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(54) GRATING AND COMBINED STOVE

(57) A grid (5000) and a combined stove. The grid (5000) includes a frame (5100) and grid bars (5200). The grid bars (5200) are disposed in the frame (5100). Each of the grid bars (5200) is provided with a tip (5230) a bottom of the grid bar (5200).

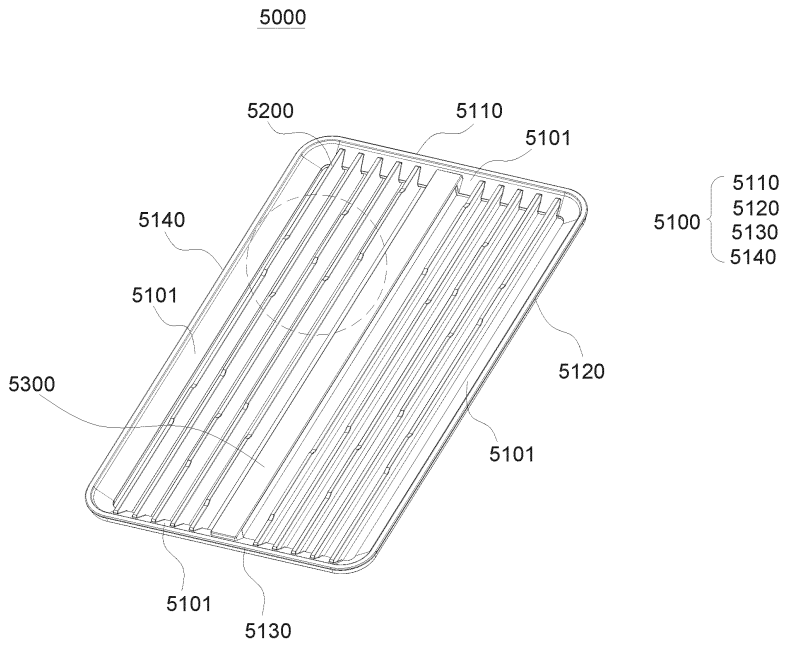

FIG. 12

EP 4 361 504 A1

Description

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims priority to Chinese Patent Application No. 202211132954.9, entitled "GRID AND COMBINED STOVE", and filed with China National Intellectual Property Administration on September 16, 2022, the entire contents of which are incorporated herein by reference.

FIELD

[0002] The present disclosure relates to the field of combined stove technologies, and in particular, to a grid and a combined stove.

BACKGROUND

[0003] A combined stove is a kind of combined appliance with stove and hood functions. In operation, the combined stove needs to extract and discharge oil fume. A grid is disposed at a desired position in order to prevent foreign matter from entering the combined stove along with the oil fume.

SUMMARY

[0004] The present disclosure aims to solve technical problems in the related art at least to some extent. To this end, the present disclosure provides a grid which, when applied in a combined stove, can avoid water adhesion.

[0005] In order to achieve the above objective, a grid is provided in the present disclosure. The grid includes a frame and a grid bar disposed in the frame. The grid bar has a tip disposed at a bottom of the grid bar, and a tip is disposed at a bottom of the grid bar.

[0006] In some embodiments of the present disclosure, the grid bar has a first side surface and a second side surface opposite to the first side surface, and the tip is joined to the first side surface and forms a notch with the second side surface.

[0007] In some embodiments of the present disclosure, the first side surface is obliquely arranged to guide air.

[0008] In some embodiments of the present disclosure, the grid bar has a chamfer close to the second side surface at a top of the grid bar.

[0009] In some embodiments of the present disclosure, the grid bar is provided with a raised portion at a top of the grid bar.

[0010] In some embodiments of the present disclosure, the grid includes a plurality of grid bars. Raised portions of adjacent grid bars of the plurality of grid bars are staggered with each other.

[0011] In some embodiments of the present disclosure, a first air guide region and a second air guide region are enclosed by the frame. The grid bar is disposed in each of the first air guide region and the second air guide region, enabling an air guide direction of the first air guide region to intersect an air guide direction of the second air guide region.

[0012] In some embodiments of the present disclosure, the grid further includes a support member located between the first air guide region and the second air guide region. The support member includes a transverse frame bar and a vertical frame bar, and two ends of the transverse frame bar extend beyond the vertical frame bar.

[0013] In some embodiments of the present disclosure, the grid further includes a support member located between the first air guide region and the second air guide region. The support member includes a transverse frame bar which allows for mounting of a decorative member.

[0014] In some embodiments of the present disclosure, the frame has an air guide surface, and the air guide surface is obliquely arranged to guide air. The grid bar has a first side surface, which is obliquely arranged to guide air. An inclination of the air guide surface is greater than an inclination of the first side surface.

[0015] In some embodiments of the present disclosure, along a height direction of the grid, a sum of a height of the grid bar and a height of the tip is greater than a height of the frame.

[0016] In some embodiments of the present disclosure, a top surface of the grid bar is flush with or lower than a top surface of the frame.

[0017] In some embodiments of the present disclosure, the frame and the grid bar are both made of plastic.

[0018] A combined stove is further disclosed in the present disclosure. The combined stove includes the grid as described above.

[0019] In some embodiments of the present disclosure, a length of the frame is greater than a width of the frame, and the grid bar is arranged in a length direction of the frame. A length of the combined stove is greater than a width of the combined stove, and the length of the frame is perpendicular to the length of the combined stove.

[0020] In some embodiments of the present disclosure, the combined stove further includes a filtering device. The filtering device includes a filter screen. The filter screen is obliquely arranged to face towards an air guide direction of the grid.

BRIEF DESCRIPTION OF THE DRAWINGS

[0021] In order to clearly explain technical solutions according to embodiments of the present disclosure or in the related art, drawings used in the description of the embodiments or the related art are briefly described below. Obviously, the drawings as described below are merely some embodiments of the present disclosure. Based on the structures shown in these drawings, other drawings can be obtained by those skilled in the art without involving inventive steps.

FIG. 1 is a schematic view of a combined stove according to some embodiments.
FIG. 2 is an exploded view of a combined stove according to some embodiments.
FIG. 3 is a sectional view of a combined stove according to some embodiments.
FIG. 4 is an enlarged view of a portion in FIG. 3 illustrated in a dashed line.
FIG. 5 is a sectional view of a cover plate according to some embodiments.
FIG. 6 is a schematic view of a connection member according to some embodiments.
FIG. 7 is an enlarged view of a portion in FIG. 6 illustrated in a dashed line.
FIG. 8 is a sectional view of a connection member according to some embodiments.
FIG. 9 is a schematic view of a connection member, a grid, and a filtering device in cooperation with each other according to some embodiments.
FIG. 10 is a sectional view of a structure illustrated in FIG. 9.
FIG. 11 is an enlarged view of a portion in FIG. 10 illustrated in a dashed line.
FIG. 12 is a schematic view of a grid according to some embodiments.
FIG. 13 is an enlarged view of a portion in FIG. 12 illustrated in a dashed line.
FIG. 14 is a sectional view of a grid according to some embodiments.
FIG. 15 is an enlarged view of a portion in FIG. 14 illustrated in a dashed line.
FIG. 16 is a sectional view of a grid according to some embodiments.
FIG. 17 is an enlarged view of a portion in FIG. 16 illustrated in a dashed line.
FIG. 18 is a schematic view of a cover plate according to some embodiments.
FIG. 19 is a schematic view of a cover plate and a body connected with each other according to some embodiments.
FIG. 20 is a schematic view of a fan and a body connected with each other according to some embodiments.
FIG. 21 is a schematic view of a fan according to some embodiments.
FIG. 22 is a schematic view of a fan according to some embodiments.
FIG. 23 is an exploded view of a fan according to some embodiments.

Reference signs:

[0022]

body 1000, bottom plate 1100, side plate 1200, mounting hole 1300, through hole 1400;
cover plate 2000, opening 2100, side wall 2110 of opening, left cooking region 2210, right cooking region 2220, mounting member 2300, first connection edge 2310, second connection edge 2320;
fan 3000, scroll housing 3100, upper scroll housing 3110, air inlet 3111, lower scroll housing 3120, air outlet 3121, convex ring 3200, guide tube 3300, impeller 3400, air duct 3500;
connection member 4000, first connection portion 4100, adhesive groove 4110, second connection portion 4200, rib 4210;
grid 5000;
frame 5100, air guide surface 5101, first frame bar 5110, second frame bar 5120, third frame bar 5130, fourth frame bar 5140;
grid bar 5200, first side surface 5210, second side surface 5220, chamfer 5221, tip 5230, notch 5240, raised portion 5250;
support member 5300, transverse frame bar 5310, vertical frame bar 5320, avoidance groove 5330;
first air guide region 5410, second air guide region 5420; and
filtering device 6000, filter screen 6100.

[0023] The objective realization, functional features and advantages of the present disclosure will be further described in conjunction with the embodiments and with reference to the accompanying drawings.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0024] Technical solutions according to embodiments of the present disclosure will be described clearly and completely below in combination with accompanying drawings of the embodiments of the present disclosure. Obviously, the embodiments described below are only some of the embodiments of the present disclosure, rather than all embodiments of the present disclosure. Based on the embodiments of the present disclosure, all other embodiments obtained by those skilled in the art without involving inventive steps shall fall within the scope of the present disclosure.

[0025] It should be noted that all directional indications (such as, up, down, left, right, front, and rear) in the embodiments of the present disclosure are only used to explain a relative positional relationship, a movement, or the like of components in a particular posture (as illustrated in the figures). When the particular posture changes, the directional indication will change accordingly.

[0026] In the present disclosure, unless otherwise clearly specified and limited, terms such as "connect" and "fix" should be understood in a broad sense. For example, "fix" may be fixed connection, detachable connection, or formed integrally; may be mechanical connection or electrical connection; may be direct connection or indirect connection through an intermediate; and may be internal communication of two components or an interaction relationship between two components, unless otherwise clearly limited. Those skilled in the art can understand the specific meaning of the above terms in the

present disclosure based on specific situations.

[0027] In addition, in the present disclosure, the description related to "first", "second" or the like are only used for descriptive purposes, and cannot be understood as indicating or implying relative importance or implicitly indicating the number of indicated technical features. Therefore, the features associated with "first" and "second" may explicitly or implicitly include at least one of the features. In addition, combinations can be made between technical solutions of various embodiments, but they must be performed based on the fact that those skilled in the art can implement these combinations. When a combination of the technical solutions is contradictory or cannot be implemented, it should be understood that the combination of the technical solutions neither exists nor falls within the scope of the present disclosure.

[0028] The present disclosure discloses a combined stove. As illustrated in FIG. 1 to FIG. 4, in some embodiments, the combined stove includes a cover plate 2000, a connection member 4000, and an air intake assembly.

[0029] Since oil fume is generated during use of the combined stove, the combined stove is required to extract and discharge the oil fume, and the air intake assembly is disposed at an air intake path of the combined stove. The air intake assembly is configured to guide and filter air. In this way, whether positioning of the air intake assembly is accurate or not has great impact on flowing of the air. Thus, in the embodiments, positioning between the connection member 4000 and the cover plate 2000 is easy by disposing the connection member 4000 on the cover plate 2000. In this way, supporting the air intake assembly at the connection member 4000 allows for a more accurate match between the air intake assembly and an opening 2100 of the cover plate 2000, which prevent a relatively large gap relative to the opening 2100 from occurring subsequent to assembly of the air intake assembly, preventing air leakage and an overall unsightly appearance.

[0030] In some embodiments, the combined stove is a combination appliance having a stove function and a hood function. The stove function means that cooking of ingredients over an open or non-open flame can be realized. For example, a cooking region is provided on each of a left side and a right side of the combined stove. An electromagnetic heating device may be provided in correspondence to the cooking region, or a burner using a combustible gas for combustion may be provided in correspondence to the cooking region. The hood function means that the oil fume generated during cooking of the ingredients can be extracted and discharged to avoid air pollution in a kitchen space.

[0031] As illustrated in FIG. 1 to FIG. 4, the combined stove generally includes a body 1000, the cover plate 2000, and a fan 3000.

[0032] The body 1000 of the combined stove serves to carry a framework, and is configured to mount various components to maintain a whole machine form of the combined stove.

[0033] The cover plate 2000 is mounted to the body 1000 to form a top surface of the combined stove. The cover plate 2000 is in an exposed state when the combined stove is mounted to a cabinet. The cover plate 2000 is in a substantially flat-plate shape, which may be made of, e.g., glass. The opening 2100 is formed at the cover plate 2000, and penetrates an upper surface and a lower surface of the cover plate 2000. A cooking region at a left side of the opening 2100 is referred to as a left cooking region 2210, and a cooking region at a right side of the opening 2100 is referred to as a right cooking region 2220. The body 1000 is provided with an electromagnetic heating device at a position corresponding to the left cooking region 2210 therein. Moreover, the body 1000 is further provided with an electromagnetic heating device at a position corresponding to the right cooking region 2220 therein. It is also possible to dispose a burner using a combustible gas for combustion.

[0034] As illustrated in FIG. 21 to FIG. 23, the fan 3000 includes a scroll housing 3100, an impeller 3400, and a motor. The scroll housing 3100 includes a lower scroll housing 3120 and an upper scroll housing 3110. The motor is mounted to the lower scroll housing 3120. The impeller 3400 is a centrifugal wind wheel, is mounted to the lower scroll housing 3120, and is in a drive connection to the motor. The upper scroll housing 3110 and the lower scroll housing 3120 are connected to cover the impeller 3400. An air duct 3500 is formed between the upper scroll housing 3110 and the lower scroll housing 3120. The impeller 3400 is located in the air duct 3500. The upper scroll housing 3110 has an air inlet 3111 in communication with the air duct 3500. An air outlet 3121 in communication with the air duct 3500 is formed between the upper scroll housing 3110 and the lower scroll housing 3120. The fan 3000 is fixed to the body 1000 by the upper scroll housing 3110.

[0035] A negative pressure is formed when the motor of the fan 3000 operates to drive the impeller 3400 to rotate. The external air enters the body 1000 through the opening 2100 of the cover plate 2000 under an action of a pressure, enters the air duct 3500 through the air inlet 3111, and is then discharged through the air outlet 3121. A path along which the air flows from the opening 2100 of the cover plate 2000 to the air inlet 3111 of the fan 3000 may be construed as the air intake path.

[0036] As illustrated in FIG. 18 and FIG. 19, mounting members 2300 are disposed at the lower surface of the cover plate 2000. The mounting member 2300 is disposed at each of four edges of the cover plate 2000. The mounting members 2300 each includes a first connection edge 2310 and a second connection edge 2320. The first connection edge 2310 is disposed close to an edge of the cover plate 2000, and is connected to the lower surface of the cover plate 2000 by adhesive bonding. For example, a glass cement is used to bond the first connection edges 2310 to the lower surface of the cover plate 2000. Thereafter the cover plate 2000 is connected to the body 1000 by the second connection edges 2320.

[0037] The body 1000 includes a bottom plate 1100 and side plates 1200. The bottom plate 1100 is in a substantially rectangular shape. The side plate 1200 is disposed at each of four edges of the bottom plate 1100. The bottom plate 1100 and the side plates 1200 are formed by bending a single piece of sheet metal, and thus structural strength of the body 1000 can be greatly improved. The second connection edge 2320 extends from the first connection edge 2310 towards the body 1000. In addition, the second connection edge 2320 is at an inclination with respect to the cover plate 2000, in which a plane is defined perpendicular to the cover plate 2000, and an angle between the plane and the second connection edge 2320 is defined as an inclination. Further, the second connection edge 2320 is inclined towards an interior of the body 1000 with respect to the side plate 1200 of the body 1000, e.g., inclined at 2°, 5°, 8°, 10°, or the like. In this way, a region enclosed by the four second connection edges 2320 is smaller than a region enclosed by the four side plates 1200. When the cover plate 2000 is mounted to the body 1000, a top of the side plate 1200 of the body 1000 is in contact with a region between a top of the second connection edge 2320 and a bottom of the second connection edge 2320 during movement of the cover plate 2000. Since the second connection edge 2320 is obliquely arranged, the cover plate 2000 can be guided to move in a better way to reduce mounting difficulty of the cover plate 2000, improving a mounting efficiency of the cover plate 2000.

[0038] After the cover plate 2000 is mounted at a predetermined position, a fastener, such as a screw and a bolt, is provided to penetrate the side plate 1200 and the second connection edge 2320 to fasten the body 1000 to the cover plate 2000. It should be understood that a corresponding screw hole needs to be pre-formed on each of the second connection edge 2320 and the side plate 1200. In this way, the fixation through penetration can be realized by the fastener subsequent to mounting of the cover plate 2000.

[0039] As illustrated in FIG. 18 and FIG. 19, the first connection edge 2310 and the second connection edge 2320 have an integrally-formed sheet metal structure, and are formed through bending. In addition, the second connection edge 2320 extends downwardly and obliquely from an edge at an inner side of the first connection edge 2310. The inner side of the first connection edge 2310 is a side that is closer to the interior of the body 1000. In this way, the cover plate 2000 can be prevented from being deformed or even damaged under the pressure.

[0040] In some embodiments, in a case where the cover plate 2000 is moved to be mounted to the body 1000, since the second connection edge 2320 is obliquely arranged, the top of the side plate 1200 abuts against an intersection between the first connection edge 2310 and the second connection edge 2320 or abuts against the first connection edge 2310 when the cover plate 2000 is mounted in place. That is, the side plate 1200 exerts a force on the cover plate 2000 through the first connection edge 2310. The first connection edge 2310 enlarges an area to which the force is applied, avoiding damage to the cover plate 2000, especially in a case where the cover plate 2000 is the glass cover plate.

[0041] When the second connection edge 2320 extends inwardly and obliquely from an outer side of the first connection edge 2310, the top of the side plate 1200 abuts against the lower surface of the cover plate 2000 when the cover plate 2000 is moved to be mounted at the predetermined position. Since a small area of contact is provided between the top of the side plate 1200 and the lower surface of the cover plate 2000, the side plate 1200 exerts a relatively large force on the cover plate 2000, and the cover plate 2000 is thus more susceptible to deformation or even rupture due to the force.

[0042] During mounting of the fan 3000, the body 1000, and the cover plate 2000, the fan 3000 is placed at a mounting station, and the body 1000 is then aligned with the fan 3000 and entirely placed on the fan 3000. A fastener is provided to penetrate the body 1000 from an inner side of the body 1000. That is, the fastener penetrates the body 1000 from an inner surface of the body 1000 to an outer surface of the body 1000 to be tightly connected to the fan 3000. The cover plate 2000 is then mounted to the body 1000. In this way, it is unnecessary to connect the body 1000 to the cover plate 2000 before connecting the body 1000 to the fan 3000. Due to a heavy weight of the cover plate 2000, such a mounting method can reduce operation difficulty and avoid exposure of the fastener, improving aesthetics of the combined stove.

[0043] In some embodiments, as illustrated in FIG. 20, a convex ring 3200 surrounding the air inlet 3111 is disposed at the upper scroll housing 3110. A mounting hole 1300 is formed at the body 1000. In some embodiments, the mounting hole 1300 is formed at the bottom plate 1100 of the body 1000. In this way, during mounting of the body 1000 and the fan 3000, the mounting hole 1300 of the body 1000 is aligned with the scroll housing 3100 of the fan 3000, and the body 1000 is moved until the convex ring 3200 is embedded in the mounting hole 1300. That is, the body 1000 is sleeved on the convex ring 3200 through the mounting hole 1300. The cooperation between the convex ring 3200 and the mounting hole 1300 realizes positioning of the body 1000 and the fan 3000 during the mounting of the body 1000 and the fan 3000, which facilitates subsequent fixation of the scroll housing 3100 by penetrating the fastener through the body 1000, reducing the operation difficulty.

[0044] The convex ring 3200 is further formed in a closed ring structure, which can prevent air leakage from occurring in the convex ring 3200, and further facilitate alignment with the mounting hole 1300 performed by a user.

[0045] A guide tube 3300 is disposed at the scroll housing 3100. The guide tube 3300 extends from an exterior of the body 1000 towards the interior of the body 1000, and penetrates to the interior of the body 1000, which

facilitates threading of wires.

[0046] Generally, as illustrated in FIG. 20 to FIG. 23, a circuit board and various components need to be disposed in the body 1000 to realize electrical connections. Since the fan 3000 is disposed outside of the body 1000, exposure of wires is likely to happen when the motor of the fan 3000 is connected to the circuit board in the body 1000. Thus, the guide tube 3300 is provided to avoid the exposure. In some embodiments, the guide tube 3300 is formed by two half-housings snapped together. One half-housing of the two half-housings and the scroll housing 3100 are integrally formed, and another half-housing of the two half-housings is formed as a separate component to be snapped with the one half-housing at the scroll housing 3100. The guide tube 3300 extends from the scroll housing 3100 to the body 1000. In this way, the guide tube 3300 can guide and hide the wires, allowing the wires to connect the motor of the fan 3000 to the circuit board in the body 1000 without being exposed.

[0047] In addition, a through hole 1400 penetrating the inner surface and the outer surface of the body 1000 is formed at the body 1000. The guide tube 3300 is inserted into the through hole 1400. In this way, the wires can not only be hidden, but also have a positioning function. That is, in addition to achieve match by the convex ring 3200 and the mounting hole 1300, the guide tube 3300 further needs to be inserted into the through hole 1400 during the mounting of the body 1000 and the fan 3000, which achieves mutual positioning.

[0048] In general, since it is required to prevent foreign matter from entering the body 1000 through the opening 2100 of the cover plate 2000, a grid 5000 needs to be provided at the opening 2100 to block the foreign matter from the ambient environment and to guide the air. In addition, since a large quantity of oil mist particles and water vapor will be produced during cooking, a filtering device 6000 needs to be provided in the air intake path. The filtering device 6000 provides coarse filtration. When the air passes through the filtering device 6000, the oil mist particles are partially attached to the filtering device 6000, and the water vapor is condensed on the filtering device 6000 when encountering the filtering device 6000. The grid 5000 and the filtering device 6000 are referred to as the air intake assembly. Thus, a positional match between the air intake assembly and the air intake path will affect an air intake effect of the air.

[0049] It should be understood that the air intake assembly is disposed at the opening 2100. That is, during mounting, the air intake assembly substantially covers the opening 2100, allowing the air to pass through the air intake assembly.

[0050] The connection member 4000 is exposed at the opening 2100 by disposing the connection member 4000 in the cover plate 2000. Since the air intake assembly is supported by the connection member 4000 when being disposed at the opening 2100, a positional relationship of the air intake assembly is unaffected by the body 1000 as long as the connection member 4000 can be ensured to be disposed at an accurate position of the cover plate 2000. When the air intake assembly is disposed at the opening 2100 and supported by the connection member 4000, the air intake assembly and the air intake path can be ensured to match each other, and a gap is thus unlikely to be formed between the air intake assembly and the opening 2100, avoiding air leakage.

[0051] When the connection member 4000 is disposed at the body 1000 rather than the cover plate 2000, precise positioning between the cover plate 2000 and the body 1000 needs to be ensured during the mounting of the cover plate 2000 and the body 1000, to avoid positional deviation in the mounting of the air intake assembly due to an offset of the connection member 4000 with respect to the opening 2100 of the cover plate 2000. Thus, such a mounting method greatly increases manufacturing difficulty.

[0052] In addition, the air intake assembly is supported by the connection member 4000. For example, the air intake assembly is directly supported by the connection member 4000 under gravity, which realizes a detachable connection between the air intake assembly and the connection member 4000. When the air intake assembly is supported by the connection member 4000 under gravity, a force exerted by the air on the air intake assembly tightly presses the air intake assembly against the connection member 4000 during the flowing of the air, and thus the air intake assembly will not wobble during the flowing of the air and produces no abnormal noises. When the user holds the air intake assembly to insert the air intake assembly into the opening 2100 from an outer side of the cover plate 2000, the air intake assembly can be supported on the connection member 4000 under an action of gravity. Similarly, during disassembly, the user can hold the air intake assembly to pull the air intake assembly out of the opening 2100. Thus, assembly and disassembly by the user are facilitated, which improves use experience.

[0053] Further, as illustrated in FIG. 4, because the air intake assembly is disposed at the opening 2100 in a support manner, the air intake assembly can be entirely embedded in the opening 2100. That is, an upper surface of the air intake assembly may be not higher than an upper surface of the cover plate 2000, which can prevent the air intake assembly from extending beyond the cover plate 2000 in a height direction to avoid obstruction to cleaning. The upper surface of the air intake assembly is not higher than the upper surface of the cover plate 2000, which means that the upper surface of the air intake assembly is flush with the upper surface of the cover plate 2000, or that the upper surface of the air intake assembly is slightly lower than the upper surface of the cover plate 2000.

[0054] It should be understood that the exposure of connection member 4000 at the opening 2100 means that, in a case where the combined stove is mounted to the cabinet, the connection member 4000 partially appears within a region enclosed by the opening 2100 when

viewed downwardly from directly above the combined stove.

[0055] As illustrated in FIG. 4, in some embodiments, the connection member 4000 is disposed at the lower surface of the cover plate 2000 to hide the connection member 4000.

[0056] In some embodiments, the air intake assembly is disposed at the opening 2100, and needs to be positioned at the opening 2100 to be located in the air intake path. The connection member 4000 may be disposed in variety ways. For example, the connection member 4000 is disposed at the upper surface of the cover plate 2000, but this way tends to cause obstruction to the user. When the combined stove is mounted to the cabinet, the cover plate 2000 is exposed out of the cabinet and is within a field of vision of the user. If the connection member 4000 is disposed at the upper surface of the cover plate 2000, the connection member 4000 protrudes from the upper surface of the cover plate 2000, which leads to accumulation of dirt easily, makes cleaning difficult and damaging aesthetics of the cover plate 2000.

[0057] In an embodiment, the connection member 4000 is disposed in a side wall 2110 of the opening 2100, but this structure makes it uneasy to fix the connection member 4000. Since the connection member 4000 is unable to bear a large weight, the connection member 4000 is easy to be loosened when the air intake assembly is supported by the connection member 4000, resulting in detachment of the air intake assembly. Considering various factors such as cost, weight, and design, the cover plate 2000 is generally not too thick. In this way, if the connection member 4000 is only disposed in the side wall 2110 of the opening 2100, the side wall 2110 of the opening 2100 is unable to provide a sufficient region for fixation of the connection member 4000, which makes fixation between the connection member 4000 and the side wall 2110 of the opening 2100 become difficult.

[0058] In this embodiment, the above problem is solved by disposing the connection member 4000 at the lower surface of the cover plate 2000. When the connection member 4000 is disposed at the lower surface of the cover plate 2000, the connection member 4000 is hidden and does not protrude from the upper surface of the cover plate 2000, which will not damage the aesthetics of the cover plate 2000. In addition, since the lower surface of the cover plate 2000 can provide a sufficient region for fixation of the connection member 4000, more connection manners can be used between the connection member 4000 and the lower surface of the cover plate 2000. The fixation effect between the connection member 4000 and the lower surface of the cover plate 2000 is better compared with that obtained when the connection member 4000 is disposed at the side wall 2110 of the opening 2100, as long as it can be ensured that the connection member 4000 is partially exposed through the opening 2100 when the connection member 4000 is fixed to the lower surface of the cover plate 2000. In this way, the connection member 4000 can support the air intake assembly when the air intake assembly is inserted into the opening 2100 from the outer side of the cover plate 2000 and embedded in the body 1000.

[0059] As illustrated in FIG. 5 to FIG. 11, in some embodiments, the connection member 4000 includes a second connection portion 4200 and a first connection portion 4100. The first connection portion 4100 is fixed to the lower surface of the cover plate 2000. The second connection portion 4200 is configured to support the air intake assembly.

[0060] For example, the connection member 4000 is integrally formed by means of injection molding of plastic to form the first connection portion 4100 and the second connection portion 4200. The connection member 4000 that is formed by plastic molding has advantages such as light weight and high toughness. When the combined stove is in a state where the combined stove is mounted to the cabinet and the connection member 4000 is viewed from top to bottom, a portion of the connection member 4000 hidden in the cover plate 2000 is construed as the first connection portion 4100, and a portion of the connection member 4000 exposed through the opening 2100 is construed as the second connection portion 4200.

[0061] The connection member 4000 may be a separate member, and may be fixed to the lower surface of the cover plate 2000 in an additional connection manner. A variety of connection manners may be available. For example, the first connection portion 4100 is connected to the lower surface of the cover plate 2000 by means of adhesive bonding, welding, or screwing.

[0062] For example, the cover plate 2000 is connected to the first connection portion 4100 by means of adhesive bonding. A glass cement is applied to first connection portion 4100, and the connection member 4000 is then moved to a corresponding position at the cover plate 2000, until the first connection portion 4100 is adhesively fixed to the lower surface of the cover plate 2000. This method can realize the connection between the connection member 4000 and the cover plate 2000 faster, achieving a high mounting efficiency.

[0063] For example, the cover plate 2000 is made of a metallic material. The connection member 4000 is moved to the corresponding position at the cover plate 2000, and the first connection portion 4100 of the connection member 4000 is then fixed to the lower surface of the cover plate 2000 by means of welding or fusion welding.

[0064] As illustrated in FIG. 7 and FIG. 8, in some embodiments, an adhesive groove 4110 is formed at one of the first connection portion 4100 and the cover plate 2000, which can prevent overflow of an adhesive during gluing and improve reliability of the adhesive bonding.

[0065] For example, the adhesive groove 4110 is formed in the first connection portion 4100, and provides an accommodation space for the adhesive. When the first connection portion 4100 and the cover plate 2000 are connected to each other by the adhesive, since the first connection portion 4100 needs to be compressed

against the cover plate 2000, the adhesive is unlikely to overflow to the opening 2100 during compression. It should be understood that the adhesive groove 4110 is formed at a distance from the opening 2100, such as 0.5 centimeters, 1 centimeter, and 1.5 centimeters.

[0066] The adhesive groove 4110 may be disposed in the cover plate 2000. However, the cover plate 2000 is generally made of glass or sheet metal, and thus it will be more difficult to form the adhesive groove 4110 directly at the cover plate 2000 than forming the adhesive groove 4110 at the connection member 4000. When the connection member 4000 is made of plastic, the adhesive groove 4110 and the connection member 4000 can be integrally formed, which is simple and convenient.

[0067] As illustrated in FIG. 5, in some embodiments, a positioning portion is disposed at one of the cover plate 2000 and the second connection portion 4200, while another one of the cover plate 2000 and the second connection portion 4200 engages with the positioning portion.

[0068] For example, the positioning portion disposed at the second connection portion 4200 is taken as an example for illustration. A similar principle applies to an example of disposing the positioning portion at the cover plate 2000, and thus details thereof will be omitted herein. When the positioning portion is disposed at the second connection portion 4200, it is easier to move the connection member 4000 and mount the connection member 4000 to the cover plate 2000 during the mounting of the connection member 4000 and the cover plate 2000, since it is uneasy to move the cover plate 2000 due to a large size and a heavy weight of the cover plate 2000. When the positioning portion is disposed at the connection member 4000, mounting can be realized by aligning the connection member 4000 with a corresponding portion of the cover plate 2000 when moving the connection member 4000 to realize the mounting, which can increase the mounting efficiency and avoid errors in the mounting.

[0069] Further, as illustrated in FIG. 5, in some embodiments, a rib 4210 is disposed at the second connection portion 4200. The rib 4210 forms the positioning portion disposed at the second connection portion 4200.

[0070] The second connection portion 4200 faces towards the opening 2100 from the first connection portion 4100, and is exposed through the opening 2100. The rib 4210 is disposed at the second connection portion 4200, extends in an axial direction of the opening 2100, and is placed tightly against the side wall 2110 of the opening 2100. The axial direction of the opening 2100 is a direction extending along up-down positions when the combined stove is in the state of being mounted to the cabinet. In this way, during the mounting of the connection member 4000 and the cover plate 2000, the connection member 4000 is moved towards the cover plate 2000. The rib 4210 is inserted into the opening 2100 and disposed immediately adjacent to the side wall 2110 of the opening 2100, and thus fast positioning between the connection member 4000 and the cover plate 2000 can be realized.

[0071] It should be understood that the rib 4210 may be placed tightly against the side wall 2110 of the opening 2100, or a gap may be formed between the rib 4210 and the side wall 2110 of the opening 2100. The rib 4210 is disposed at the second connection portion 4200, such that the second connection portion 4200 engages with the cover plate 2000 through the opening 2100 of the cover plate 2000 to realize positioning and mounting, and a positioning structure is not required to be disposed at the cover plate 2000 separately, reducing overall structural complexity.

[0072] As illustrated in FIG. 6, in some embodiments, the connection member 4000 has a ring-shaped structure. For example, when the opening 2100 of the cover plate 2000 has a substantially rectangular shape as a whole, the connection member 4000 is also formed in a ring-shaped structure that is in a substantially rectangular shape. The connection member 4000 with the ring-shaped structure can support the air intake assembly better. In this way, the adhesive groove 4110 formed on the connection portion 4100 also has a ring-shaped structure.

[0073] In some embodiments, a plurality of connection members 4000, rather than the connection member 4000 in the ring-shaped structure, may be provided. The plurality of connection members 4000 is arranged at intervals in a circumferential direction of the opening 2100, which can also realize support for the air intake assembly.

[0074] As illustrated in FIG. 4, FIG. 9, and FIG. 10, in some embodiments, the air intake assembly includes the grid 5000 and the filtering device 6000. The grid 5000 is disposed above the filtering device 6000.

[0075] The grid 5000 is a structure, which is configured to block external foreign matter from entering the interior of the combined stove through the opening 2100 and serves to guide the air.

[0076] The grid 5000 and the filtering device 6000 may be mounted in a variety of manners. For example, the filtering device 6000 is supported by the second connection portion 4200, and the grid 5000 is supported directly on the filtering device 6000. In this way, the grid 5000 is supported indirectly on the second connection portion 4200 through the filtering device 6000.

[0077] Further, the filtering device 6000 may be supported by the second connection portion 4200, and the grid 5000 may be supported by the rib 4210. Thus, the grid 5000 is supported indirectly on the second connection portion 4200 through the rib 4210.

[0078] Furthermore, the filtering device 6000 may be supported by the rib 4210, and the grid 5000 may be supported by the filtering device 6000. Thus, the filtering device 6000 and the grid 5000 are indirectly supported on the second connection portion 4200 through the rib 4210.

[0079] In addition, the filtering device 6000 may be supported by the second connection portion 4200, and the grid 5000 may be supported by both the rib 4210 and the

filtering device 6000. In this way, the grid 5000 is also indirectly supported on the second connection portion 4200.

[0080] The grid 5000 is located above the filtering device 6000. When the filtering device 6000 and the grid 5000 need to be taken out, the user can firstly take out the grid 5000 and then take out the filtering device 6000. When the filtering device 6000 and the grid 5000 need to be put back, the user can firstly mount the filtering device 6000 to the opening 2100 and enable the filtering device 6000 to be supported by the second connection portion 4200, and then mount the grid 5000 to the opening 2100 and enable the grid 5000 to be supported by the second connection portion 4200. An upper surface of the grid 5000 is flush with or slightly lower than the upper surface of the cover plate 2000.

[0081] In some embodiments, as illustrated in FIG. 12, the grid 5000 includes a frame 5100 and a grid bar 5200.

[0082] The grid 5000 has a ring-shaped hollow structure, which is mainly configured to fix the grid bar 5200. When the grid 5000 is mounted at the opening 2100, the frame 5100 is supported by the connection member 4000 (second connection portion 4200), and the entire grid 5000 is thus fixed at the opening 2100. The grid 5000 may have various shapes, such as a rectangular shape, a square shape, a hexagonal shape, a circular shape, and an oval shape. In the present disclosure, as an example, the frame 5100 has a rectangular shape. The grid bar 5200 is disposed at the frame 5100. For example, the grid bar 5200 is disposed at two opposite sides of the frame 5100. The grid bar 5200 and the frame 5100 may be fixed to each other in a variety of manners. For example, the frame 5100 and the grid bars 5200 are integrally formed. In another example, the grid bar 5200 may be connected to the frame 5100 by means of adhesive bonding, welding, screwing, snap connection, or the like.

[0083] In some embodiments, as illustrated in FIG. 12, the frame 5100 entirely has a substantially rectangular shape, and includes a first frame bar 5110, a second frame bar 5120, a third frame bar 5130, and a fourth frame bar 5140. The first frame bar 5110 and the third frame bar 5130 are disposed opposite to each other. The second frame bar 5120 and the fourth frame bar 5140 are disposed opposite to each other. There is a circular-arc transition between the first frame bar 5110 and the second frame bar 5120, a circular-arc transition between the second frame bar 5120 and the third frame bar 5130, a circular-arc transition between the third frame bar 5130 and the fourth frame bar 5140, and a circular-arc transition between the fourth frame bar 5140 and the first frame bar 5110.

[0084] The first frame bar 5110 and the third frame bar 5130 form edges of the frame 5100 in a width direction. The second frame bar 5120 and the fourth frame bar 5140 form edges of the frame 5100 in a length direction. A dimension of the frame 5100 in the length direction is greater than a size of the frame 5100 in the width direction.

[0085] The grid bar 5200 is disposed between the first frame bar 5110 and the third frame bar 5130. That is, the grid bar 5200 extends in the length direction of the frame 5100. A plurality of grid bars 5200 is provided to form a grid structure with the frame 5100, preventing foreign matter in the ambient environment from entering the interior of the combined stove along with the flowing of air, especially entering the fan 3000.

[0086] Each of the plurality of grid bars 5200 is provided with a tip 5230 at a bottom of the grid bar 5200. It should be understood that the bottom herein is referenced with the grid 5000 mounted to the combined stove while the combined stove is in the state of being mounted to the cabinet. For example, as illustrated in FIG. 1 to FIG. 3, the grid 5000, the filtering device 6000 and the fan 3000 are arranged from top to bottom when the grid 5000 is mounted to the combined stove. Thus, the bottom of the grid bar 5200 is a portion close to the filtering device 6000.

[0087] As illustrated in FIG. 14 and FIG. 15, the grid bar 5200 is provided with the tip 5230 at the bottom of the grid bar 5200. That is, a section of the grid bar 5200 exhibits abrupt or gradual decrease in dimension. For example, a plane is defined in such a manner that the plane is perpendicular to a length direction of the grid bar 5200 and intercepts the grid bar 5200 to form the section. The section becomes smaller at the tip 5230 in a direction from a top to the bottom of the grid bar 5200, i.e., a top-to-bottom direction.

[0088] Since there is a large amount of water vapor in the air during operation of the fan 3000, the water vapor will condense into water droplets when encountering the grid bar 5200. The water droplets flow along a surface of the grid bar 5200 under actions of an airflow and the gravity. When the water droplets flow to the tip 5230, a contact area between the water droplets and the tip 5230 becomes smaller. In this way, the water droplets drip down to the filtering device 6000 easily under the actions of the gravity and the airflow, and are unlikely to stick to the grid bar 5200 to cause water adhesion.

[0089] As illustrated in FIG. 14 and FIG. 15, in some embodiments, the grid bar 5200 has a first side surface 5210 and a second side surface 5220. The first side surface 5210 is opposite to the second side surface 5220. The tip 5230 is joined to one of the first side surface 5210 and the second side surface 5220.

[0090] For example, the grid bar 5200 has the first side surface 5210 and the second side surface 5220, in such a manner that the grid bar 5200 has a vertical flat structure as a whole, which is favorable for directing the air. The air is able to flow through the first side surface 5210 and the second side surface 5220 as flowing. The tip 5230 is connected to one of the first side surface 5210 and the second side surface 5220, preventing the water adhesion and reducing wind noises.

[0091] The following description is made with the tip 5230 joined to the first side surface 5210. The tip 5230 is joined to the first side surface 5210. It should be understood that the tip 5230 joined to the first side surface

5210 means that the tip 5230 is located in an extension direction of the first side surface 5210 and is in a smooth transition with the first side surface 5210. Thus, when the air is guided by the first side surface 5210, it is unlikely for the airflow to cause turbulence between the first side surface 5210 and the tip 5230, reducing the wind noises. In particular, when the first side surface 5210 is formed as a windward surface, occurrence of wind noises can be more effectively reduced.

[0092] In some embodiments, the first side surface 5210 is obliquely arranged, and the first side surface 5210 is thus formed as the windward surface.

[0093] For example, the tip 5230 is joined to the first side surface 5210, and a notch 5240 is formed between the tip 5230 and the second side surface 5220. The first side surface 5210 is obliquely arranged, i.e., capable of directing the air, and the windward surface is formed accordingly. When the grid 5000 is mounted at the combined stove, the first side surface 5210 instead of the second side surface 5220 can be observed when viewed downwardly from directly above the combined stove. The air encounters the first side surface 5210 during flowing and flows along the first side surface 5210. With the first side surface 5210, the air undergoes a flow direction change along an inclination direction of the first side surface 5210. Since the tip 5230 is joined to the first side surface 5210, no turbulence is formed between the tip 5230 and the first side surface 5210 during the flowing of the air, reducing the wind noises. The water vapor flows, subsequent to condensation on the first side surface 5210, to the tip 5230 in the extension direction of the first side surface 5210 and drips down.

[0094] The notch 5240 is formed between the tip 5230 and the second side surface 5220. With the notch 5240, a cross-sectional area of the tip 5230 is ensured to exhibit a gradual decrease state. Compared with an amount of air flowing through the first side surface 5210, an amount of air flowing through the second side surface 5220 is relatively small and the air flows at a relatively slow flow rate. In this way, despite the presence of the notch 5240, no excessive wind noises will be produced.

[0095] Further, as illustrated in FIG. 15, in some embodiments, the grid bar 5200 has a chamfer 5221. The chamfer 5221 is disposed at a position close to the second side surface 5220 on a top of the grid bar 5200.

[0096] During the flowing, the air is divided into two airflows when encountering the top of the grid bar 5200. One of the two airflows flows along the first side surface 5210, and another one of the two airflows flows along the second side surface 5220. Since the first side surface 5210 is obliquely arranged, the flowing of the air can be guided better. The second side surface 5220 may be construed as a leeward surface. In order to reduce a resistance of the second side surface 5220 to the air when the air just encounters the top of the grid bar 5200, it is required to arrange the second side surface 5220 obliquely in an inclination direction opposite to that of the first side surface 5210, to form a structure distribution similar to the Chinese character "A". However, this will cause too much air to be diverted by the second side surface 5220, which may adversely affect air guidance from a neighboring grid bar 5200 and accordingly, make the wind noises louder. Therefore, in this embodiment, as the chamfer 5221 is formed at the position close to the second side surface 5220 on the top of the grid bar 5200, the airflow flowing towards the second side surface 5220 will no longer encounter a large resistance and occurrence of turbulence can be decreased when the air encounters the top of the grid bar 5200, reducing the wind noises.

[0097] It should be understood that, when the chamfer 5221 is provided, the second side surface 5220 may be arranged upright or slightly inclined. The slight inclination of the second side surface 5220 may be in a same inclination direction as or a different inclination direction from the inclination direction of the first side surface 5210.

[0098] As illustrated in FIG. 12 and FIG. 13, in some embodiments, the grid bar 5200 is provided with a raised portion 5250 at the top of the grid bar 5200. With the raised portion 5250, a printing effect can be realized on the raised portion 5250 to improve overall aesthetics of the grid 5000 and realize differentiation of the grid 5000.

[0099] For example, the raised portion 5250 is disposed at the top of the grid bar 5200. That is, the top of the grid bar 5200 exhibits a raised-recessed structure. One, two, three or more raised portions 5250 may be provided. During processing of the grid 5000, polishing or printing may be performed on the raised portion 5250 to form a pattern on the raised portion 5250. The raised portions 5250 on the grid bars 5200 cooperate with one another to form a whole pattern, improving the overall aesthetics of the grid 5000 and providing more differentiated grids 5000. In addition, since the raised portion 5250 is in a raised state, it can be ensured that, when printing is being carried out, the raised portion 5250 can be contacted without affecting the appearance of the grid bar 5200, which is convenient and quick. When a plurality of grid bars 5200 is provided, raised portions 5250 of adjacent grid bars 5200 are staggered with each other, which can facilitate formation of a pattern.

[0100] As illustrated in FIG. 14 and FIG. 16, in some embodiments, two air guide regions are enclosed by the frame 5100, and are a first air guide region 5410 and a second air guide region 5420, respectively. The first air guide region 5410 is provided with the grid bar 5200 therein. The second air guide region 5420 is also provided with the grid bar 5200 therein. An air guide direction of the first air guide region 5410 intersects with an air guide direction of the second air guide region 5420.

[0101] For example, the first air guide region 5410 is disposed close to the left cooking region 2210. The first side surface 5210 of the grid bar 5200 in the first air guide region 5410 is obliquely arranged. That is, from the top of the grid bar 5200 to the bottom of the grid bar 5200, the first side surface 5210 is obliquely arranged towards the second air guide region 5420, allowing the air to be

guided to flow towards the second air guide region 5420. It should be understood that, in an extension direction from the bottom of the grid bar 5200 to the top of the grid bar 5200, the first side surface 5210 of the grid bar 5200 in the first air guide region 5410 faces towards an upper space corresponding to the left cooking region 2210. Thus, a negative pressure region can be formed in the upper space corresponding to the left cooking region 2210 when the fan 3000 is in operation.

[0102] The second air guide region 5420 is disposed close to the right cooking region 2220. The first side surface 5210 of the grid bar 5200 in the second air guide region 5420 is obliquely arranged. That is, from the top of the grid bar 5200 to the bottom of the grid bar 5200, the first side surface 5210 is obliquely arranged towards the first air guide region 5410, allowing the air to be guided to flow towards the first air guide region 5410. It should be understood that, in the extension direction from the bottom of the grid bar 5200 to the top of the grid bar 5200, the first side surface 5210 of the grid bar 5200 in the second air guide region 5420 faces towards an upper space corresponding to the right cooking region 2220. Thus, a negative pressure region can be formed in the upper space corresponding to the right cooking region 2220 when the fan 3000 is in operation.

[0103] The air guide directions of the first air guide region 5410 and the second air guide region 5420 intersect. In this way, the oil mist, water vapor or other harmful substances generated in the left cooking region 2210 and the right cooking region 2220 can be extracted better. In addition, the air guide direction of the first air guide region 5410 and the air guide direction of the second air guide region 5420 intersect to provide a converging airflow effect. This can allow the airflow to be more efficiently filtered by the filtering device 6000, avoid decrease in a filtration quality due to disturbance and dispersion of the airflow, and further avoid a problem of loud wind noises caused by the disturbance of the airflow.

[0104] As illustrated in FIG. 16 and FIG. 17, in some embodiments, the grid 5000 further includes a support member 5300. The support member 5300 and the frame 5100 may be integrally formed, or the support member 5300 may be connected to the frame 5100 separately by means of an additional connection manner. The support member 5300 is disposed at the grid 5000 to divide the space enclosed by the grid 5000 into the first air guide region 5410 and the second air guide region 5420. The support member 5300 includes a transverse frame bar 5310 and a vertical frame bar 5320 perpendicular to the transverse frame bar 5310. Two ends of the transverse frame bar 5310 extend beyond the vertical frame bar 5320 in a transverse direction.

[0105] For example, when the grid 5000 is mounted to the combined stove, only the transverse frame bar 5310 is visible when viewed downwardly from directly above the combined stove since the transverse frame bar 5310 covers the vertical frame bar 5320. The transverse frame bar 5310 extends beyond the vertical frame bar 5320, and an avoidance groove 5330 is thus formed between the transverse frame bar 5310 and the vertical frame bar 5320. Since oil mist is easily attached to the surface of the grid 5000, the transverse frame bar 5320 and the vertical frame bar 5320 are provided so that it is easy for the user to lift the support member 5300 with his/her hand and press the support member 5300 into the avoidance groove 5330, which increases a friction between the support member 5300 and the user, making it easier for the user to lift the grid 5000.

[0106] In some embodiments, the transverse frame bar 5310 allows for mounting of a decorative member, which can improve the aesthetics of the grid 5000.

[0107] When the combined stove is in the state of being mounted to the cabinet, the cover plate 2000 is exposed out of the cabinet and is within the field of vision of the user, and the grid 5000 is disposed at the opening 2100 of the cover plate 2000. In order to achieve diversity of the appearance, the decorative member is mounted at the grid 5000 in the related art, but it is critical regarding how to mount the decorative member. In this embodiment, the support member 5300 is disposed in the frame 5100 to divide the space enclosed by the frame 5100 into the first air guide region 5410 and the second air guide region 5420. The flowing of the air is mainly occurred in the first air guide region 5410 and the second air guide region 5420. Thus, the transverse frame bar 5310 disposed at the support member 5300 cannot have great influence on the flowing of the air, providing a basis for mounting the decorative member to the transverse frame bar 5310. In this way, the appearance of the grid 5000 may be aesthetically pleasing and differentiated without affecting the flowing of the air too much.

[0108] As illustrated in FIG. 12 and FIG. 15, in some embodiments, the frame 5100 has an air guide surface 5101, which is obliquely arranged to guide the air. An inclination of the first side surface 5210 is smaller than an inclination of the air guide surface 5101.

[0109] In some embodiments, the frame 5100 includes the first frame bar 5110, the second frame bar 5120, the third frame bar 5130, and the fourth frame bar 5140. The first frame bar 5110 and the third frame bar 5130 are disposed opposite to each other. The second frame bar 5120 and the fourth frame bar 5140 are disposed opposite to each other. Each of the first frame bar 5110, the second frame bar 5120, the third frame bar 5130 and the fourth frame bar 5140 is formed with the air guide surface 5101. The air guide surface 5101 is configured to guide the air. That is, the air guide surface 5101 of the first frame bar 5110 is configured to direct the airflow towards the third frame bar 5130. The air guide surface 5101 of the third frame bar 5130 is configured to direct the airflow towards the first frame bar 5110. The air guide surface 5101 of the second frame bar 5120 is configured to direct the airflow towards the fourth frame bar 5140. The air guide surface 5101 of the fourth frame bar 5140 is configured to direct the airflow towards the second frame bar 5120.

[0110] The inclination is a degree of deviation from an upright plane. For example, the grid bar 5200 is disposed between the first frame bar 5110 and the third frame bar 5130. An upright plane is defined to be perpendicular to the grid 5000 and extend in the length direction of the grid bar 5200. A degree of deviation of the air guide surface 5101 of each of the second frame bar 5120 and the fourth frame bar 5140 relative to the upright plane is greater than a degree of deviation of the first side surface 5210 relative to the upright plane. In this way, the air guide surface 5101 achieves better guidance for oil fume that sinks to the vicinity of the upper surface of the cover plate 2000 to prevent the oil fume from escaping to other spaces in the kitchen.

[0111] As illustrated in FIG. 15, in some embodiments, a sum of a height of the grid bar 5200 and a height of the tip 5230 is greater than a height of the frame 5100, and thus the space can be fully utilized.

[0112] In some embodiments, in a height direction of the grid 5000, i.e., an up-down direction illustrated in FIG. 15, the height of the frame 5100 is smaller than the sum of the height of the grid bar 5200 and the height of the tip 5230. In this way, when the grid 5000 is disposed at the opening 2100 and supported on the connection member 4000 (the second connection portion 4200), the grid bar 5200 is sunk into the body 1000, which can reduce a space of the body 1000 and makes a thickness of the entire combined stove thinner. Since the air guide surface 5101 of the frame 5100 is configured to be more inclined than the first side surface 5210, a favorable condition is provided for reduction in the thickness of the frame 5100.

[0113] Further, as illustrated in FIG. 15, in some embodiments, a top surface of the grid bar 5200 is not higher than a top surface of the frame 5100. For example, the top surface of the grid bar 5200 is flush with the top surface of the frame 5100, or the top surface of the grid bar 5200 is lower than the top surface of the frame 5100, which can avoid obstruction to the cleaning resulted from the grid bar 5200 protruding from the frame 5100 in the height direction.

[0114] In some embodiments, each of the frame 5100 and the grid bar 5200 is made of plastic to realize the light weight of the grid 5000 and facilitate grasping by the user. For example, the frame 5100, the grid bar 5200, the tip 5230, the raised portion 5250 and the support member 5300 are integrally formed by plastic injection molding to reduce the weight of the grid 5000. In particular, when the oil mist is adhered to the grid 5000 used for a long period, the lightweight grid 5000 can reduce difficulty for the user to grasp the grid 5000, avoiding fall off the grid 5000 during the grasping.

[0115] As illustrated in FIG. 1, in some embodiments, the frame 5100 is in a rectangular shape as a whole, and has a structure in which a length of the frame 5100 is greater than a width of the frame 5100. The grid bar 5200 is disposed in the length direction of the frame 5100. The combined stove is also in a rectangular shape as a whole, and has a structure in which a length of the combined stove is greater than a width of the combined stove. The length of the frame 5100 is perpendicular to the length of the combined stove. In this way, when the grid 5000 is arranged at the combined stove, the grid 5000 does not excessively occupy a space of the left cooking region 2210 and a space of the right cooking region 2220. In addition, the grid bar 5200 is disposed in the length direction of the frame 5100, which can better divide the first air guide region 5410 corresponding to the left cooking region 2210 and the second air guide region 5420 corresponding to the right cooking region 2220.

[0116] In some embodiments, as illustrated in FIG. 3 and FIG. 4, the filtering device 6000 includes a filter screen 6100. The filter screen 6100 is obliquely arranged towards an air guide direction of the grid 5000.

[0117] In some embodiments, the filter screen 6100 is obliquely arranged to maximize a filter area in a limited space. For example, the grid 5000 includes the first air guide region 5410 and the second air guide region 5420. Accordingly, two filter screens 6100 are provided, and correspond to the first air guide region 5410 and the second air guide region 5420 in a one-to-one correspondence. The two filter screens 6100 form an inverted "V" structure. In addition, the grid bar 5200 is disposed in the grid 5000 to guide the air. The grid bar 5200 has the first side surface 5210, which is obliquely arranged to realize better guidance of the air. The filter screens 6100 are obliquely arranged towards the grid 5000, such that the air guide direction of the first air guide region 5410 is as perpendicular as possible to the corresponding filter screen 6100, and the air guide direction of the second air guide region 5420 is as perpendicular as possible to the corresponding filter screen 6100. This can reduce a resistance applied to the air when passing through the filter screen 6100, which improves the filtration efficiency.

[0118] While preferred embodiments of the present disclosure are described above, the scope of the present disclosure is not limited to these embodiments. All equivalent structural transformations made within the concept of the present disclosure through utilizing the contents of the specification and the accompanying drawings of the present disclosure, or applications of the contents of the specification and the accompanying drawings of the present disclosure directly/indirectly applied in other related technical fields, shall fall within the scope of the present disclosure.

Claims

1. A grid, comprising: a frame; and a grid bar disposed in the frame, the grid bar having a tip disposed at a bottom of the grid bar.

2. The grid according to claim 1, wherein the grid bar has a first side surface and a second side surface opposite to the first side surface, the tip being joined to the first side surface and forming a notch with the

second side surface.

3. The grid according to claim 2, wherein the first side surface is obliquely arranged to guide air.

4. The grid according to claim 3, wherein the grid bar has a chamfer close to the second side surface at a top of the grid bar.

5. The grid according to claim 1, wherein the grid bar is provided with a raised portion at a top of the grid bar.

6. The grid according to claim 5, wherein the grid comprises a plurality of grid bars, raised portions of adjacent grid bars of the plurality of grid bars being staggered with each other.

7. The grid according to claim 1, wherein: a first air guide region and a second air guide region are enclosed by the frame; and the grid bar is disposed in each of the first air guide region and the second air guide region, enabling an air guide direction of the first air guide region to intersect an air guide direction of the second air guide region.

8. The grid according to claim 7, further comprising: a support member located between the first air guide region and the second air guide region, the support member comprising a transverse frame bar and a vertical frame bar, and two ends of the transverse frame bar extending beyond the vertical frame bar.

9. The grid according to claim 7, further comprising: a support member located between the first air guide region and the second air guide region, the support member comprising a transverse frame bar which allows for mounting of a decorative member.

10. The grid according to claim 1, wherein the frame has an air guide surface, the air guide surface being obliquely arranged to guide air; and the grid bar has a first side surface, the first side surface being obliquely arranged to guide air, and an inclination of the air guide surface being greater than an inclination of the first side surface.

11. The grid according to claim 1 or 10, wherein along a height direction of the grid, a sum of a height of the grid bar and a height of the tip is greater than a height of the frame.

12. The grid according to claim 1, wherein a top surface of the grid bar is flush with or lower than a top surface of the frame.

13. The grid according to claim 1, wherein the frame and the grid bar are both made of plastic.

14. A combined stove, comprising the grid according to any one of claims 1 to 13.

15. The combined stove according to claim 14, wherein a length of the frame is greater than a width of the frame, the grid bar being arranged in a length direction of the frame; and a length of the combined stove is greater than a width of the combined stove, the length of the frame being perpendicular to the length of the combined stove.

16. The combined stove according to claim 14, further comprising: a filtering device comprising a filter screen, the filter screen being obliquely arranged towards an air guide direction of the grid.

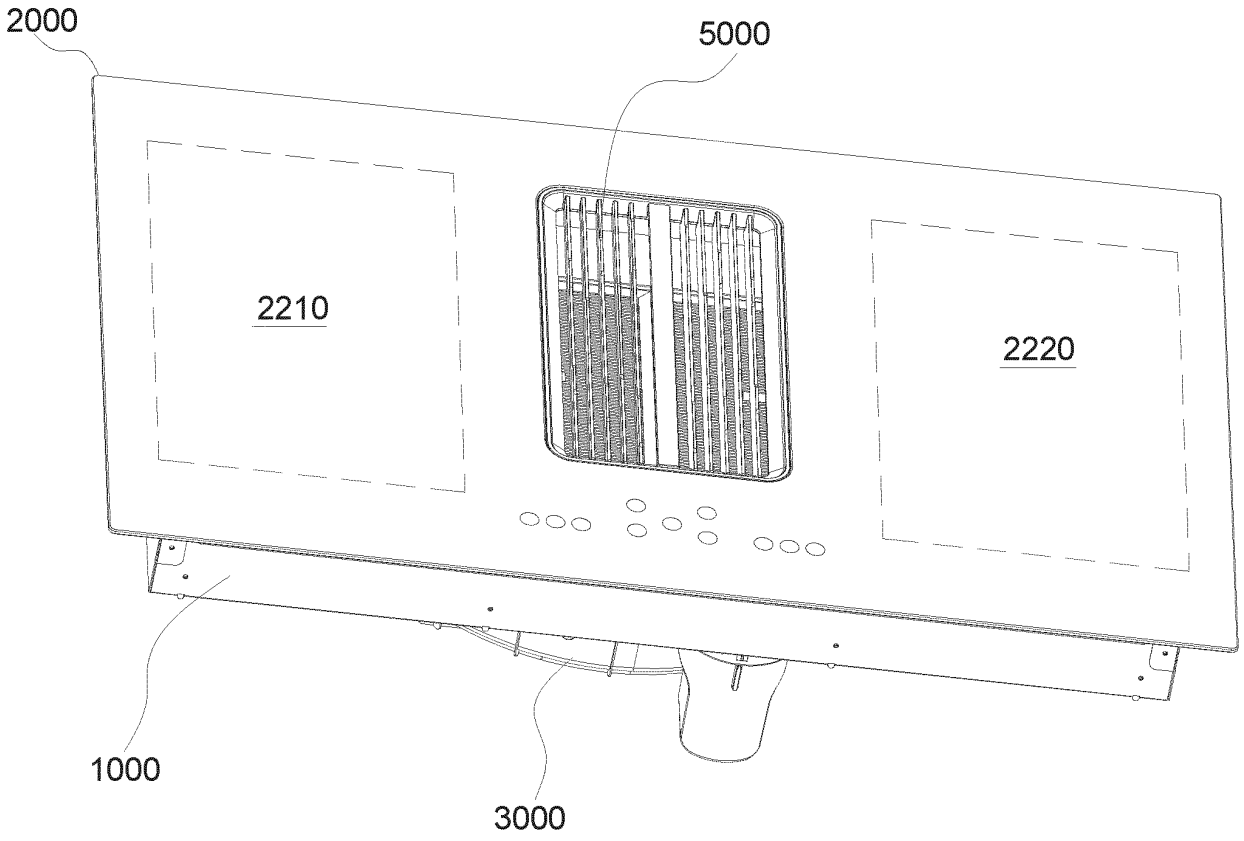

FIG. 1

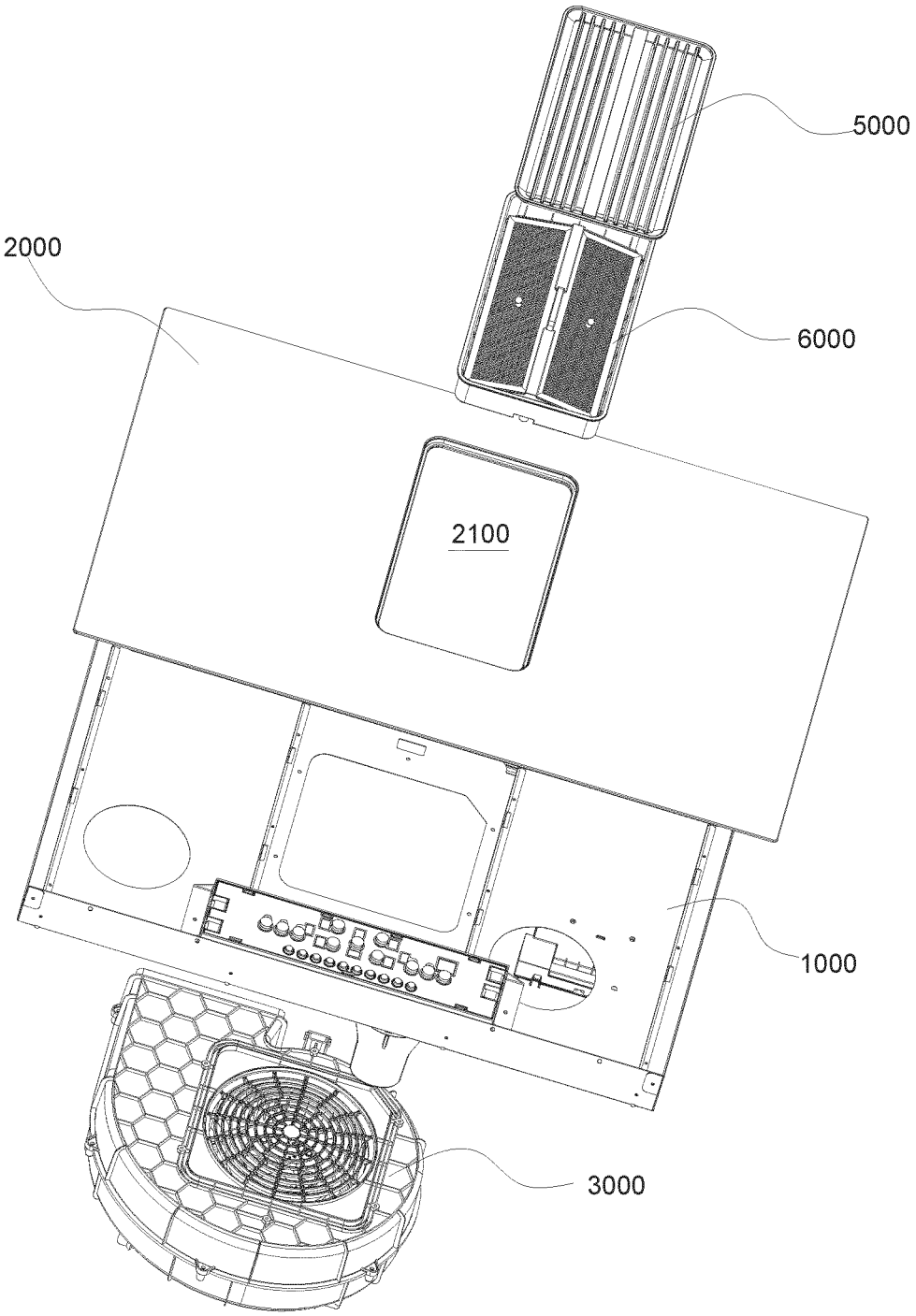

FIG. 2

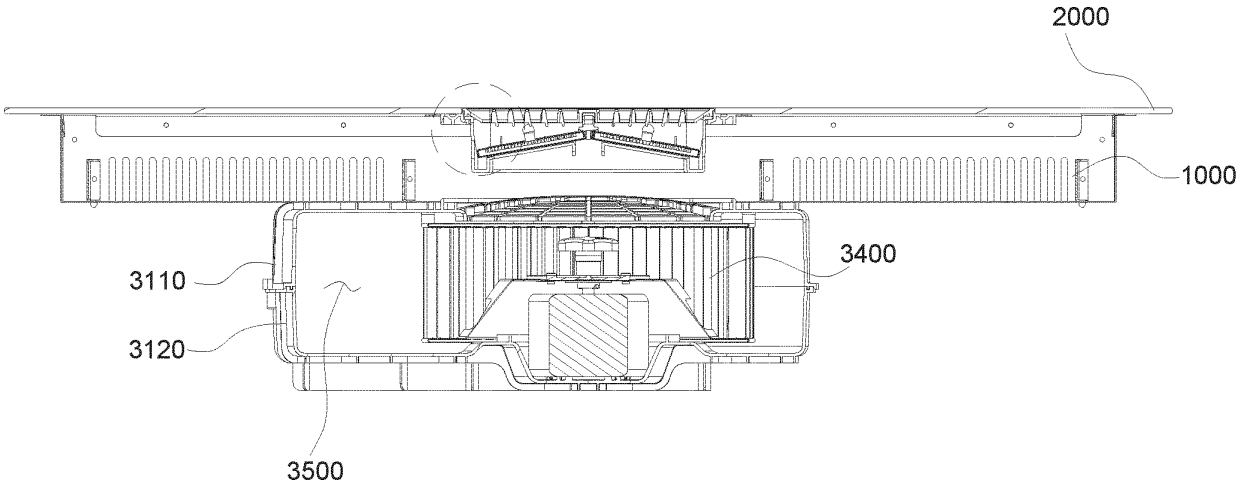

FIG. 3

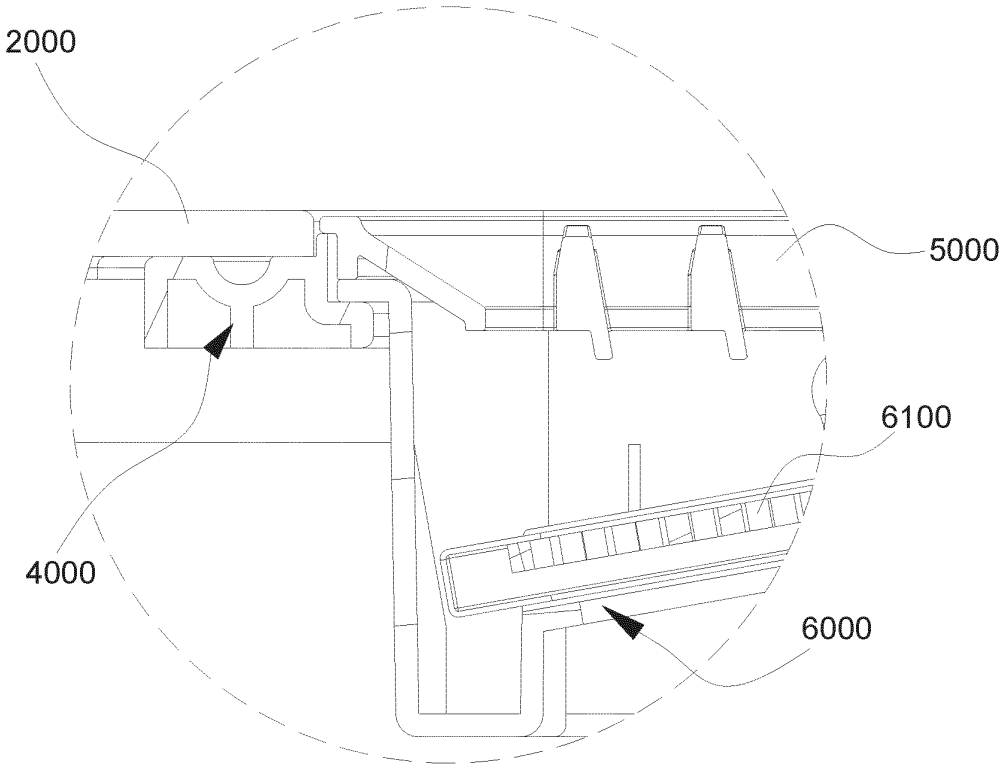

FIG. 4

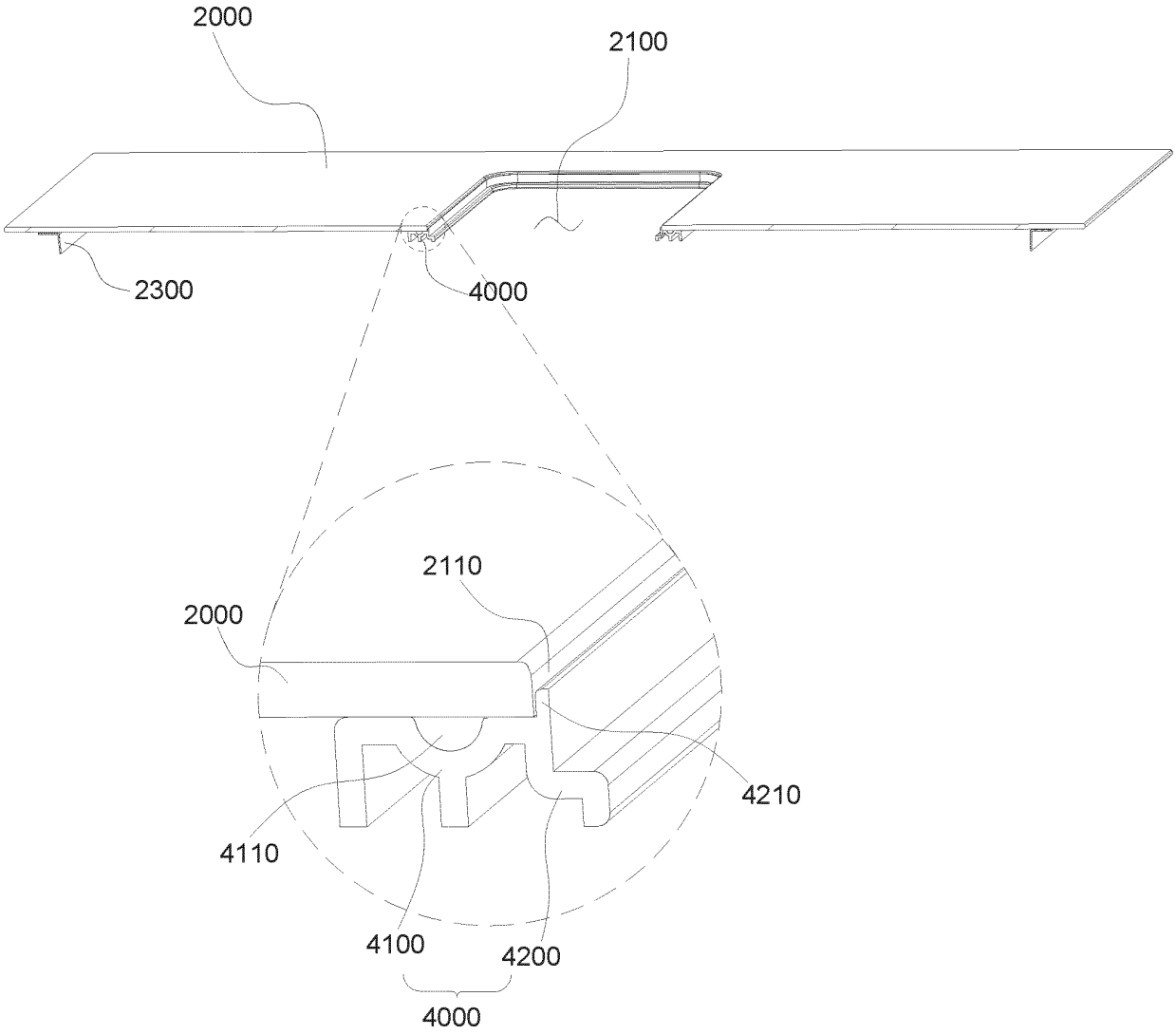

FIG. 5

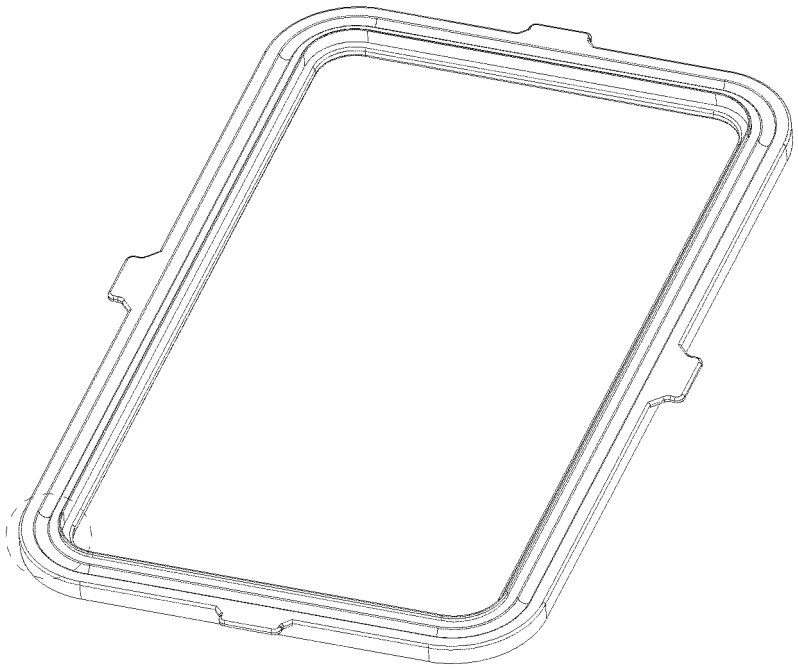

FIG. 6

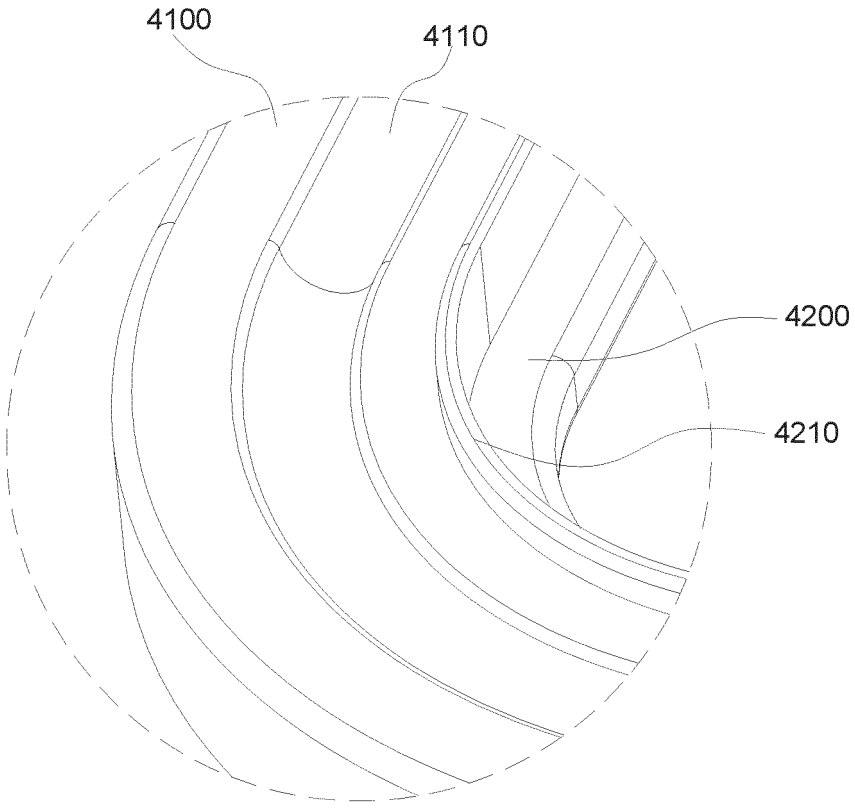

FIG. 7

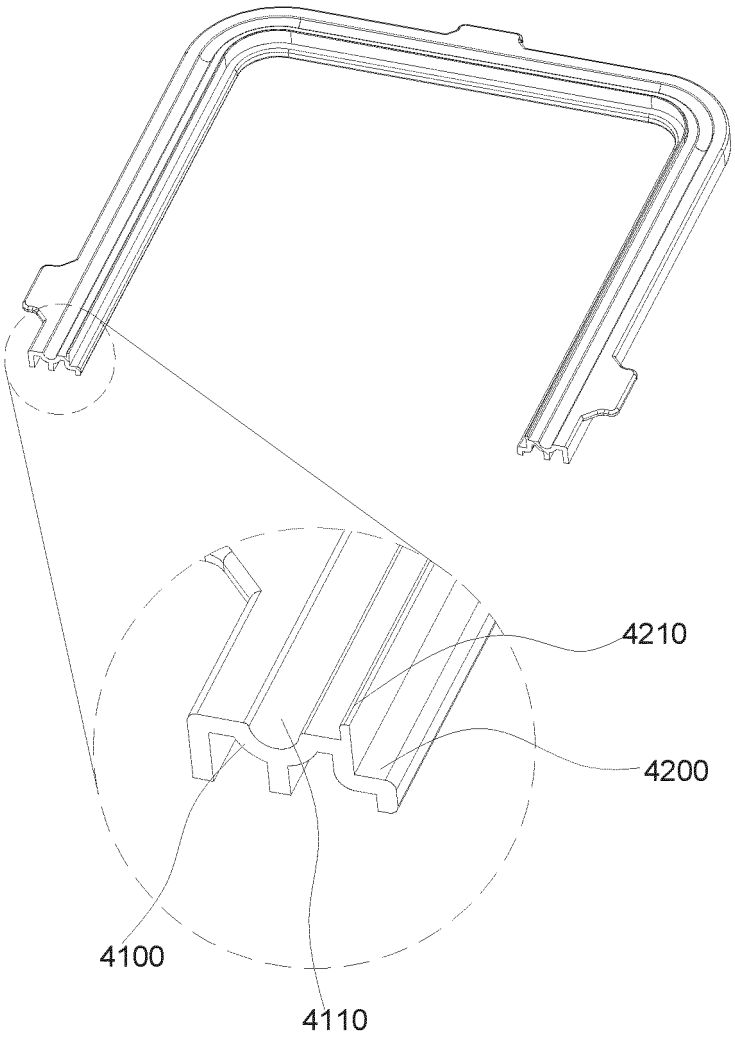

FIG. 8

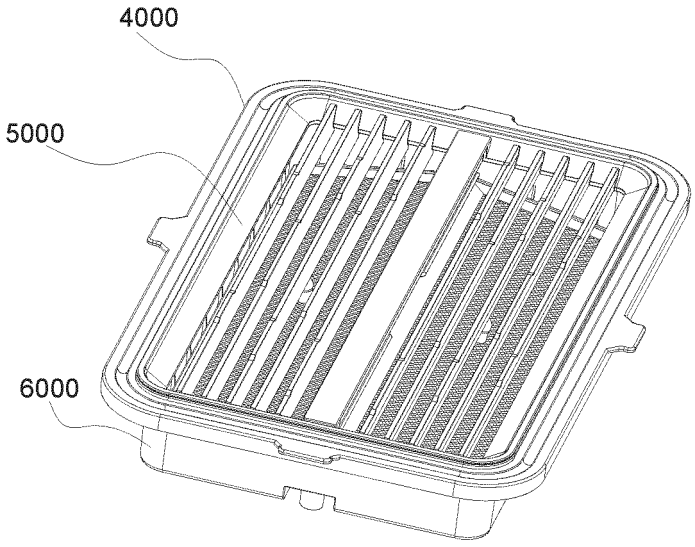

FIG. 9

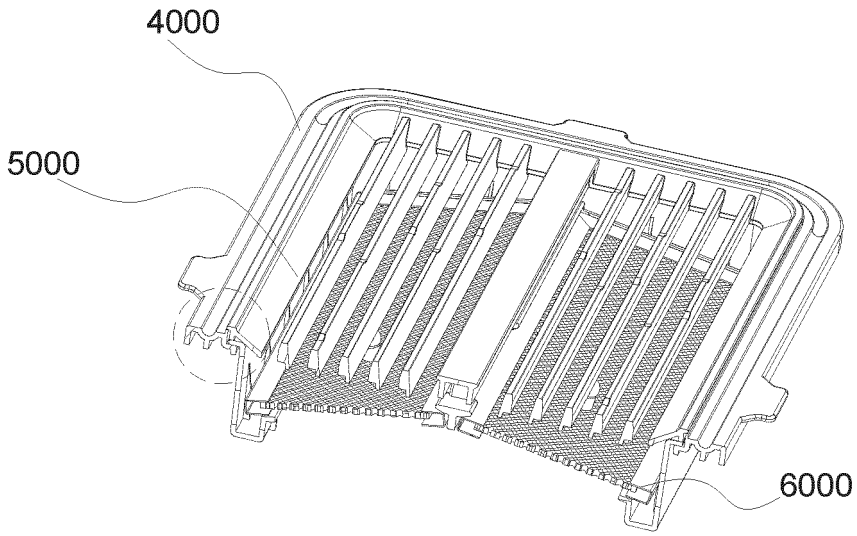

FIG. 10

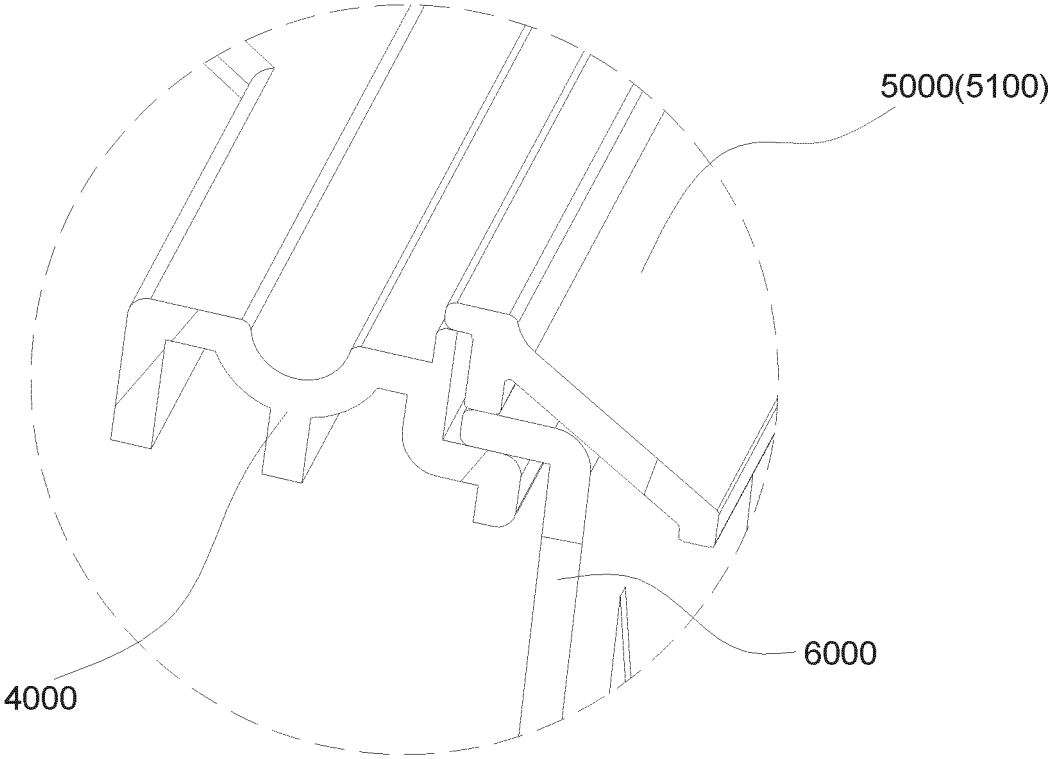

FIG. 11

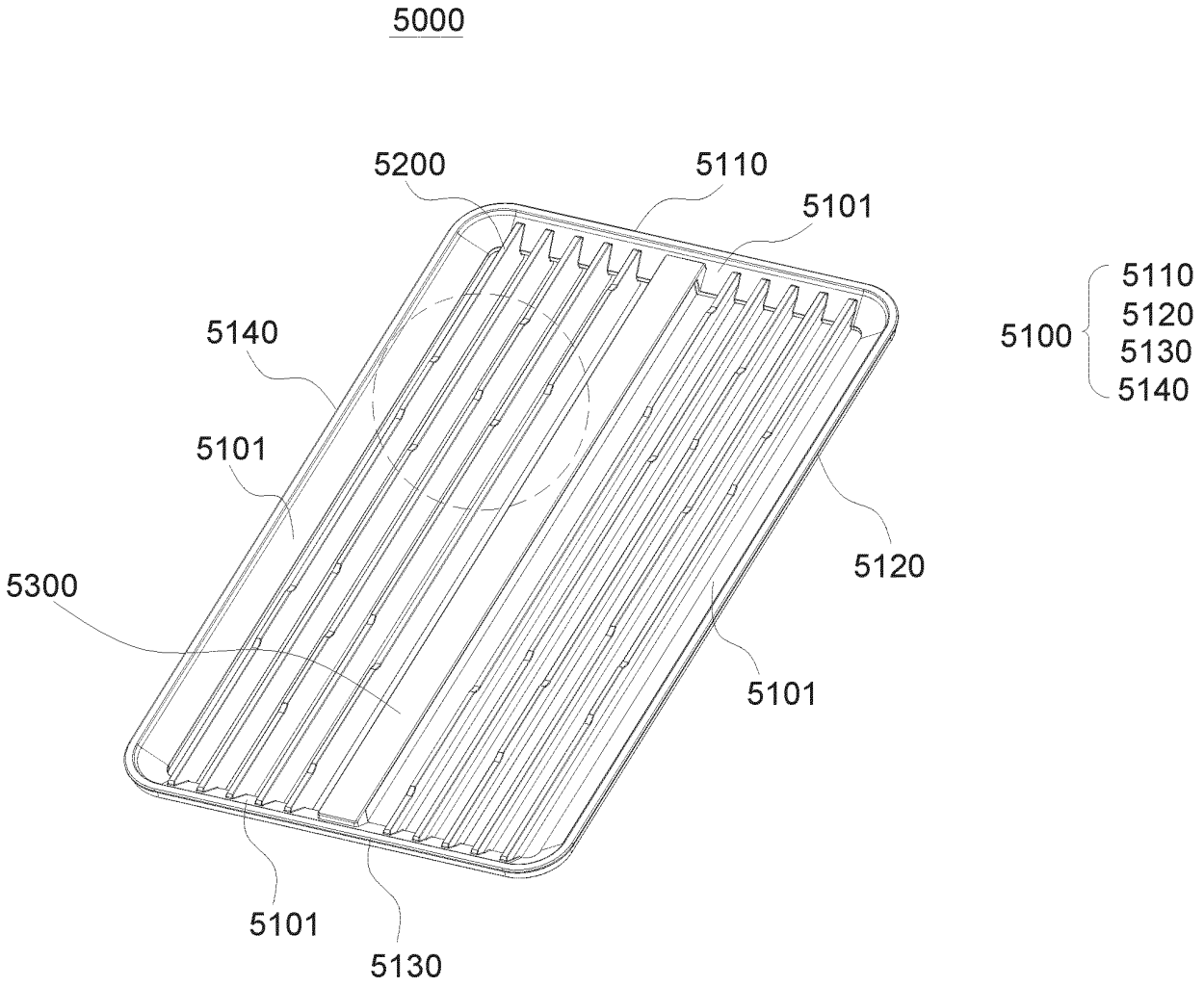
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FIG. 12

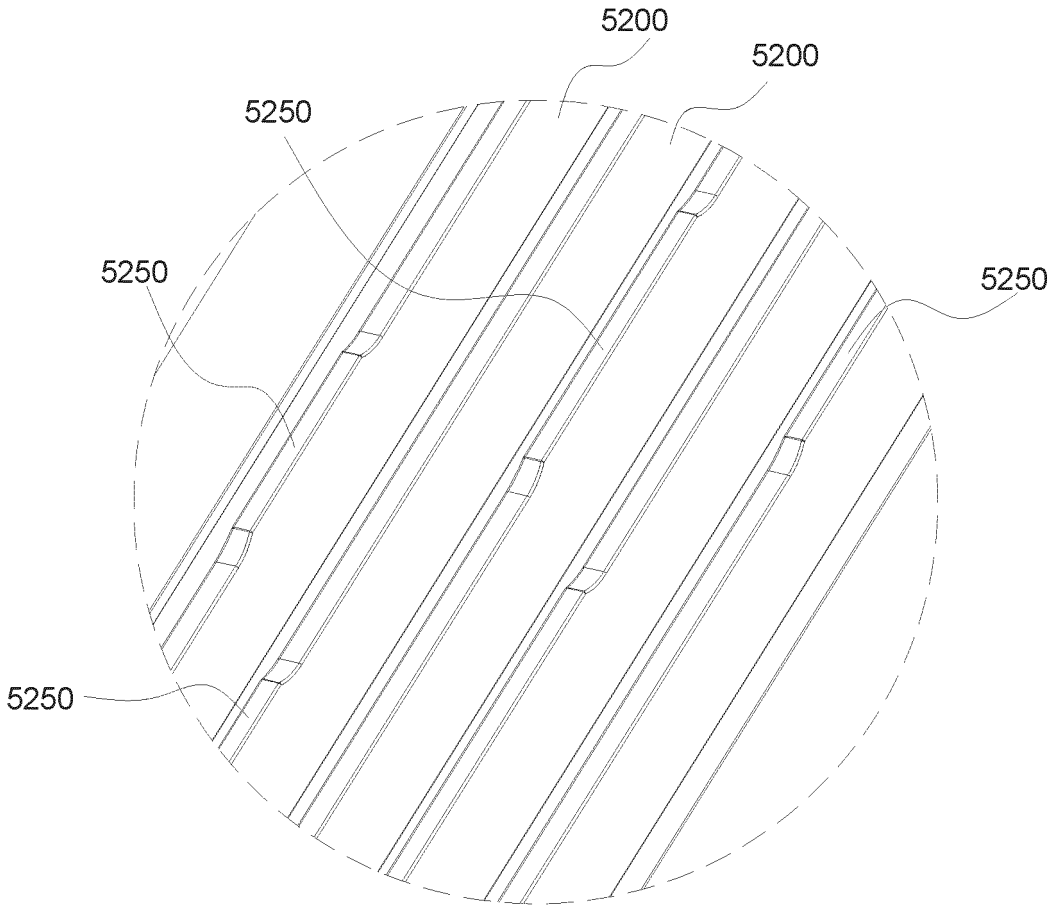

FIG. 13

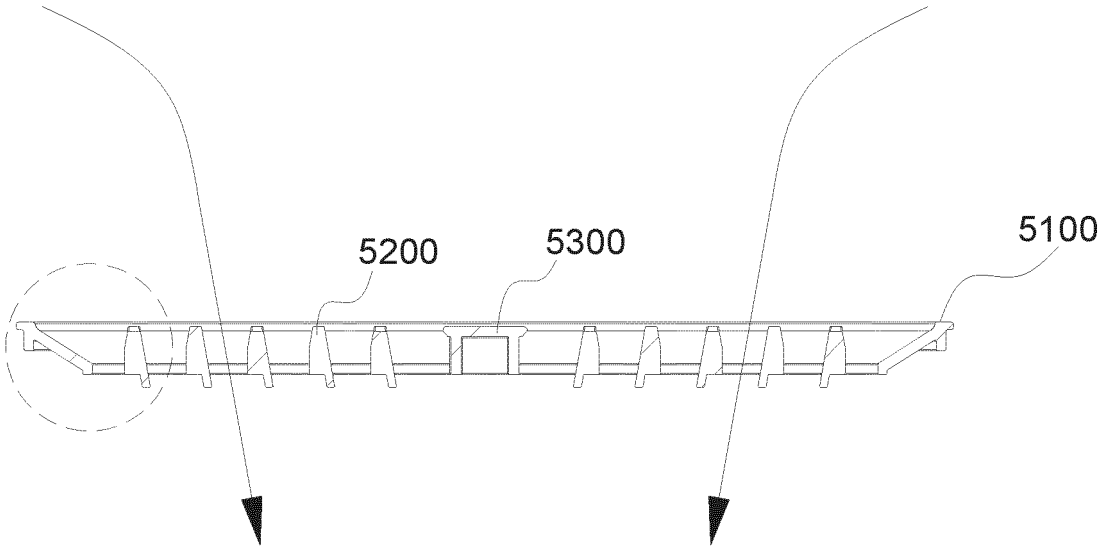

FIG. 14

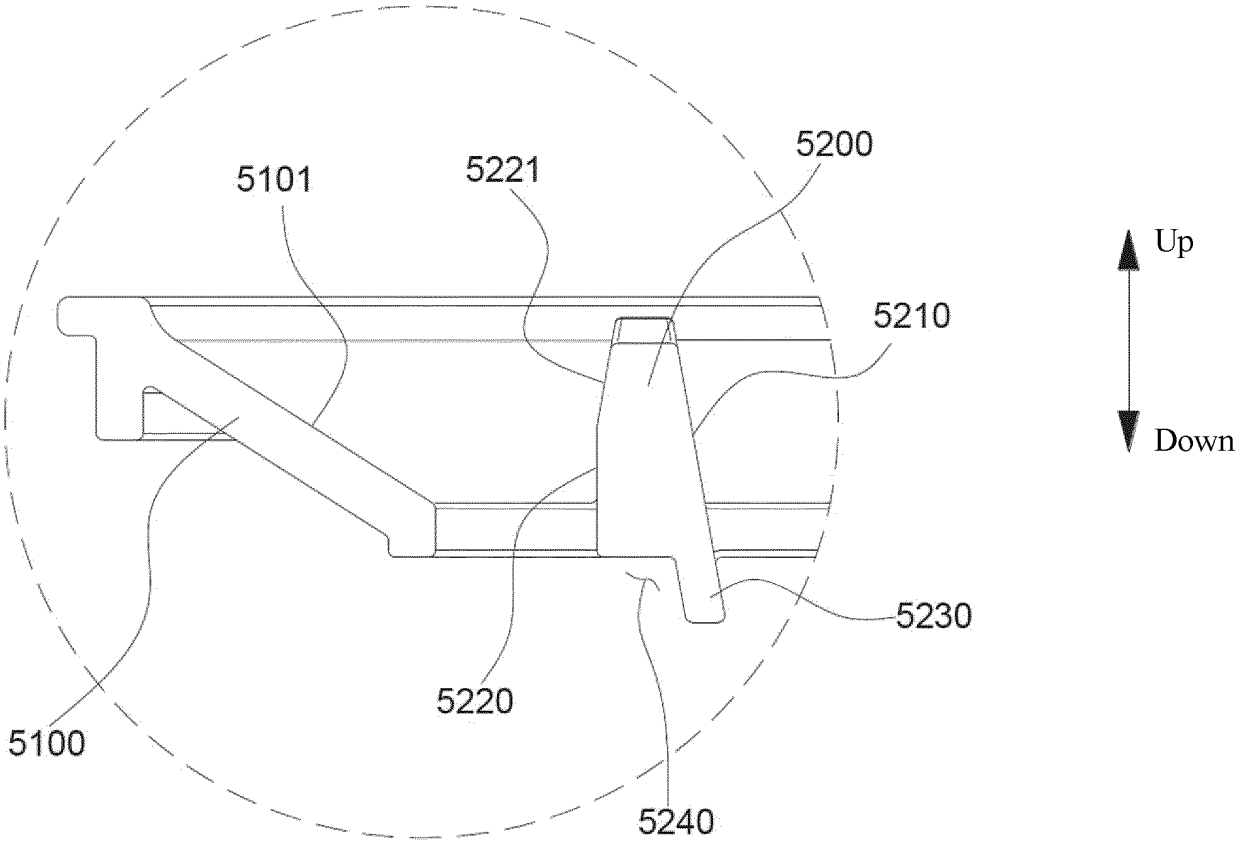

FIG. 15

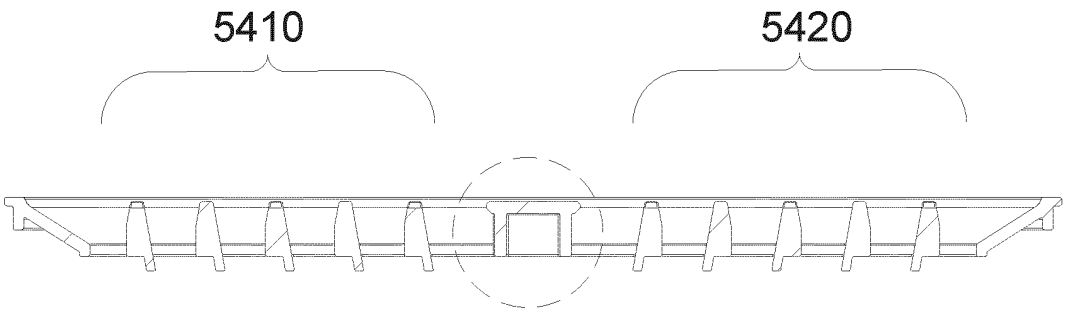

FIG. 16

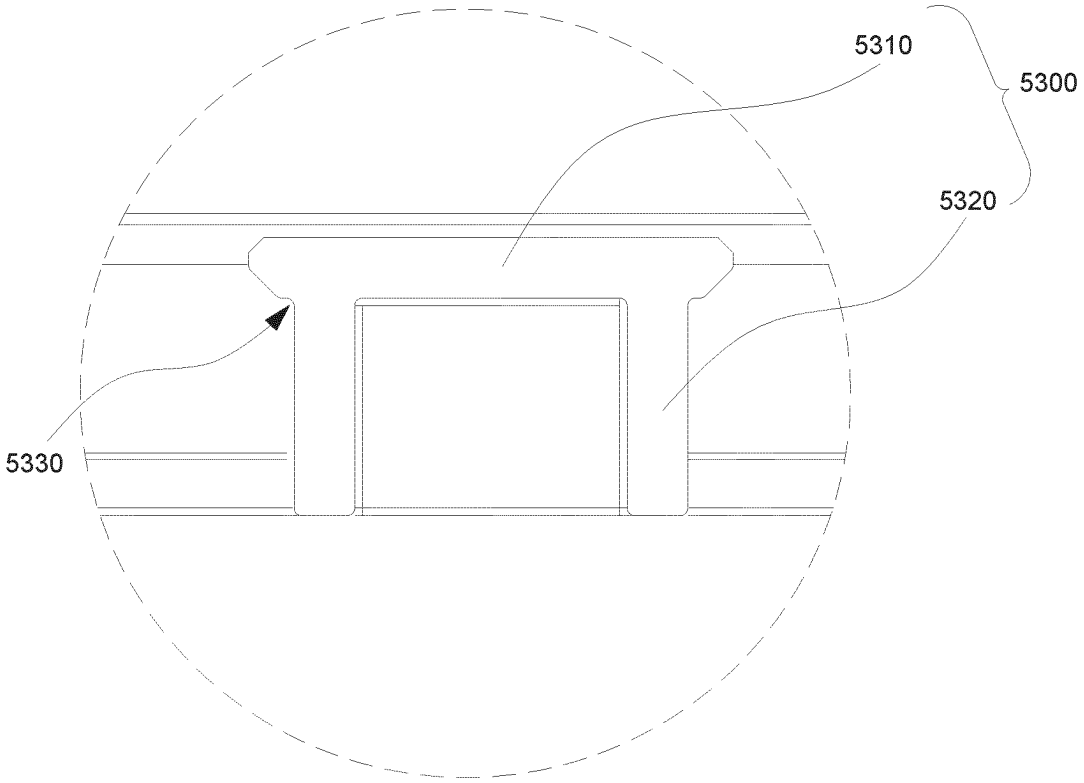

FIG. 17

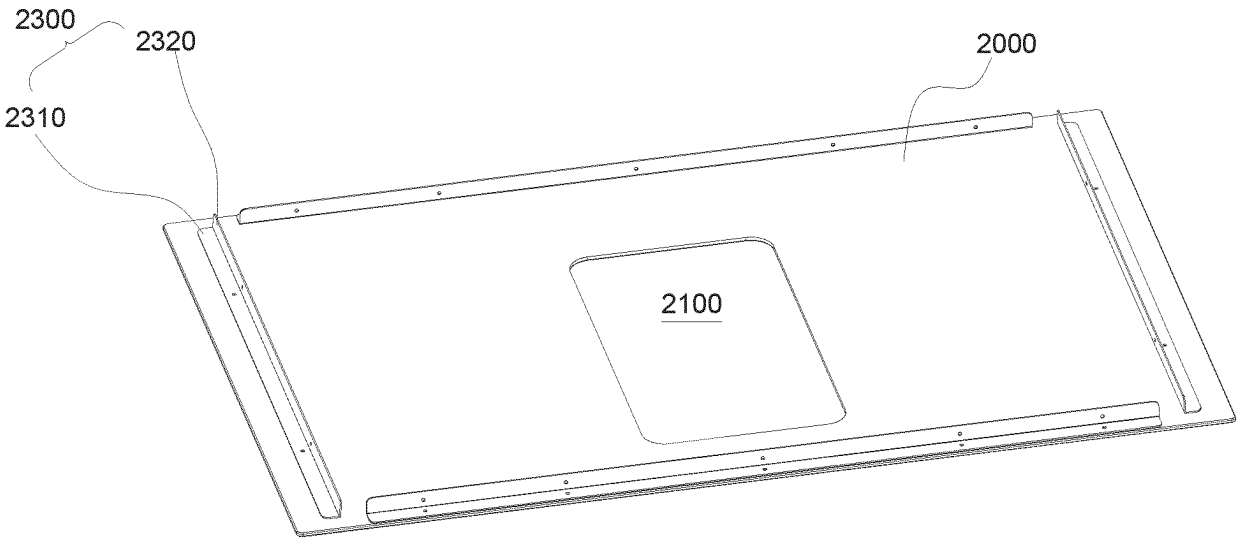

FIG. 18

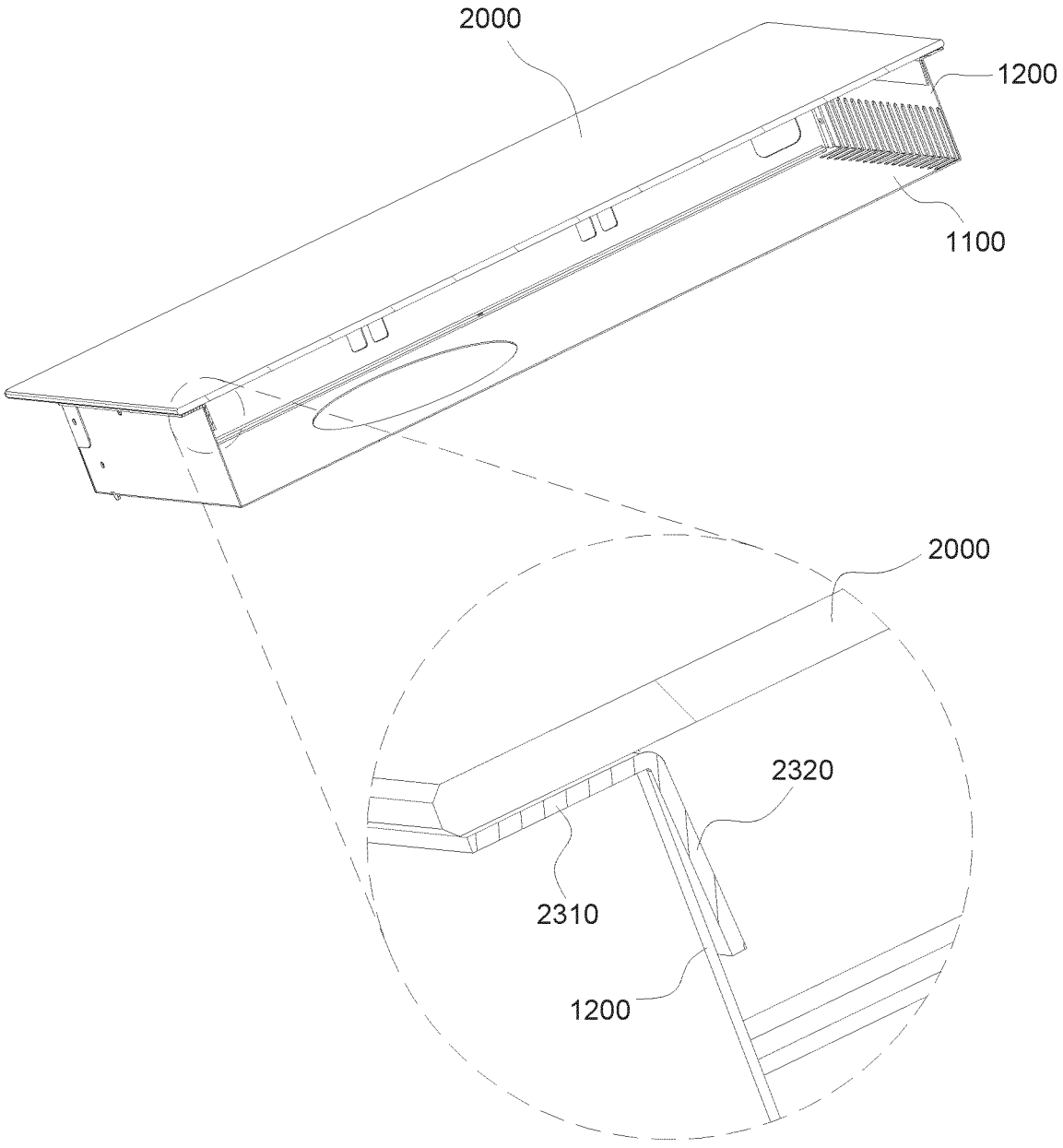

FIG. 19

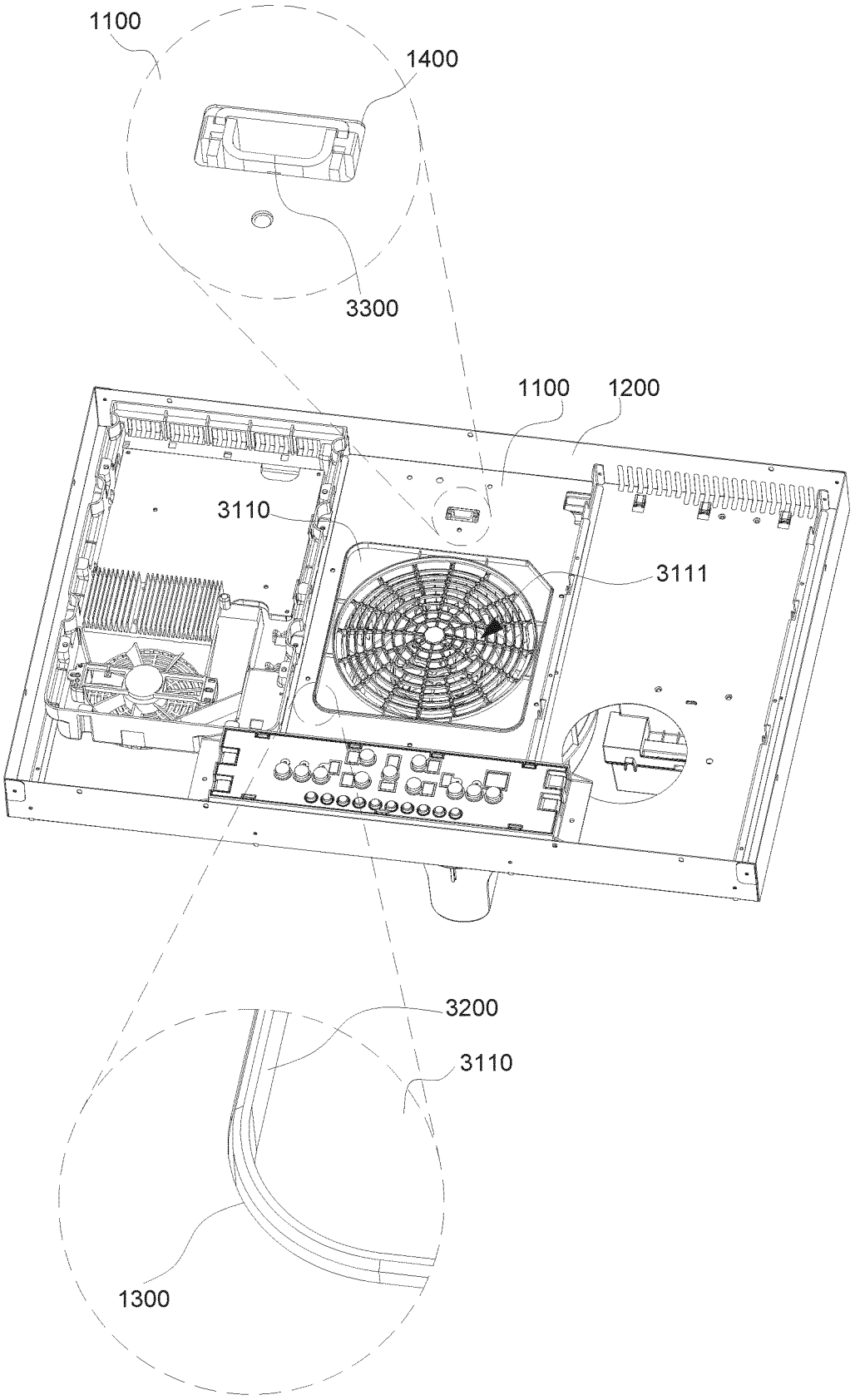

FIG. 20

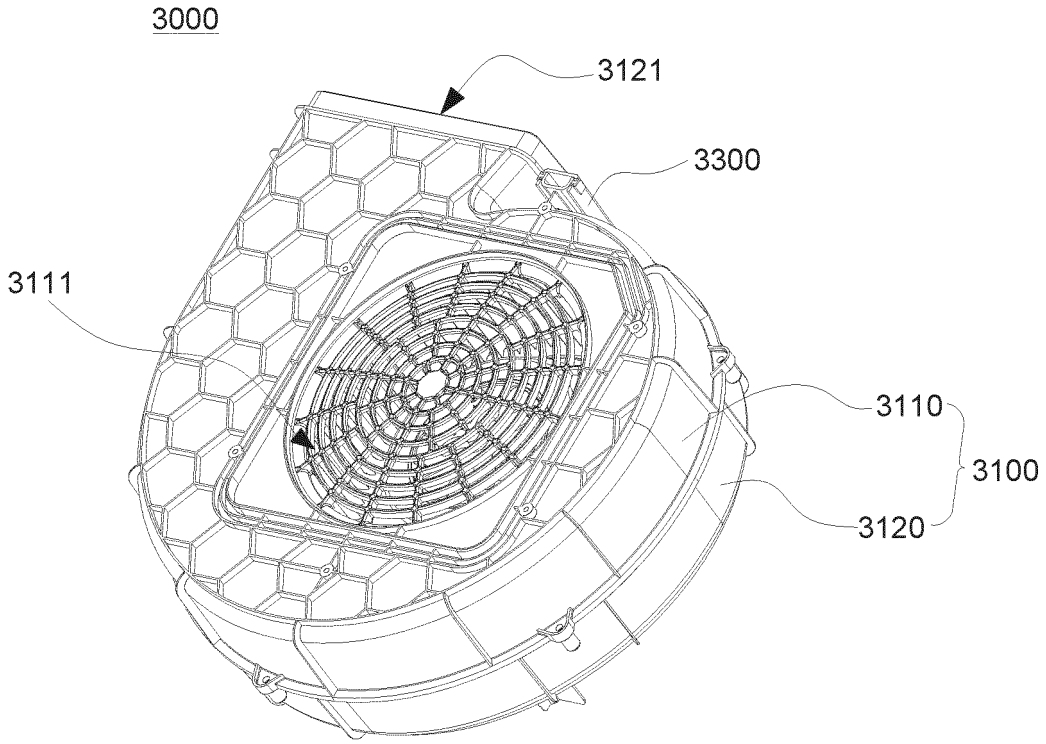

FIG. 21

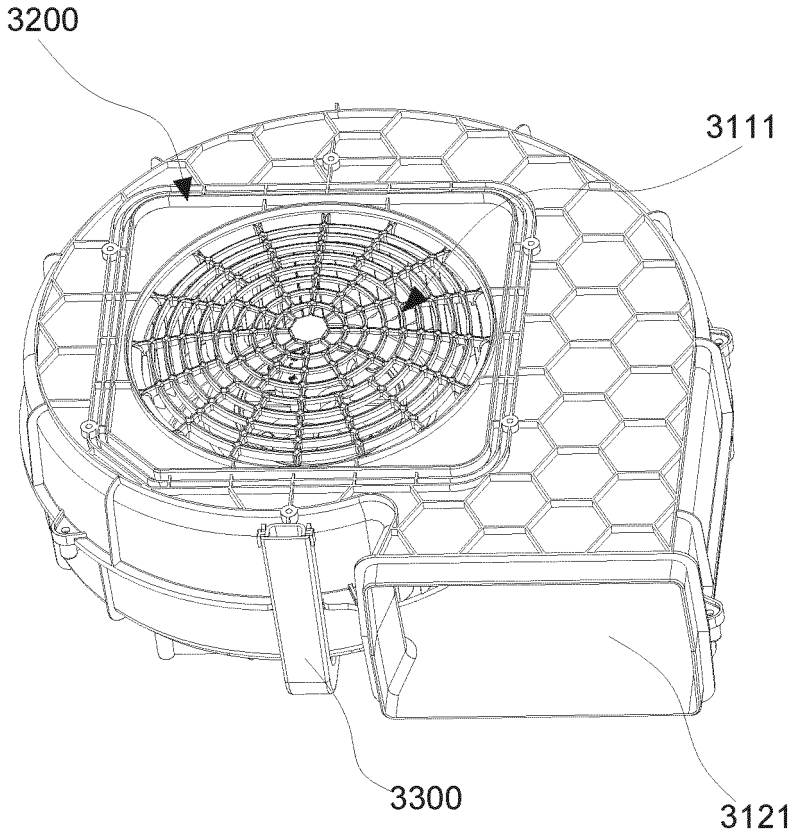

FIG. 22

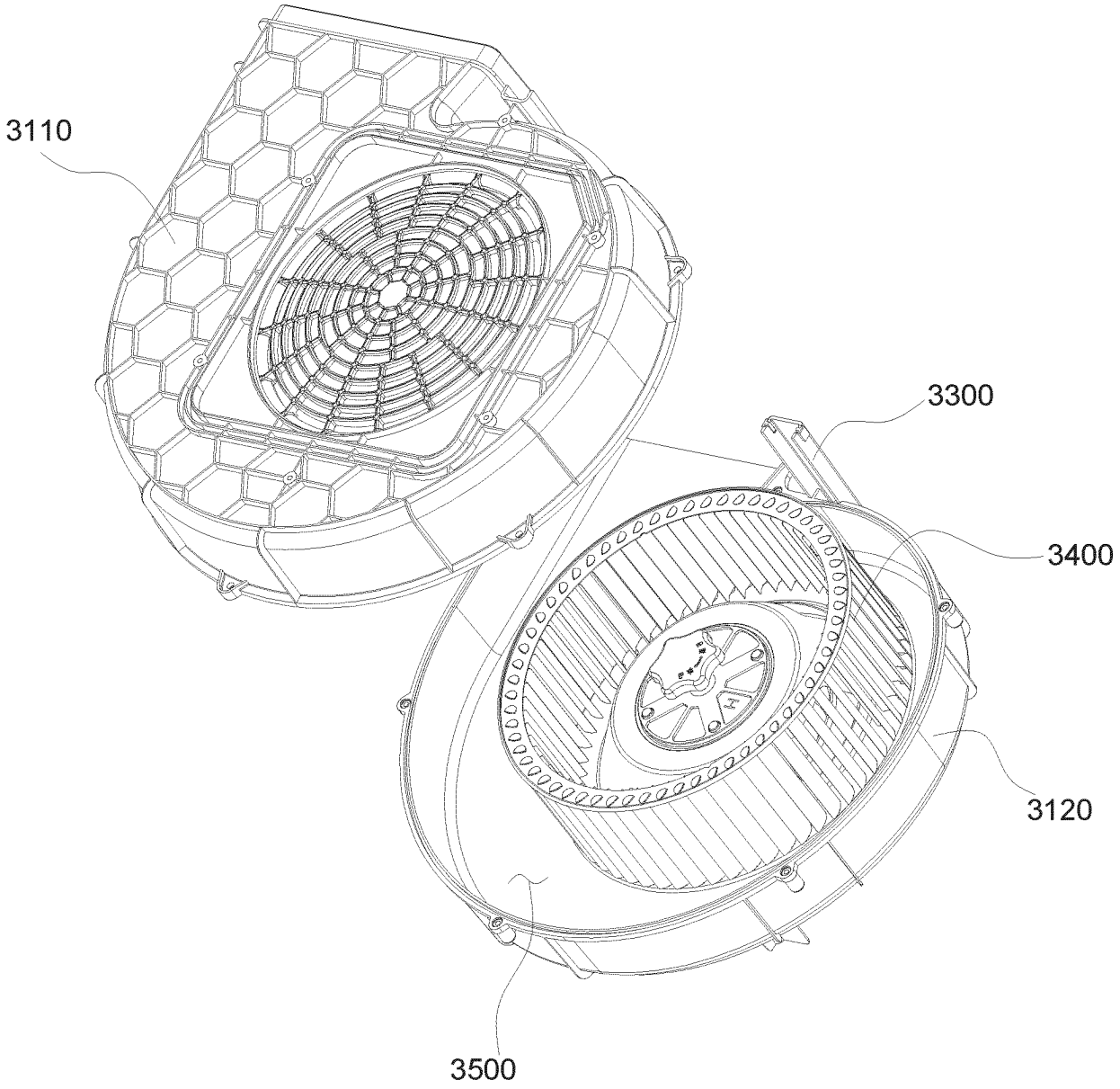

FIG. 23

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2023/070484

A. CLASSIFICATION OF SUBJECT MATTER

F24C15/20(2006.01)i;F24C3/00(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:F24C15/-; F24C3/-

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, ENTXT, PATENTICS, 中国期刊网全文数据库, CJFD: 美的, 邹义华, 张万高, 欧阳伟明, 集成, 组合, 下吸, 下排, 下抽, 一体, 灶, 烟机, 油烟, 烟气, 水, 蒸汽, 蒸气, 格, 条, 栅, 尖, 凸, 突, 端, 导风, 框, 重力, 凝, 斜, 缺, 槽, 截面, 逐渐, 变小, 变化, integrat+, combin+, low, suction, exhaust+, pump?, stove?, oven?, furnace?, hood?, oil, smoke?, flue, grid, convex, protrus+, end?, wind, gurd+, frame, gravity, condensat+, inclin+, oblique, slot?, notch, section, aera, gradually, variat+

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 218096170 U (WUHU MIDEA SMART KITCHEN APPLIANCE MANUFACTURING CO., LTD.) 20 December 2022 (2022-12-20) description, paragraphs [0106]-[0149], and figures 1-18	1-16
PX	CN 218096171 U (WUHU MIDEA SMART KITCHEN APPLIANCE MANUFACTURING CO., LTD.) 20 December 2022 (2022-12-20) description, paragraphs [0049]-[0099], and figures 1-10	1-16
PX	CN 218096172 U (WUHU MIDEA SMART KITCHEN APPLIANCE MANUFACTURING CO., LTD.) 20 December 2022 (2022-12-20) description, paragraphs [0060]-[0126], and figures 1-11	1-16
PX	CN 218096173 U (WUHU MIDEA SMART KITCHEN APPLIANCE MANUFACTURING CO., LTD.) 20 December 2022 (2022-12-20) description, paragraphs [0056]-[0122], and figures 1-15	1-16

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

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"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
12 May 2023	**17 May 2023**
Name and mailing address of the ISA/CN **China National Intellectual Property Administration (ISA/CN)** **China No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088**	Authorized officer Telephone No.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2023/070484

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN 211176964 U (FOSHAN SHUNDE MIDEA WASHING APPLIANCES MANUFACTURING CO., LTD.) 04 August 2020 (2020-08-04) description, paragraphs [0055]-[0080], and figures 1-8	1, 5-6, 10-13
Y	CN 211176964 U (FOSHAN SHUNDE MIDEA WASHING APPLIANCES MANUFACTURING CO., LTD.) 04 August 2020 (2020-08-04) description, paragraphs [0055]-[0080], and figures 1-8	2-4, 7-9, 14-16
Y	CN 104896964 A (WUHU MINGREN THERMAL ENERGY EQUIPMENT CO., LTD.) 09 September 2015 (2015-09-09) description, paragraphs [0003]-[0012], and figure 1	2-4
Y	CN 216244487 U (ZHONGSHAN YOULONG ELECTRICAL APPLIANCES CO., LTD.) 08 April 2022 (2022-04-08) description, paragraphs [0018]-[0021], and figures 1-7	7-9, 14-16
X	CN 215805384 U (GREE ELECTRIC APPLIANCES INC. OF ZHUHAI) 11 February 2022 (2022-02-11) description, paragraphs [0032]-[0033], and figures 1-4	1
X	CN 110864354 A (NINGBO AUX ELECTRIC CO., LTD.) 06 March 2020 (2020-03-06) description, paragraphs [0052]-[0069], and figures 1-6	1
A	CN 213983697 U (FOSHAN SHUNDE MIDEA WASHING APPLIANCES MANUFACTURING CO., LTD.) 17 August 2021 (2021-08-17) entire document	1-16
A	CN 216244423 U (ZHONGSHAN YOULONG ELECTRICAL APPLIANCES CO., LTD.) 08 April 2022 (2022-04-08) entire document	1-16
A	CN 104607135 A (CHINA PETROLEUM & CHEMICAL CORPORATION et al.) 13 May 2015 (2015-05-13) entire document	1-16
A	CN 211597024 U (NANJING YAOU PROJECT MANAGEMENT CO., LTD.) 29 September 2020 (2020-09-29) entire document	1-16
A	CN 216346509 U (FOSHAN SHUNDE MIDEA ELECTRICAL HEATING APPLIANCES MANUFACTURING CO., LTD.) 19 April 2022 (2022-04-19) entire document	1-16
A	JP 2017129294 A (PALOMA CO., LTD.) 27 July 2017 (2017-07-27) entire document	1-16
A	JP 2006258370 A (MATSUSHITA DENKI SANGYO K.K.) 28 September 2006 (2006-09-28) entire document	1-16

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2023/070484

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN 218096170 U	20 December 2022	None	
CN 218096171 U	20 December 2022	None	
CN 218096172 U	20 December 2022	None	
CN 218096173 U	20 December 2022	None	
CN 211176964 U	04 August 2020	WO 2021093068 A1	20 May 2021
CN 104896964 A	09 September 2015	None	
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JP 2006258370 A	28 September 2006	None	

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Patent documents cited in the description

- CN 202211132954 **[0001]**