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(54) **EXTRACTOR HOOD PROVIDED WITH AN ANTI-CONDENSATION SYSTEM**

(57) Extractor hood (100, 100A) comprising a body (8), an inlet section (80), an electrical fan (V) suitable for extracting the hot steam (F) that rises from said cooktop (P) through the inlet section (80), and a grease filter (2) disposed in correspondence with the inlet section (80) or in intermediate position between the inlet section (80) and the electrical fan (V); the peculiarity of the extractor hood (100, 100A) is that it comprises an anti-condensation system provided with at least one radiation emitter (1) configured in such a way to emit electromagnetic radiation (IR) with a wavelength comprised between 0.74 μm and 2000 μm that irradiates and heats the grease filter (2) in such a way to prevent the formation of condensation in said grease filter (2).

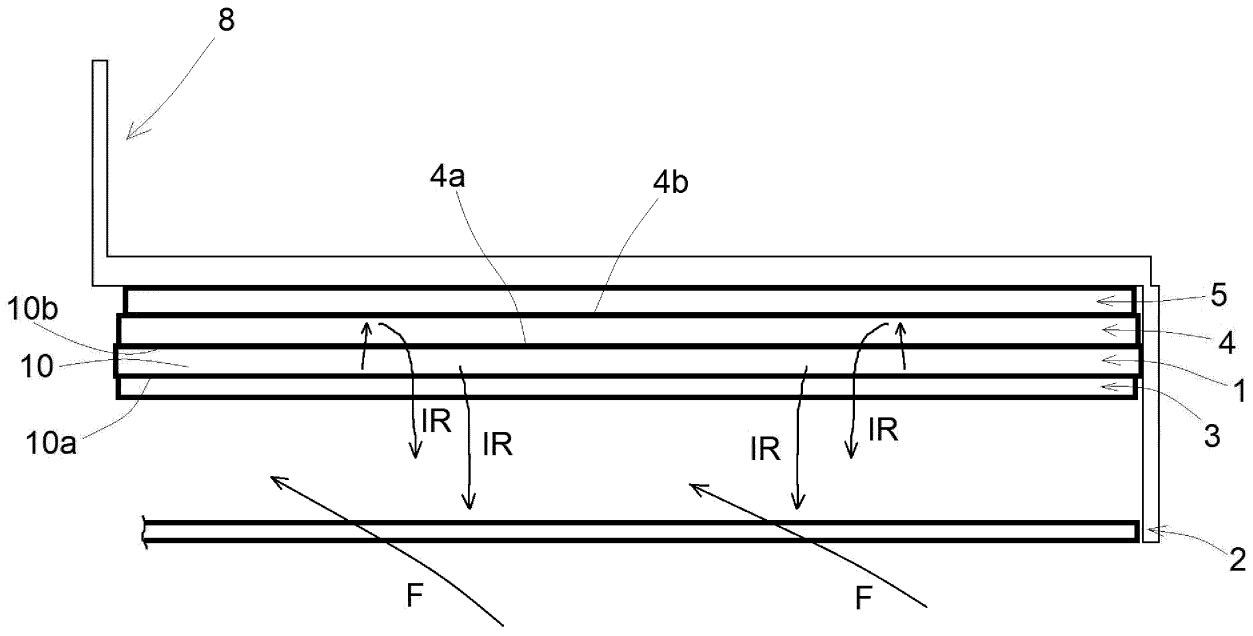

FIG. 3

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Description

[0001] The present patent application for industrial invention relates to a kitchen extractor hood provided with an anti-condensation system suitable for preventing the dripping caused by condensation.

[0002] As it is known, an extractor hood is suitable for cooperating with a cooktop in a kitchen, with the function of forcedly extracting the fumes and consequently the odors generated by the cooking of food.

[0003] Two main types of extractor hoods are currently available on the market, which differ in terms of the position and direction of the inlet section of the extractor hood.

[0004] The first type, which is defined as "horizontal hood", comprises a body suitable for being mounted above a respective cooktop and is provided with an inlet section that is substantially parallel to the cooktop.

[0005] A second type, which is defined as "vertical hood", comprises a body mounted above the respective cooktop, preferably in correspondence with the rear edge of the cooktop.

[0006] In particular, the body of said extractor hoods is configured in such a way that the inlet section of the extractor hood is arranged in a perpendicular position with respect to the cooktop or in a slightly inclined position towards the center of the cooktop that allows the extractor hood to better intercept the fumes that rise upwards.

[0007] Both types of extractor hoods make use of an electrical fan that is disposed inside the body and capable of forcing the fumes towards the interior of the extractor hood (either a horizontal or vertical extractor hood), and then conveying said fumes towards an evacuation or delivery duct associated with the extractor hood.

[0008] Both types of extractor hoods comprise conventional filters, which are commonly known as grease filters, disposed in correspondence with the inlet section of the extractor hood, covering the front of the extractor hood.

[0009] Horizontal and vertical extractor hoods are divided into two subcategories based on the extraction mode: direct extraction and perimeter extraction.

[0010] The perimeter extraction mode differs from the direct suction mode in that a screen is disposed in front of the grease filter, namely in front of the inlet section of the body, with dimensions smaller, equal or larger than the grease filter, thus creating a "perimetral" extraction area along the perimeter of the screen.

[0011] Therefore, when said electrical fan is activated, the fumes that are extracted by the electrical fan cannot directly enter the inlet of the extractor hood, precisely because said inlet is "covered" by said screen.

[0012] The fumes will reach the inlet after being extracted through the gap formed between the edges that define the inlet section and the "covering" screen, along the entire perimeter of the screen.

[0013] Regardless of being provided or not with the screen, both types of extractor hoods (horizontal and vertical hoods) are impaired by a serious drawback. While rising towards the extractor hood, the fumes and the hot steam from cooking directly hit the grease filter or the covering screen.

[0014] Considering that the temperature of said fumes is certainly higher than the one of the surrounding space, and also higher than the one of the grease filter and/or the covering screen, abundant condensation is inevitably formed on the surface and on the inside of the grease filters and/or on the surface of the covering screen.

[0015] In particular, condensation is formed during cooking because there is a temperature difference between the steam and the grease filters and/or the cover screen.

[0016] The accumulation of condensation favors the onset of a conspicuous and annoying dripping on the cooktop and in the worst cases on the food that is being cooked. Evidently, this is extremely unhygienic.

[0017] The dripping increases consistently when the electrical fan is turned off because with the absence of the depression generated by the electrical fan, the condensation is no longer retained inside the grease filters and is no longer adhered to the cover, dripping on the cooktop.

[0018] With the increased use of cooktops equipped with induction hobs, the dripping of the condensation is even more significant.

[0019] In the presence of induction hobs, in fact, the heating only affects the bottom of the pot and not also the air that surrounds the vertical walls of the pot, as in the case of gas hobs.

[0020] Because of such an "exclusive targeted" heating of the pot, which is typical of induction hobs, the steam that rises towards the extractor hood is less hot than the one produced by the gas hobs and therefore, precisely because of such a lower temperature, a longer time is necessary to heat the surface of said screen.

[0021] CN206563333U discloses a range hood with a filtering screen provided with a membrane made of a highly conductive material.

[0022] The purpose of the present invention is to overcome the drawbacks of the prior art by providing an extractor hood that is capable of reducing or eliminating the dripping of grease on a cooktop under the extractor hood.

[0023] Another purpose of the present invention is to devise an extractor hood wherein the generation of condensation in the grease filters and/or in the perimeter screen is reduced.

[0024] These purposes are achieved according to the invention with the characteristics of the appended independent claim 1.

[0025] Advantageous embodiments appear from the dependent claims.

[0026] The idea of the present invention is to provide the extractor hood with a radiation emitter capable of irradiating and consequently heating the grease filters so as to raise the temperature of said filters in order to avoid, or eliminate the generation of condensation in the grease filter and on the covering screen, both superficially and

internally.

[0027] For the sake of clarity, the description of the extractor hood according to the invention continues with reference to the appended drawings, which have a merely illustrative, not limiting value, wherein:

Fig. 1 is a schematic front view of a horizontal extractor hood with direct extraction according to the invention mounted above a cooktop;

Fig. 2 is a schematic axonometric view of the extractor hood of Fig. 1, wherein the grease filter is partially omitted to show the position of the anti-condensation system;

Fig. 3 is a schematic side view of a detail of the extractor hood of Fig. 1, which refers to the anti-condensation system;

Fig. 4 is a schematic front view of a horizontal extractor hood with perimeter extraction according to the invention mounted above a cooktop;

Fig. 5 is a schematic axonometric view of the extractor hood of Fig. 4, wherein the covering screen is partially omitted to show the anti-condensation system;

Fig. 6 is a schematic front view of a detail of the extractor hood of Fig. 4, which refers to the anti-condensation system.

[0028] With reference to the appended figures, an extractor hood according to the invention is disclosed, which is generally indicated with reference numerals 100 and 100A.

[0029] In particular, reference numeral 100 will refer to a horizontal extractor hood with direct extraction, whereas reference numeral 100A will refer to a horizontal extractor hood with perimeter extraction.

[0030] With reference to Figs. 1 and 4, the extractor hood (100, 100A) comprises:

- a body (8) made of sheet metal comprising a wall (81) disposed in such a way to be hit by the hot steam (F) that rises from a cooktop (P);
- an inlet section (80) of the hot steam (F) realized on the wall (81);
- an electrical fan (V) disposed inside the body (8) and suitable for extracting the hot steam (F) that rise from said cooktop (P) through the inlet section (80);
- a grease filter (2) connected to the body (8) and disposed in correspondence with the inlet section (80) or in intermediate position between the inlet section (80) and the electrical fan (V).

[0031] The extractor hood is of horizontal type and therefore the wall (81) of the body (8) is a horizontal wall disposed in parallel position above the cooktop (P).

[0032] Still with reference to Figs. 1, 2, 4 and 5, the body (8) has an inverted "T" shape that comprises a central column (8a) wherein the hot steam (F) is conveyed and a base portion comprising said wall (81) provided with said inlet section (80).

[0033] The hot steam (F) is then forcedly conveyed into an evacuation duct (Q).

[0034] The peculiarity of the extractor hood (100, 100A) according to the invention is that it is provided with an anti-condensation system comprising at least one radiation emitter (1) configured in such a way to emit electromagnetic radiation (IR) with a wavelength comprised between 0.74 μm and 2000 μm, in order to irradiate and heat the grease filter (2) and consequently avoid the formation and the dripping of condensation in said grease filter (2).

[0035] The at least one radiation emitter (1) generates radiation that completely irradiates the grease filter (2) both superficially and internally, heating it to a temperature of about 40°C - 50°C, namely a temperature at which the condensation is not formed and the dripping of the grease filter (2) is not generated.

[0036] Preferably, said radiation emitter (1) emits electromagnetic radiation (IR) in the infrared spectrum, namely electromagnetic radiation (IR) with a wavelength comprised between 0.78 μm nm and 1000 μm.

[0037] Advantageously, said grease filter (2) is made with a dark colored material or is surface treated in such a way to give a dark color to the grease filter (2) in such a way to maximize the absorption of the radiation (IR) emitted by the radiation emitter (1).

[0038] According to the preferred embodiment that is illustrated in the appended figures, the radiation emitter (1) comprises at least one infrared film (10).

[0039] The infrared film (10) is parallel to said grease filter (2) and covers said grease filter (2) only partially, in such a way not to obstruct the flow of hot steam (F) that is extracted by the extractor hood (100, 100A).

[0040] If the extractor hood (100) is an extractor hood of direction extraction type, as shown in Fig. 1, the radiation emitter (1) comprises two infrared films (10) disposed on the sides of the column (8a) in the two lateral elements (8b) of the base portion of the body (8). In this way, said infrared films (10) do not obstruct the entry of the flow of hot stream (F) inside the column (8a) of the body (8).

[0041] With reference to Fig. 3, the infrared film (10) comprises a first side (10a) directed towards the grease filter (2) and a second side (10b) opposite to the first side (10a).

[0042] The first side (10a), which is directed towards the grease filter (2) is suitably for being hit by hot steam (F) that is extracted by the extractor hood (100). Said hot steam (F) could cause the overheating of the infrared film (10) with consequent malfunction or failure of the same.

[0043] In order to prevent said hot steam (F) from hitting the first side (10a) of the infrared film (10), the anti-condensation system comprises a layer of thermal insulation material (3) transparent to infrared radiation that covers said first side (10a) of the infrared film (10).

[0044] Preferably said layer of thermal insulation material (3) transparent to infrared radiation is made of Plex-

iglas, PVC, polycarbonate or the like.

[0045] A layer of thermal insulation material (3) transparent to infrared radiation acts as a cover for the first side (10a) of the infrared film (10), but still allows the passage of the electromagnetic radiation (IR) emitted by the infrared film (10), in such a way that said electromagnetic radiation (IR) can reach the grease filter (2) in order to irradiate and heat the grease filter (2).

[0046] Advantageously, as shown in Fig. 3, in the version with direct extraction, the anti-condensation system of the extractor hood (100) comprises a layer of infrared reflective material (4) that covers said second side (10b) of the infrared film (10). The layer of infrared reflective material (4) comprises a first side (4a) facing the infrared film (10), and a second side (4b) facing the opposite direction.

[0047] The reflective material layer (4) is made of stainless steel, aluminum, reflective plastics or the like.

[0048] Said layer of reflective material (4) reflects the electromagnetic radiation (IR) that is directed in the opposite direction with respect to the position of said grease filter (2), in such a way as to direct the electromagnetic radiation (IR) towards the grease filter (2), thus increasing the efficiency of the infrared film (10).

[0049] Advantageously, still with reference to Fig. 3, the anti-condensation system also comprises a layer of thermal insulation material (5) that covers the second side (4b) of the reflective material (4).

[0050] With reference to Fig. 4, 5 and 6, an extractor hood (100A) with perimeter extraction is described.

[0051] In such a case, the extractor hood (100A) comprises a screen (6) disposed upstream the grease filter (2), and suitable for screening said inlet section (80), in such a way that, by activating said electrical fan (V), the hot steam (F) that rises from the cooktop (P) is extracted towards the inlet section (80) through a perimeter slot (7) defined between the edges (60a) of said screen (6) and the edges of the inlet section (80).

[0052] The extractor hood (100A) is of perimeter extraction type, preferably the infrared film (10) is disposed in intermediate position between said screen (6) and said grease filter (2).

[0053] The screen (6) comprises a bottom (6a) and four side edges (6b) that define a compartment with an opening facing the inlet section (80) of the body (8) that houses the infrared film (10).

[0054] With reference to Fig. 6, in the version of the extractor hood (100A) with perimeter extraction, in addition to the infrared film (10), the anti-condensation system only comprises the layer of thermal insulation material (3) transparent to infrared radiation that covers said first side (10a) of the infrared film (10).

[0055] The anti-condensation system does not comprise the reflective material layer (4) or the layer of thermal insulation material (5) because the radiation (IR) that propagates towards the screen (6) are also used to heat the screen (6), so that no condensation is generated on the screen (6) that is hit by the hot steam (F).

[0056] Although an extractor hood (100, 100A) with direct and perimetric extraction of horizontal type has been described above, the same inventive idea can also be used for extractor hoods of vertical type. More precisely, the anti-condensation system provided with the radiation emitter (1) can also be installed in extractor hoods of vertical type, namely extractor hoods provided with a body (8) that is suitably shaped in such a way that the inlet section (80) is disposed in a perpendicular position with respect to the cooktop (P) or in a slightly inclined position towards the center of the cooktop (P), thus better intercepting the fumes rising upwards.

[0057] Although in the embodiment illustrated in the appended figures said radiation emitter (1) preferably comprises said infrared film (10), in an alternative embodiment of the invention said radiation emitter (1) may comprise infrared LEDs or infrared ceramic lamps or similar devices that emit electromagnetic radiation capable of overheating the grease filter (2) and the screen (6) in such a way as to prevent the generation of condensation.

[0058] Following the above description, the advantages of the extractor hood according to the invention are evident.

[0059] In fact, because of the provision of the anti-condensation system provided with the radiation emitter (1), the extractor hood is capable of reducing, if not eliminating, the condensation that is formed on the grease filter (2) and/or on the screen (6), thus avoiding the annoying dripping on the cooktop (P).

[0060] Furthermore, since the radiation emitter (1) is suitably configured to emit electromagnetic radiation (IR) with a wavelength comprised between 0.74 μm and 2000 μm, preferably in the infrared spectrum, the formation of mold, bacteria and the like on the grease filter and on the screen is prevented.

Claims

1. Extractor hood (100, 100A) comprising:

- a body (8) comprising a wall (81) disposed in such a way to receive the hot steam that rises from a cooktop (P);
- an inlet section (80) provided in said wall (81) of the body (8);
- an electrical fan (V) suitable for extracting the hot steam (F) that rises from said cooktop (P) through the inlet section (80);
- a grease filter (2) connected to the body (8) and disposed in correspondence with the inlet section (80) or in intermediate position between the inlet section (80) and the electrical fan (V); said grease filter (2) being suitable for receiving the hot steam (F) that rises from said cooktop (P);
- an anti-condensation system comprising at least one radiation emitter (1) configured in such

a way to emit electromagnetic radiation (IR) with a wavelength comprised between 0.74 μm and 2000 μm, which irradiates and heats the grease filter (2) in such a way to prevent the formation of condensation in said grease filter (2);

wherein said at least one radiation emitter (1) comprises at least one infrared film (10) disposed in parallel direction to said grease filter (2) and partially covering said grease filter (2), in such a way not to obstruct the flow of hot steam (F) that is extracted by the extractor hood (100, 100A); and
said infrared film (10) comprises a first side (10a) directed towards the grease filter (2) and a second side (10b) opposite to said first side (10a); wherein said anti-condensation system comprises a layer of thermal insulation material (3) transparent to infrared radiation that covers said first side (10a) of the infrared film (10).

2. The extractor hood (100, 100A) of claim 1, wherein said radiation emitter (1) emits electromagnetic radiation (IR) in the infrared spectrum, namely electromagnetic radiation (IR) with a wavelength comprised between 0.78 μm nm and 1000 μm.

3. The extractor hood (100) of claim 1 or 2, wherein said anti-condensation system comprises a layer of reflective material (4) that covers said second side (10b) of the infrared film (10).

4. The extractor hood (100) of claim 3, wherein said layer of reflective material (4) comprises a first side (4a) directed towards the infrared film (10), and a second side (4b) opposite to said first side (4a); wherein said anti-condensation system comprises a layer of thermal insulation material (5) that covers said second side (4b) of the reflective material (4).

5. The extractor hood (100A) of claim 1 to 2, comprising a screen (6) disposed upstream the grease filter (2), and suitable for screening said inlet section (80), in such a way that, when said electrical fan (V) is activated, the fumes that rise from the cooktop (P) are extracted towards the inlet section (80) through a perimeter slot (7) defined between the edges (60a) of said screen (6) and the edges of the inlet section (80); wherein said infrared film (10) is disposed between said screen (6) and said grease filter (2).

6. The extractor hood (100, 100A) according to any one of the preceding claims, wherein said grease filter (2) is made of a dark-colored material or is treated with surface treatments to give a dark color to the grease filter (2) in such a way to maximize the absorption of the electromagnetic radiation (IR) emitted by the radiation emitter (1).

7. The extractor hood (100, 100A) according to any one of the preceding claims, wherein said at least one radiation emitter (1) comprises infrared LEDs or infrared ceramic lamps or the like.

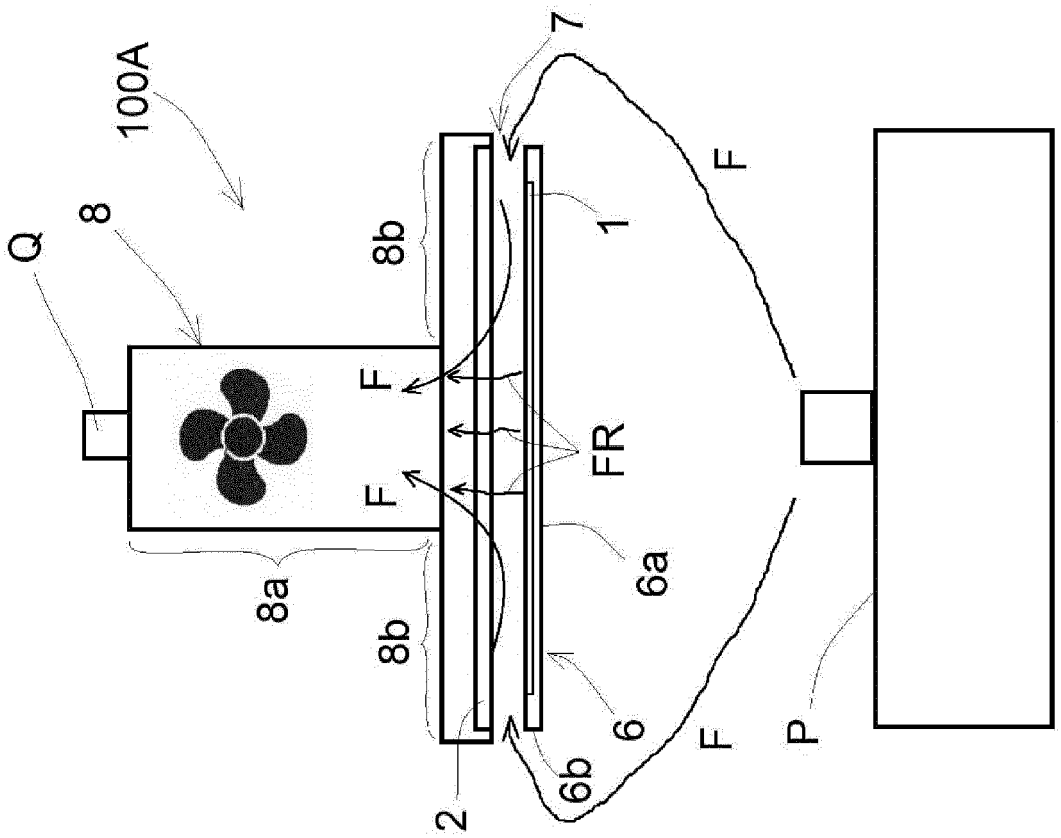

FIG. 4

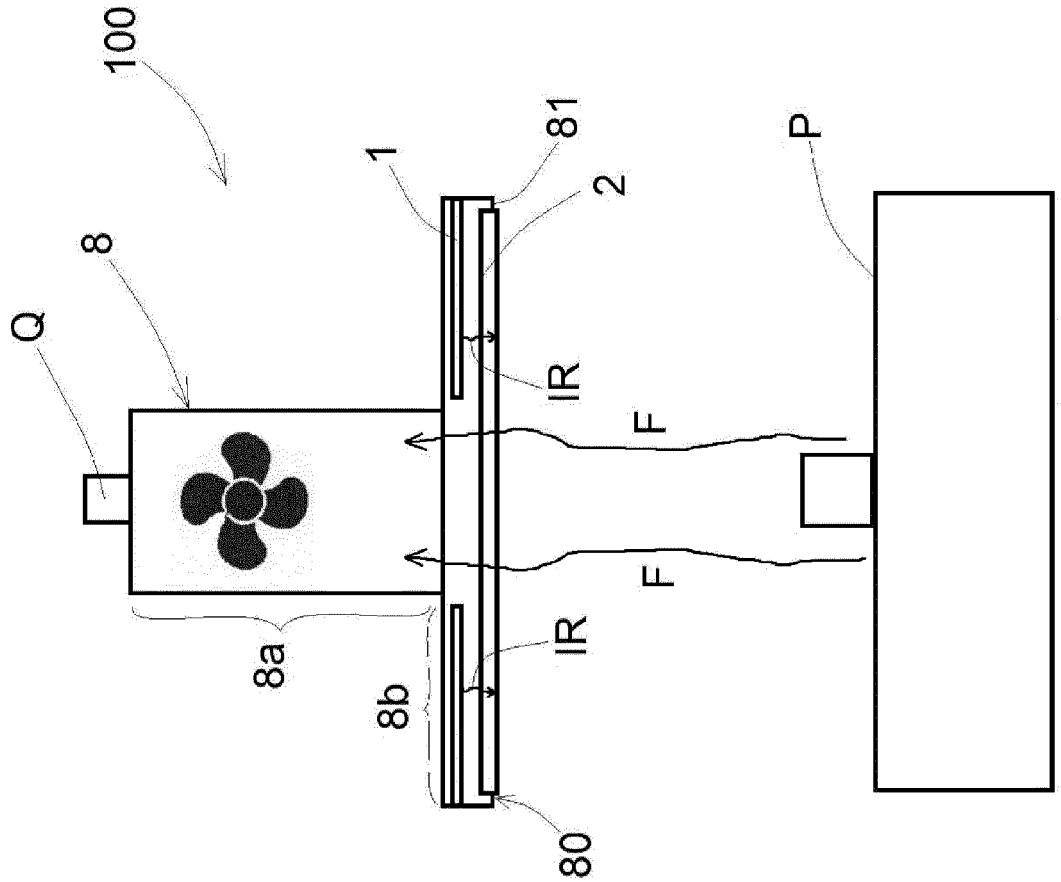

FIG. 1

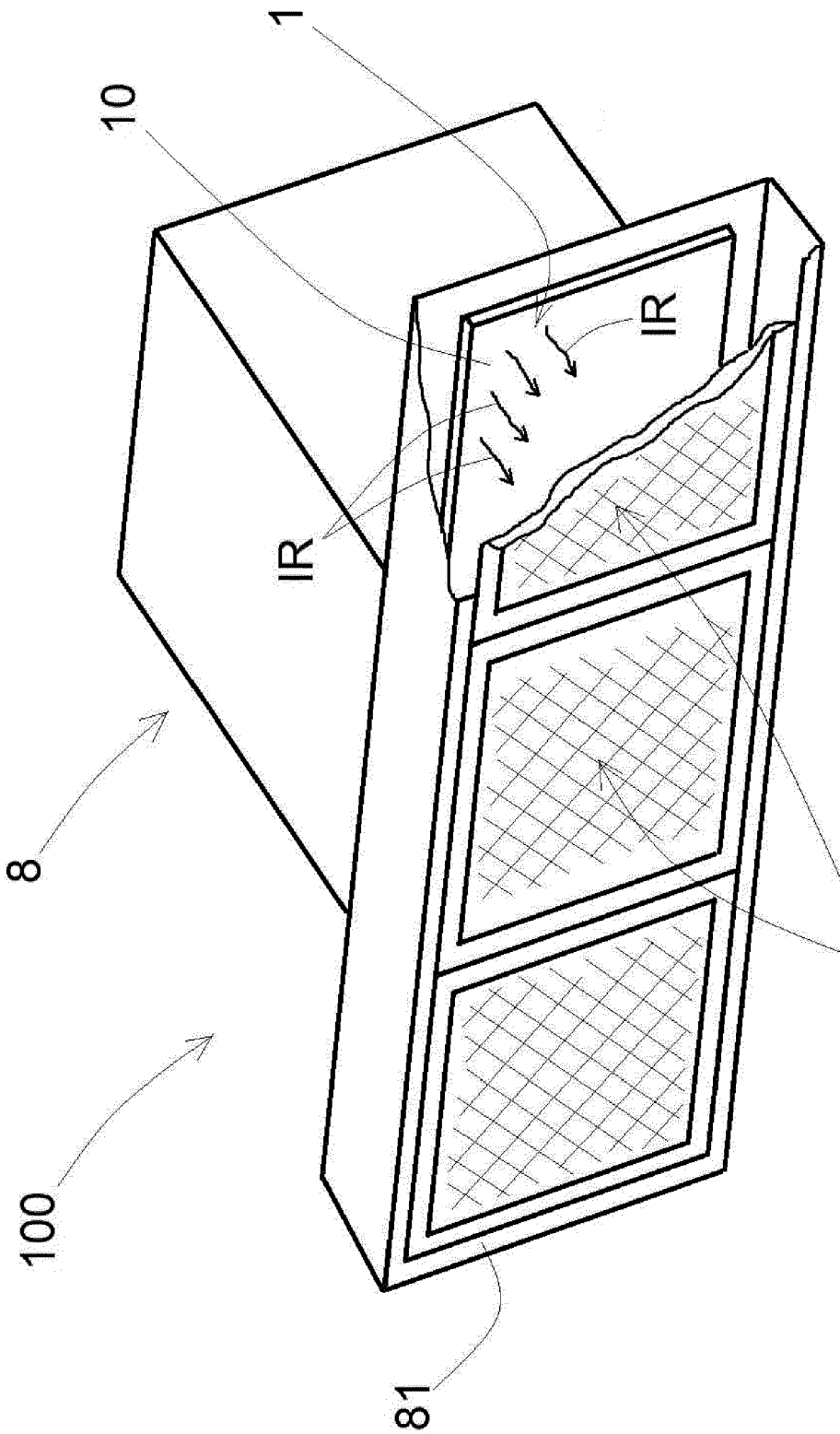

FIG. 2

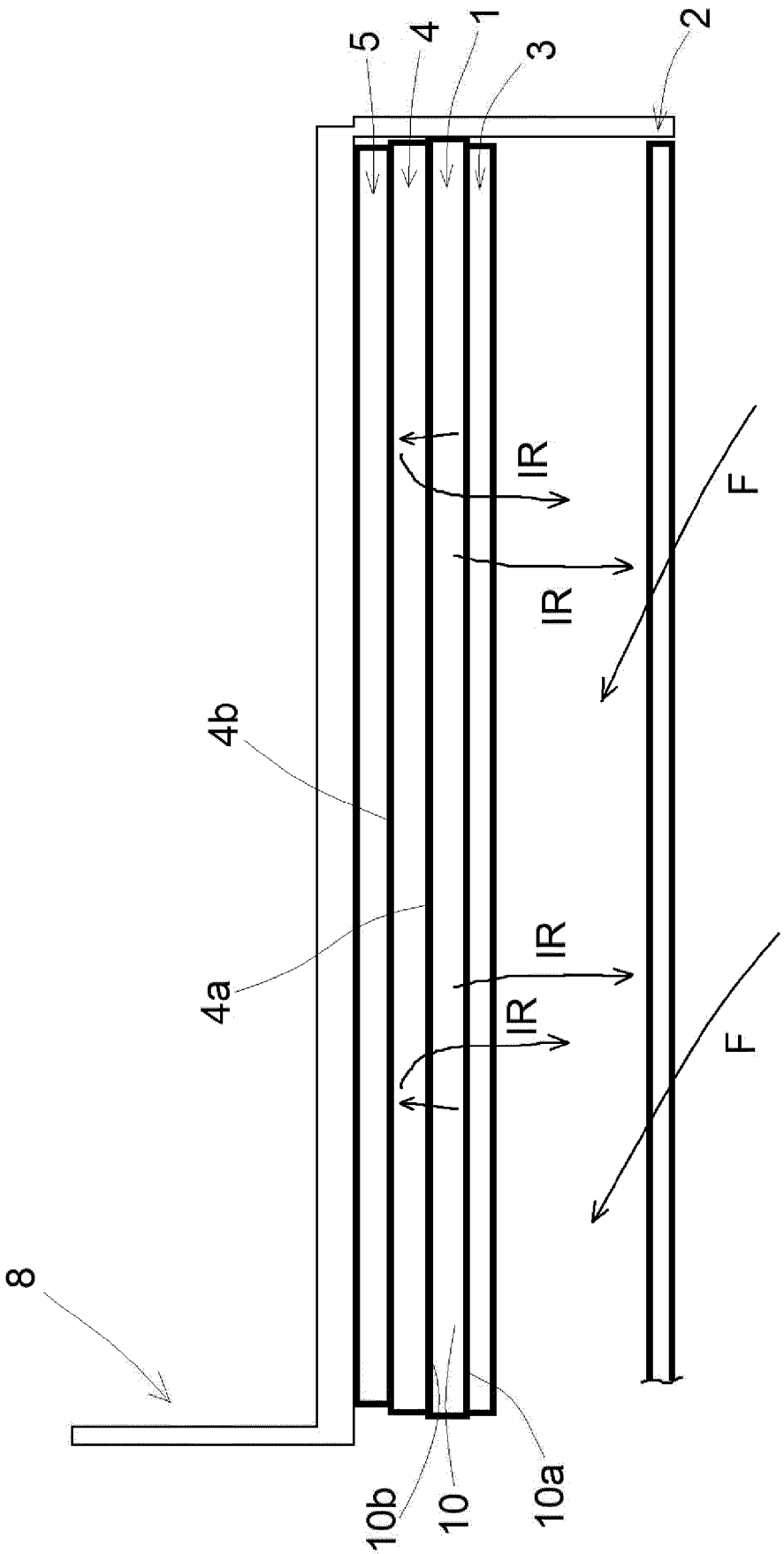

FIG. 3

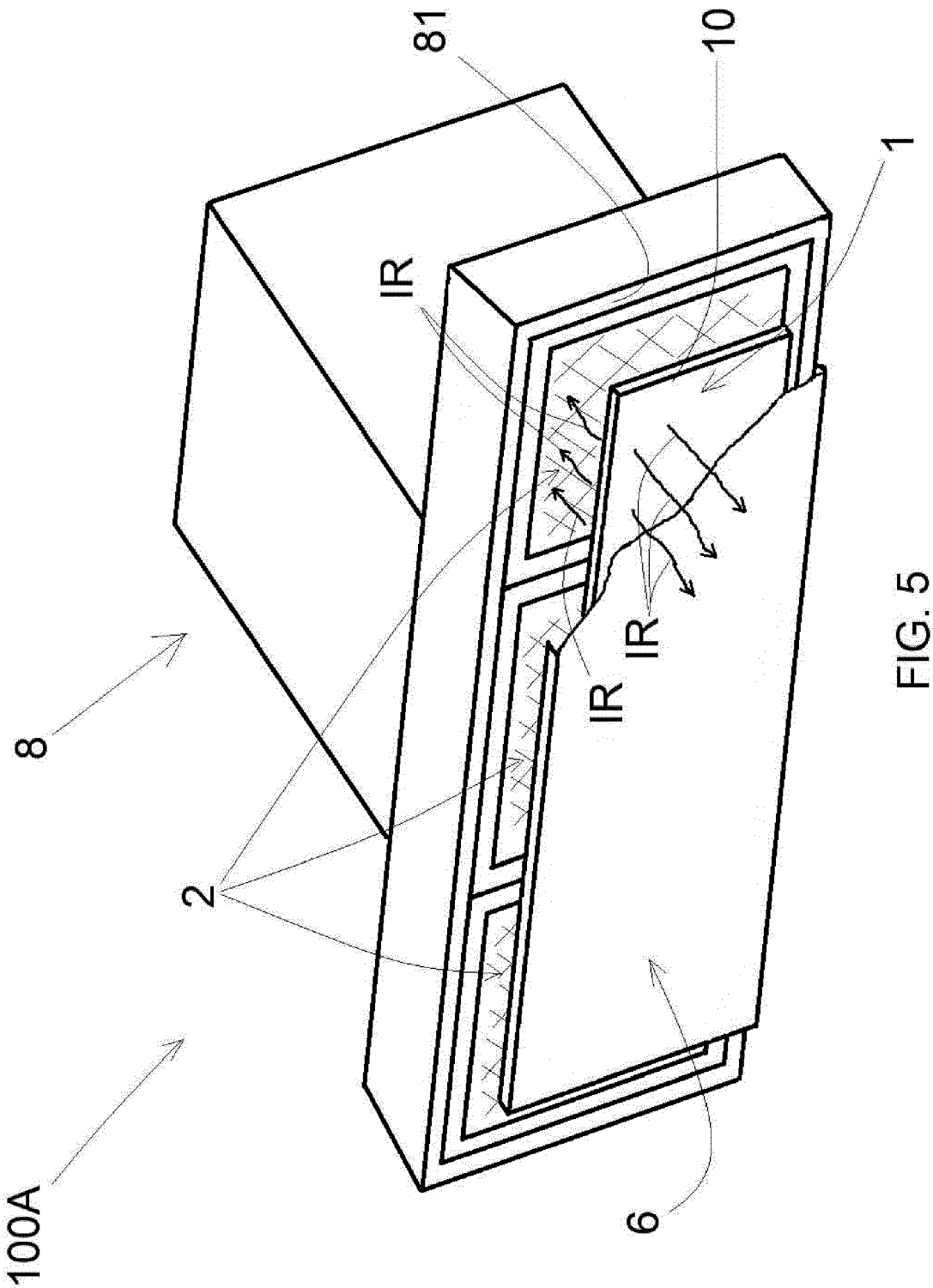

FIG. 5

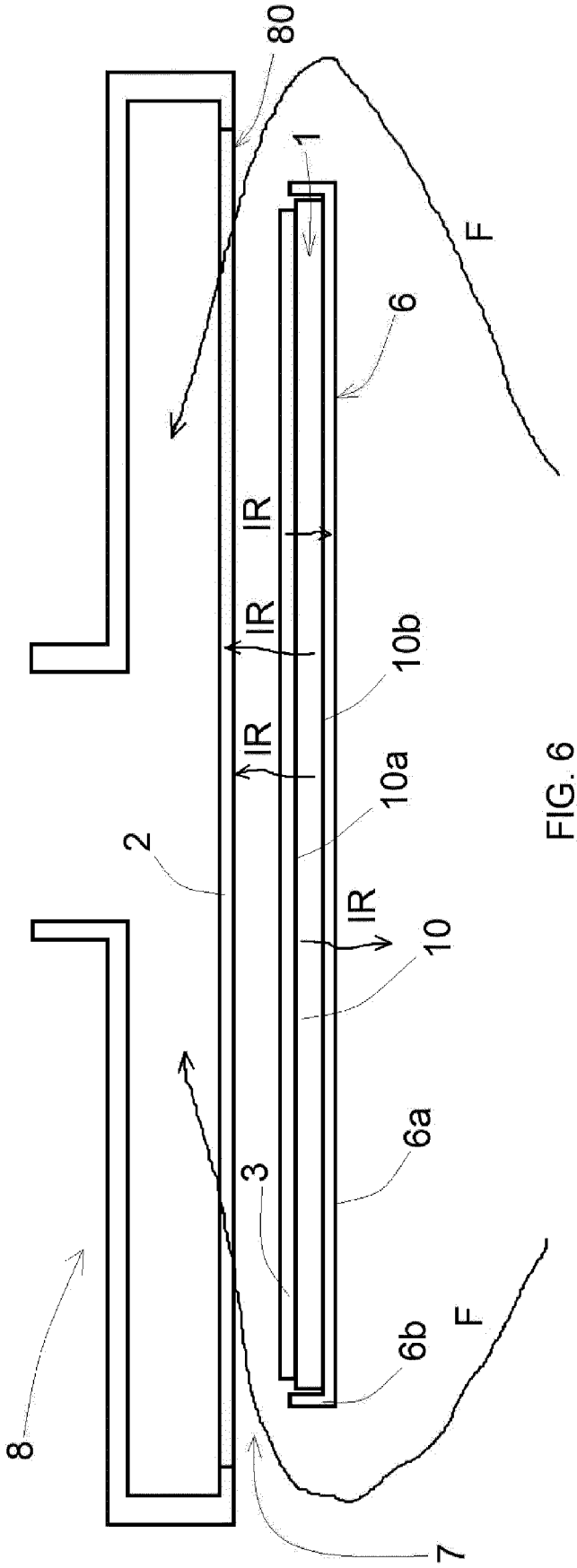

FIG. 6

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EUROPEAN SEARCH REPORT

Application Number
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DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	3 November 2021	Rodriguez, Alexander

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REFERENCES CITED IN THE DESCRIPTION

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