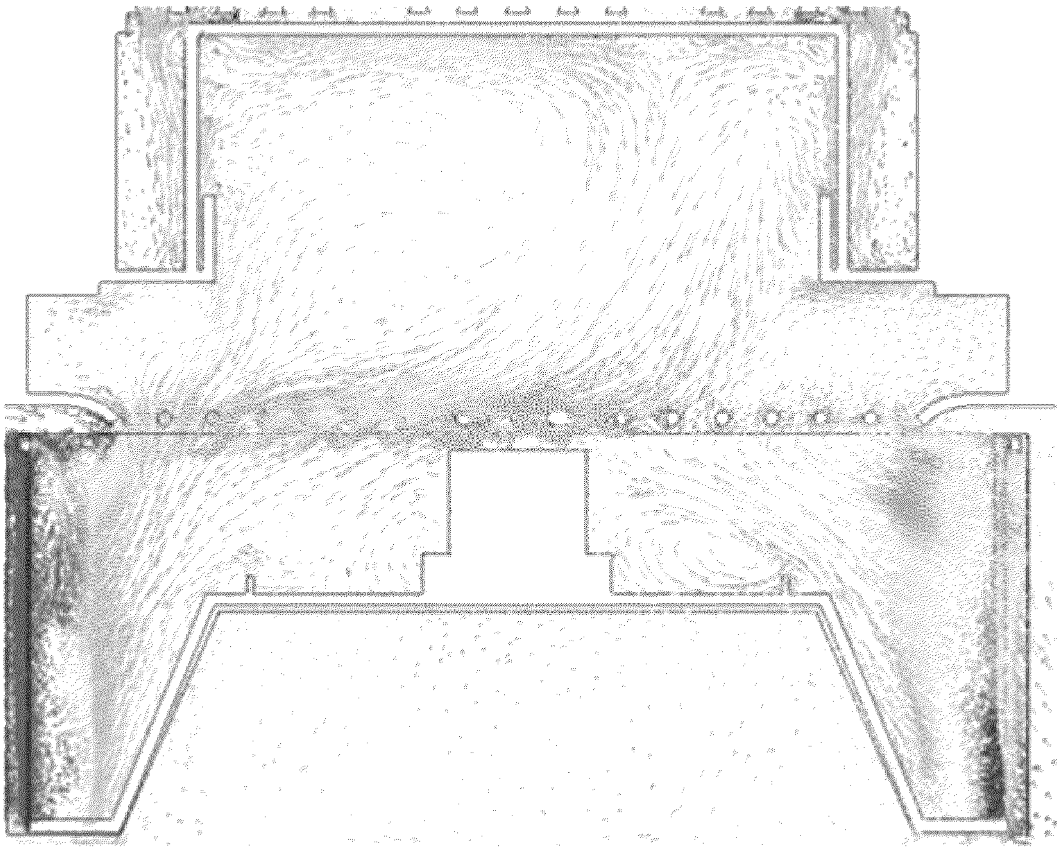

FIG. 8

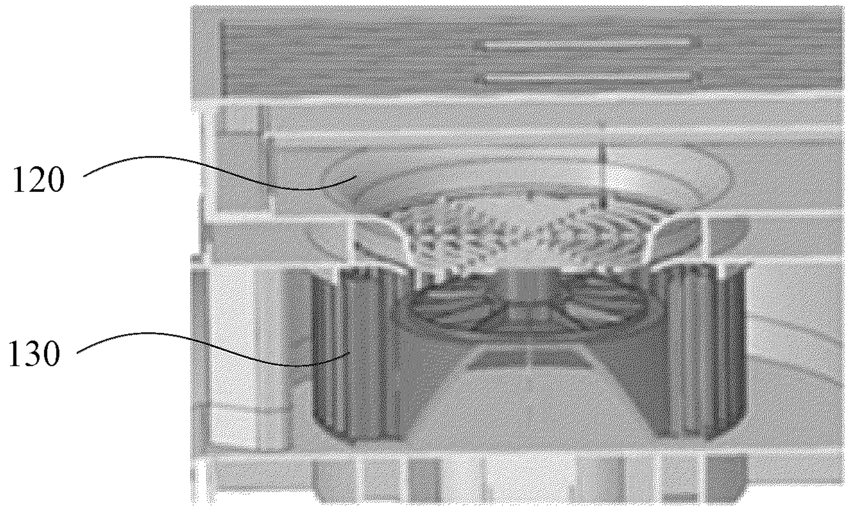

FIG. 9

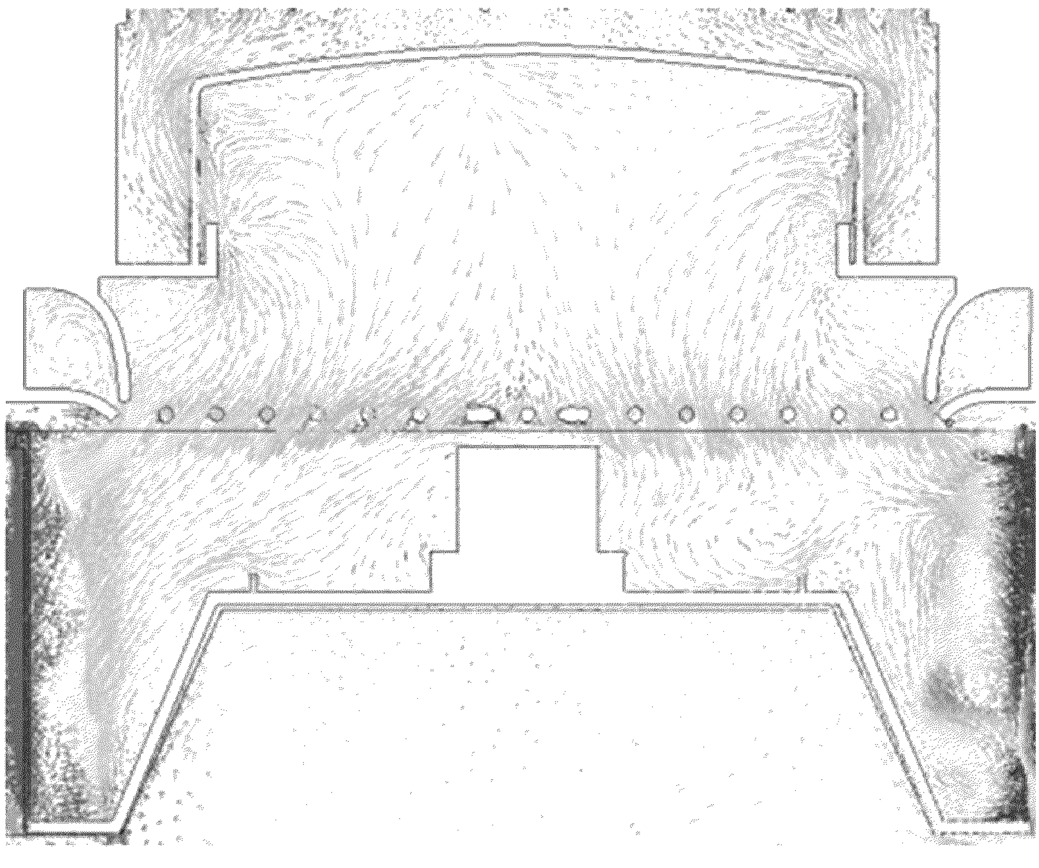

FIG. 10

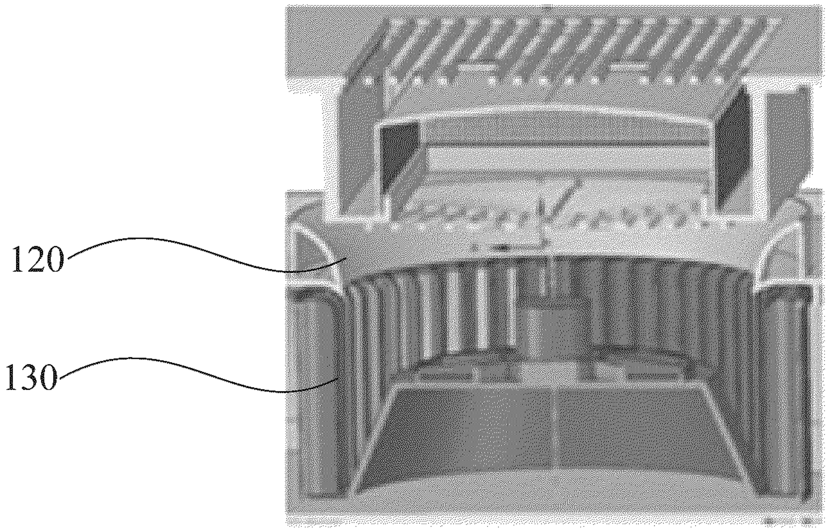

FIG. 11

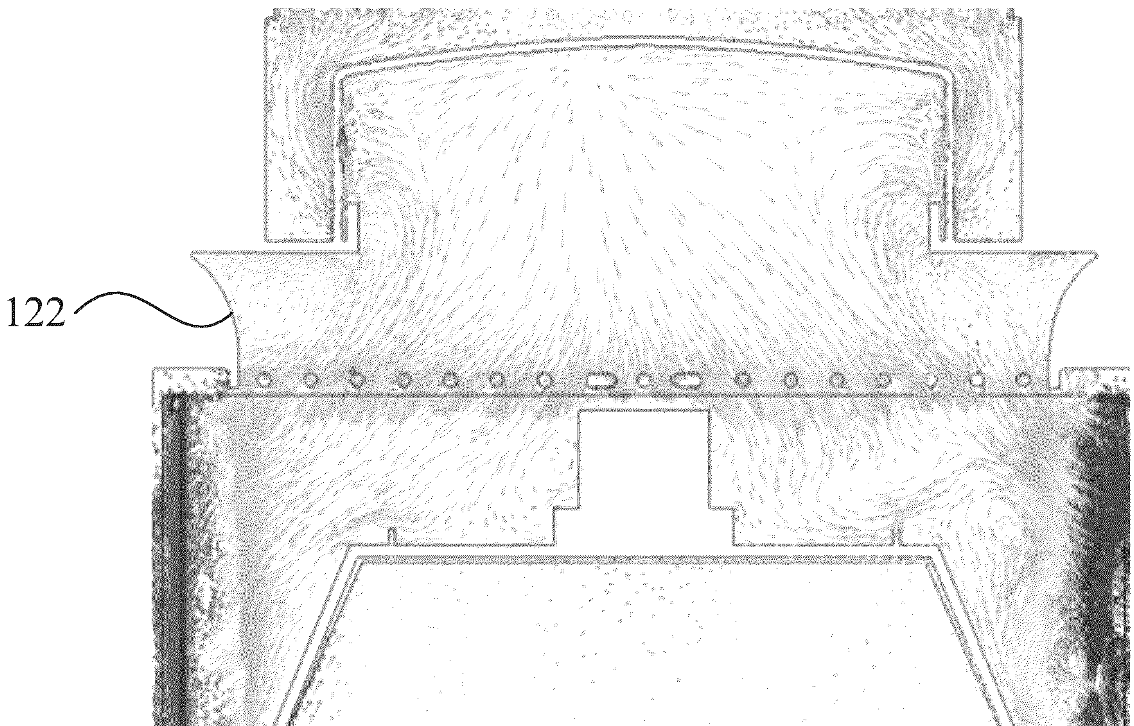

FIG. 12

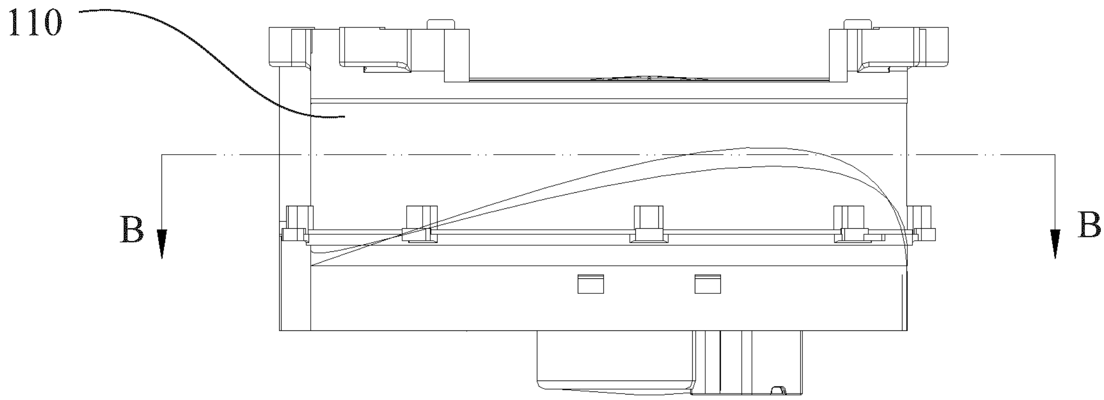

FIG. 13

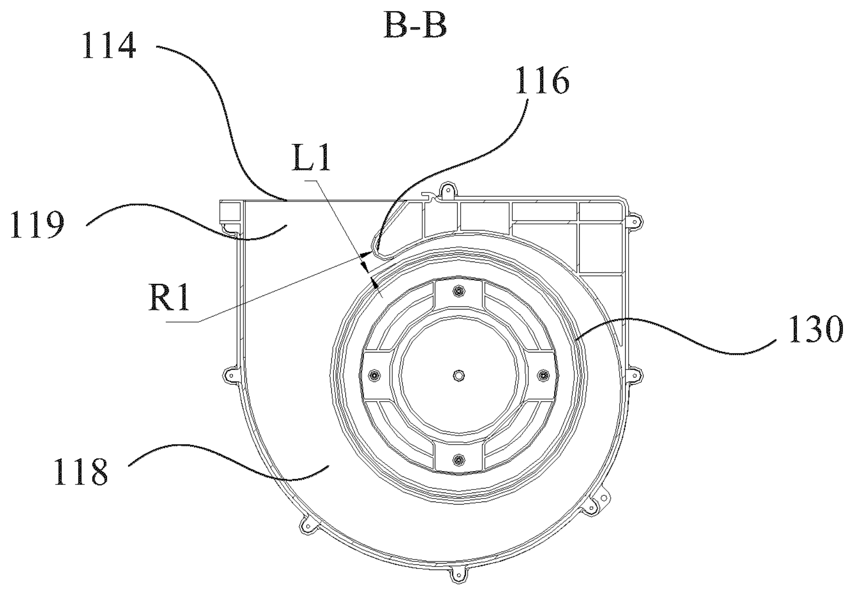

FIG. 14

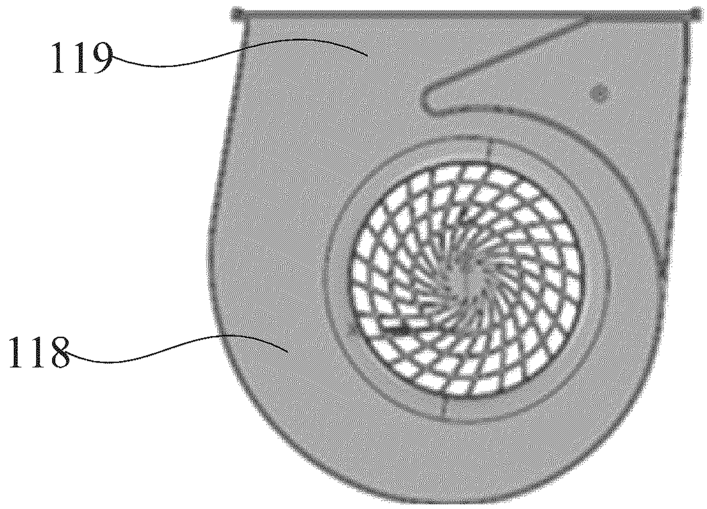

FIG. 15

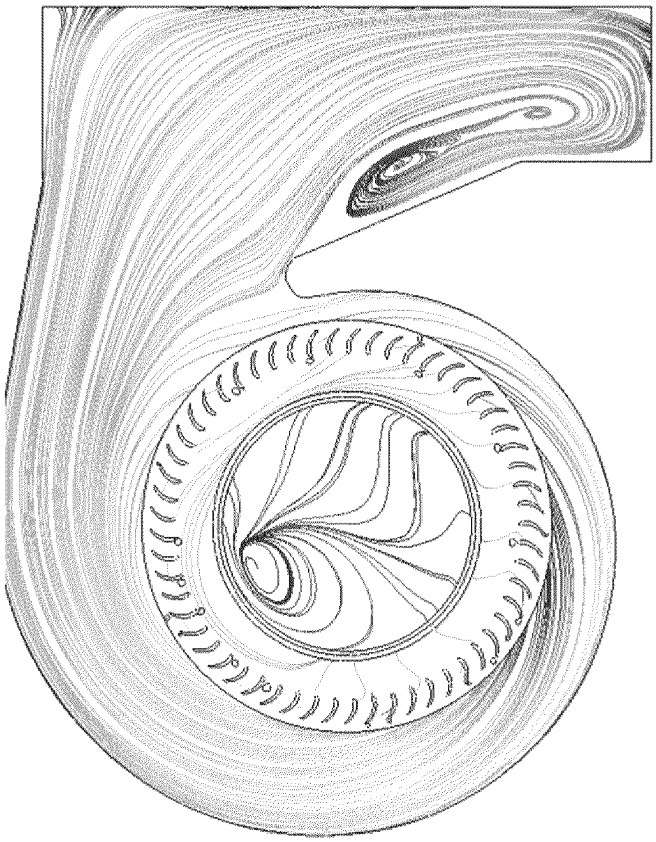

FIG. 16

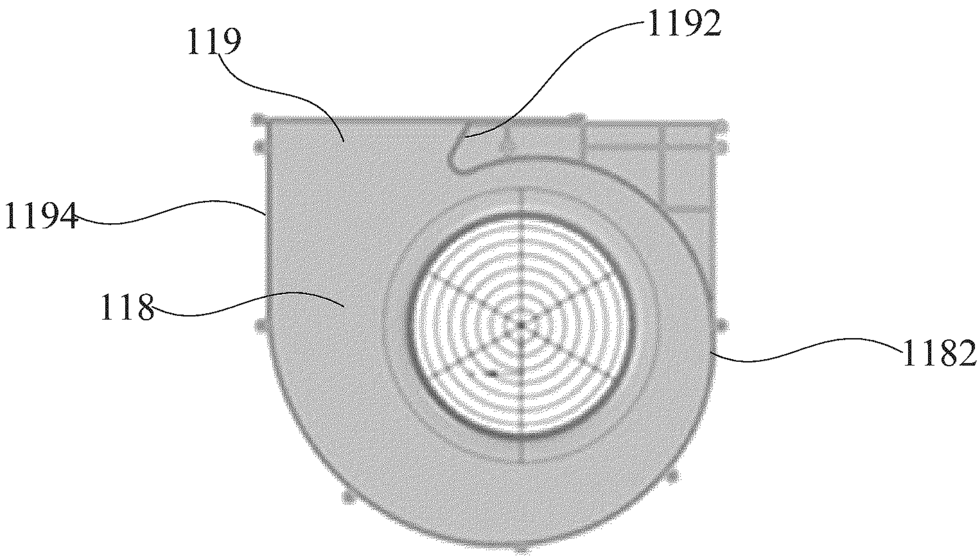

FIG. 17

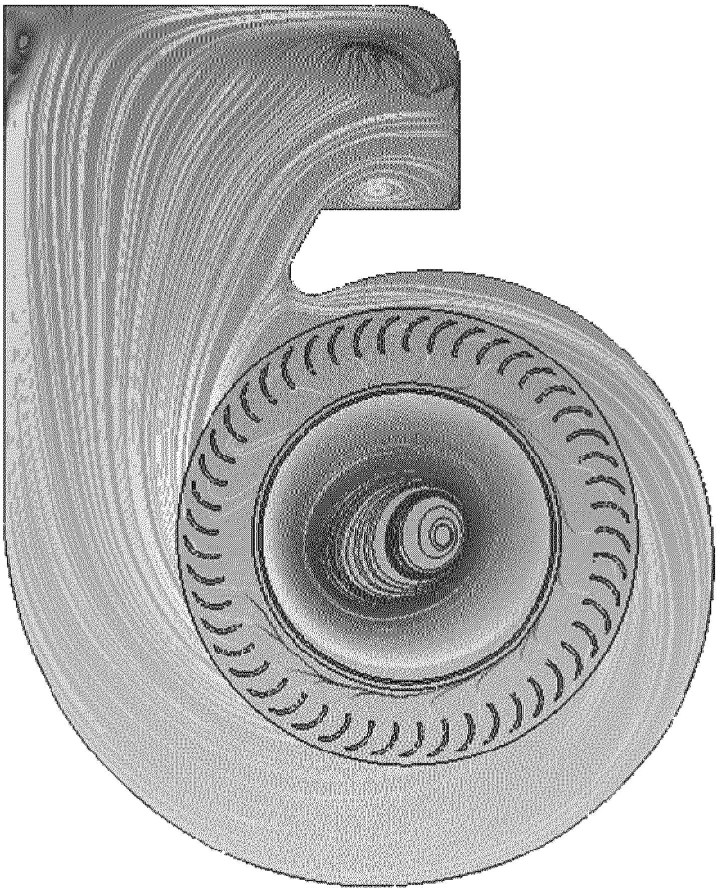

FIG. 18

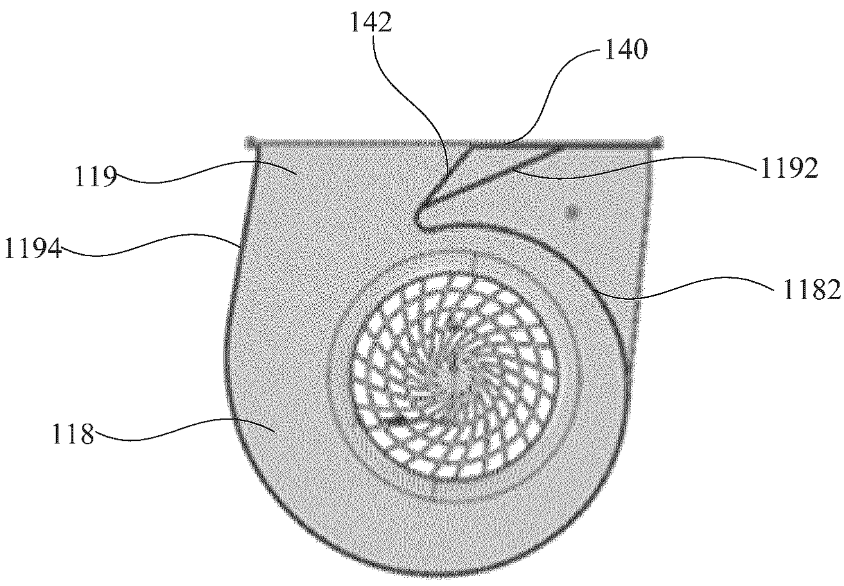

FIG. 19

FIG. 20

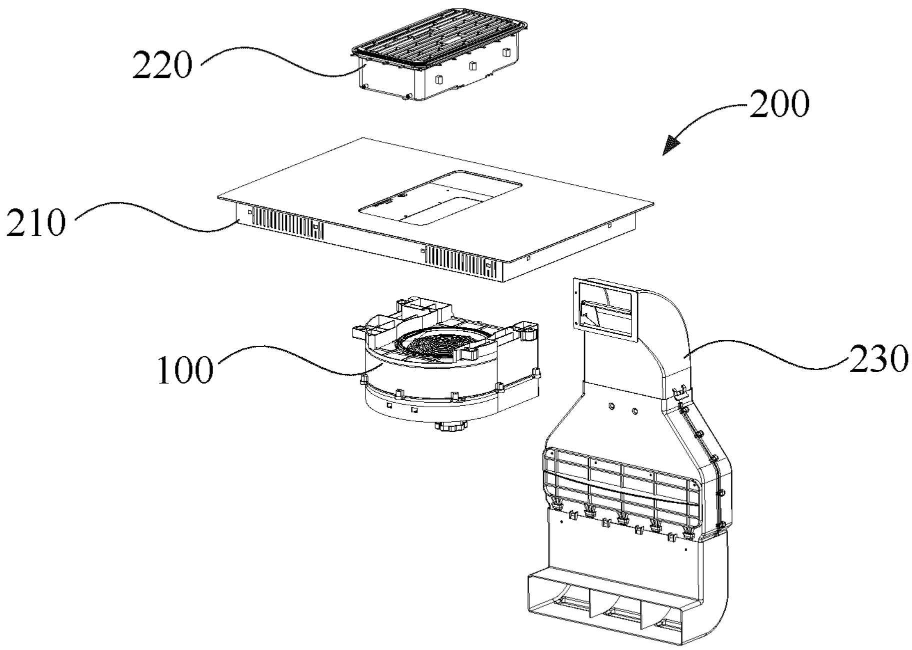

FIG. 21

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2023/093786

A. CLASSIFICATION OF SUBJECT MATTER

F24C15/20(2006.01)i；F04D29/44(2006.01)i；F04D29/42(2006.01)i；F04D29/66(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)

IPC: F24C; F04D

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

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

CNTXT, DWPI, VEN, CNKI: 烟机, 蜗壳, 导风, 进风, 出风, 曲面, 流通面积, 减小, 集成灶, 加热, 过滤, range, hood, integrated, cooker, volute, air, inlet, outlet, curved, surface, ciuculation, area, reduce+, heat+, filt+

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 218001610 U (FOSHAN SHUNDE MIDEA ELECTRICAL HEATING APPLIANCES MANUFACTURING CO., LTD.) 09 December 2022 (2022-12-09) claims 1-15, description, paragraphs [0004]-[0123], and figures 1-21	1-15
X	WO 2018040015 A1 (GUANGDONG FANS TECH ELECTRIC CO., LTD.) 08 March 2018 (2018-03-08) description, page 1, line 16-page 7, line 2, and figures 1-7	1-8
Y	WO 2018040015 A1 (GUANGDONG FANS TECH ELECTRIC CO., LTD.) 08 March 2018 (2018-03-08) description, page 1, line 16-page 7, line 2, and figures 1-7	9-15
Y	CN 215765277 U (HANGZHOU ROBAM APPLIANCES CO., LTD.) 08 February 2022 (2022-02-08) description, paragraphs [0005]-[0052], and figures 1-2	9-12
Y	CN 217402640 U (FOSHAN SHUNDE MIDEA ELECTRICAL HEATING APPLIANCES MANUFACTURING CO., LTD.) 09 September 2022 (2022-09-09) claims 13-15, description, paragraphs [0004]-[0125], and figures 1-8	13-15

☑ 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
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- "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	Date of mailing of the international search report
10 August 2023	**12 August 2023**

Name and mailing address of the ISA/CN	Authorized officer
China National Intellectual Property Administration (ISA/CN) **China No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088**	Telephone No.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2023/093786

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CN 110857791 A (NINGBO FOTILE KITCHENWARE CO., LTD.) 03 March 2020 (2020-03-03) entire document	1-15
A	CN 114483653 A (GUANGDONG VANWARD NEW ELECTRIC CO., LTD.) 13 May 2022 (2022-05-13) entire document	1-15
A	CN 202483954 U (WUHU MIDEA KITCHEN & BATH APPLIANCES MANUFACTURING CO., LTD.) 10 October 2012 (2012-10-10) entire document	1-15
A	CN 208983447 U (HANGZHOU ROBAM APPLIANCES CO., LTD.) 14 June 2019 (2019-06-14) entire document	1-15
A	CN 216111340 U (HANGZHOU ROBAM APPLIANCES CO., LTD.) 22 March 2022 (2022-03-22) entire document	1-15

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2023/093786

Patent document cited in search report			Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN	218001610	U	09 December 2022	None	
WO	2018040015	A1	08 March 2018	None	
CN	215765277	U	08 February 2022	None	
CN	217402640	U	09 September 2022	None	
CN	110857791	A	03 March 2020	None	
CN	114483653	A	13 May 2022	None	
CN	202483954	U	10 October 2012	None	
CN	208983447	U	14 June 2019	None	
CN	216111340	U	22 March 2022	None	

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REFERENCES CITED IN THE DESCRIPTION

Patent documents cited in the description

- CN 202222438708 **[0001]**