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(54) **IMPROVED EXTRACTOR HOOD**

(57) The present invention relates to an extractor hood (1) for kitchens and the like, comprising
- a hood body (2) intended to house extraction means (3),
- an illuminating panel (5) coupled to one end of the hood body (2) and in turn comprising a supporting frame (8) and a first sheet of transparent material (91), preferably glass, coupled to said supporting frame (8) and at least one light source, said hood (1) comprising hanging

means (21,51) designed to keep the hood hung with respect to a hob, said hanging means being associated with the hood body (2) and with the illuminating panel (5), wherein the supporting frame (8) is a surround frame separated from said hood body (2) and coupled thereto by means of the sheet of transparent material (91), such that this latter is a stressed element - that is a structural element - of the hood (1).

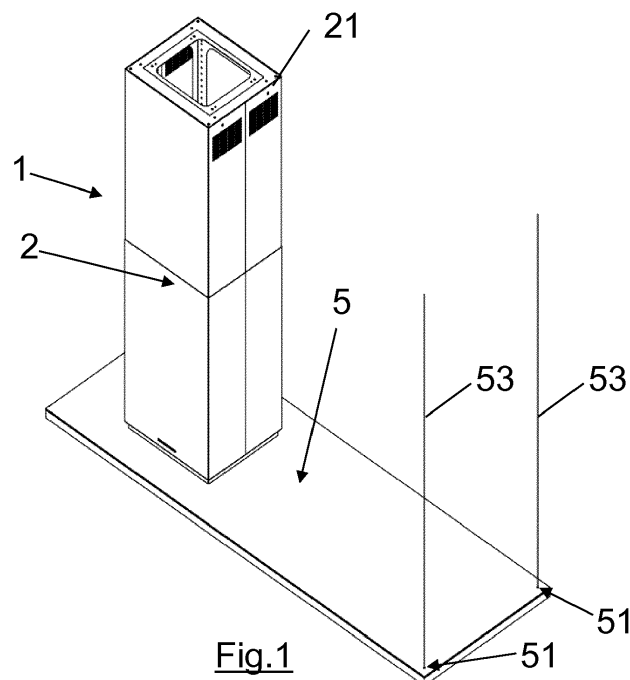


Fig.1

Description

TECHNICAL FIELD

[0001] The present invention relates to the field of extractor hoods according to the preamble of the first annexed claim.

[0002] Such hoods typically are intended to be mounted above hobs in kitchens, kitchenettes and the like in order to exhaust cooking fumes and steam to the outside, through an exhaust duct to which they are connected.

PRIOR ART

[0003] In the field of extractor hoods it is known to provide hoods equipped with a body housing the motor and the extraction chamber which is intended to be secured to a wall, typically the ceiling, in the hanging condition.

[0004] Generally extractor hoods have light sources for illuminating the area of the hob below. An example is given by the patent application WO03/073009, wherein a plurality of LEDs is inserted into the hood structure to illuminate the hob below. In some recent hood models, the hood body is coupled (in the lower portion, in the operating condition) to a plate-like element that in addition to act as the opening of the hood chimney, it acts also an illuminating panel for the hob below and/or for the adjacent space, it being equipped, among other things, with light sources intended for the aim.

[0005] An example is the hood called as "LUMEN" of the same Applicant.

[0006] The plate-like element comprises a metal frame directly connected to the hood body; in some solutions this latter is placed offset with respect to the barycenter of the plate-like element, such that ceiling tie rods are also necessary for hanging it. In practice the hood hangs both by means of the tie rods and by means of the hood body that supports the frame and that in turn is fastened to the ceiling.

[0007] The metal frame extends from the hood body to the edge of the plate-like body and it supports a transparent insert or sheet placed on one face of the plate-like element.

[0008] Light sources (e.g. electric lamps), suitably powered, illuminate the cooking area below or the adjacent space, through the transparent insert or sheet.

[0009] Although it is pleasant and functional, however in the current furnishing solutions the extractor hood more and more often plays an important role: it is often used not only as a furniture item but also as a light source for the room wherein the hood is installed (e.g. the kitchen).

[0010] Therefore it is considerably important, in this case, for the light irradiating from the light sources to be diffused as much as possible.

[0011] In the hoods of the type described above, however, the provision of the metal frame is an obstacle for the free diffusion of the light: the frame generates con-

siderable shadow areas above the hood, and it reduces the possibility of illuminating the room where the hood is installed.

[0012] The German patent application DE102005060359 discloses a hood that at the top has a transparent panel that is supported by the structure of the extraction chimney of the hood. The hood provides, under the panel, light sources directed upwardly for illuminating the space above the hood.

[0013] For illuminating the hob below an additional light is necessary.

[0014] Although this solution is efficient, it does not allow the space to be homogeneously illuminated.

OBJECTS AND SUMMARY OF THE INVENTION

[0015] It is the object of the present invention to overcome the drawbacks of the prior art mentioned above.

[0016] Another object of the present invention is to provide an extractor hood that is able to homogeneously illuminate the surrounding space, without projecting shadows or, anyway, deeply reducing the latter.

[0017] Still another object of the invention is to provide an extractor hood able to generate a diffuse and homogeneous light on a part of the transparent sheet as wide as possible.

[0018] These and further objects of the invention are achieved by an extractor hood embodying the characteristics of the annexed claims, which are an integral part of the present description.

[0019] The general idea at the basis of the present invention provides to arrange a surround metal frame and at least one glass sheet that connects, as a stressed - or structural - element the surround frame with the hood body.

[0020] More in details, the solution suggested by the invention provides to make an extractor hood comprising a hood body - intended to house at least one extraction means (for example a fan and the relevant electric motor)- and an illuminating panel coupled with the hood body.

[0021] The illuminating panel in turn comprises a supporting frame and a sheet of transparent material, preferably glass, coupled with the frame.

[0022] Advantageously the hood provides at least two hanging means, one associated to the hood body and another one associated to the illuminating panel; the hood is installed hanging from a wall (e.g. the ceiling) by means of such hanging means; the supporting frame is made like a surround and is separated from the hood body; the frame and the hood body are coupled only by means of the sheet of transparent material.

[0023] Thus the sheet of transparent material is a real stressed element of the structure, that is a structural element of the hood designed to withstand stresses.

[0024] The term "stressed element" means the fact that the forces generated by the reaction of the constraints (hanging means), determined by the force of gravity act-

ing on the hood, are transmitted through the sheet of transparent material, that, on the contrary, in the prior art hoods, was hung from the frame and it had to withstand only the loads resulting from its own weight.

[0025] Therefore from a conceptual perspective this solution is very different from prior art, where the sheet of transparent material was supported by the frame and this latter was directly connected to the hood body.

[0026] Thus it is possible to make a metal frame with a very small size, with advantages for the diffusion of the light.

[0027] According to an advantageous characteristic, the illuminating panel comprises a second sheet of transparent material facing the first sheet and preferably placed in a position above it (with reference to the condition with the hood installed) and spaced therefrom such to make the hood more stout.

[0028] According to another advantageous characteristic, the illuminating panel further comprises a third sheet of transparent material interposed between the first and the second sheet, in order to further strengthen the assembly.

[0029] Advantageously, according to another characteristic, the first, second and third sheets are separated at least partially by means of spacing elements extending preferably only in proximity to the hood body and/or the surround frame: thus it is possible to obtain a suitable thickness of the illuminating panel.

[0030] Still according to another characteristic, the first and second sheets are made of glass and the third sheet is made of a plastic material, preferably methacrylate; this allows the total weight to be reduced while keeping the strength and improving the response of the hood to stresses and to micro-movements.

[0031] Still with the same advantages, the hood body is coupled with the first sheet by means of an engagement edge protruding to the outside of one end of the hood body opposite to the free end: thus the first sheet, that preferably is the lower one, is the one with a structural functionality, it being the only connection of the frame to the hood body.

[0032] In order to suitably fasten the illuminating panel, the second hanging means comprises an engagement bushing for a tie rod - preferably a cable - which is coupled with the third sheet.

[0033] This leads to some additional advantages, the glass, as it is known, is very rigid, while methacrylate has a lower stiffness: when the hanging means are coupled one to the glass sheet and the other one to the methacrylate sheet, a more elastic structure is obtained as a whole.

[0034] Still according to another advantageous characteristic, the hood comprises a light source composed at least of a strip of LEDs arranged on a longer peripheral border of the frame and aligned with the third sheet such to project a light beam in the thickness thereof: thus the light that is generated is diffuse and it is projected both downwardly and upwardly, without obstacles (the frame

is peripheral) it being able to illuminate the room wherein the hood is installed in a very homogenous and diffuse manner, such that the hood of the invention may be used as a real light source.

[0035] In order to improve the diffusion of the light, according to another advantageous characteristic, the third sheet has notches for light diffusion.

[0036] Further advantageous characteristics are the subject of the annexed claims, that are an integral part of the present description.

BRIEF DESCRIPTION OF THE DRAWINGS

[0037] The invention will be described below with reference to non-limiting examples, provided by way of example and not as a limitation in the annexed drawings. These drawings show different aspects and embodiments of the present invention and, where appropriate, reference numerals showing like structures, components, materials and/or elements in different figures are denoted by like reference numerals.

Figures 1 and 2 are top and bottom perspective views of the hood of the invention;

Figure 3 is a view taken along section EE of Figure 3a of the hood of the invention

Figures 4 and 5 are enlarged details of Figure 3;

Figure 6 is a view taken along the section BB of Figure 6a of the hood of the invention

Figure 7 is an enlarged detail of Figure 6.

DETAILED DESCRIPTION OF THE INVENTION

[0038] While the invention is susceptible of various modifications and alternative forms, some preferred embodiments are shown in the drawings and will be described below in detail.

[0039] It should be understood, however, that there is no intention to limit the invention to the specific embodiment disclosed, but, on the contrary, the intention is to cover all modifications, alternative constructions and equivalents falling within the scope of the invention as defined in the claims.

[0040] The use of "for example", "etc", "or" indicates non-exclusive alternatives without limitation unless otherwise defined.

[0041] The use of "including" means "including, but not limited to," unless otherwise defined.

[0042] Terms as "vertical" and "horizontal", "upper" and "lower" have to be read with reference to the hood in the mounted condition (operating condition) and with reference to the normal terminology used in the current language, where "vertical" means a direction substantially parallel to that of the vector of force of gravity "g" and horizontal means a direction perpendicular thereto.

[0043] The annexed figures show according to different views an extractor hood 1 according to the invention.

[0044] A hood body 2 is visible within the hood 1 which

is intended to house an extraction means 3: for example such extraction means comprises an electric motor and a fan.

[0045] A duct portion 41 is also visible - wherein the extraction means 3 is placed - opened at the opposite ends, at the bottom such to take the cooking fumes and steam and at the top such to discharge them into a ventilation chimney (not shown) of the room where the hood is installed.

[0046] Inside the hood body 2 there is also an extraction chamber 31, a part of such duct, that is placed immediately upstream of the extraction means 3, in the flowing direction of the air stream, denoted by the arrows in fig.6.

[0047] The hood body 2 is further provided with a hanging means 21, here generally denoted, by means of which it is hung from a wall, preferably the ceiling, of the room where the hood 1 is installed.

[0048] It has to be noted how within the hood 2 two ends are visible: a free, upper one and a lower one coupled with the illuminating panel 5.

[0049] Such hanging means is generally coupled with the hood body 2, preferably it is associated to its upper free end; in use, the hanging means 21 may cooperate with a metal cable, with dowels or the like, depending on needs.

[0050] The hood 1 further comprises the illuminating panel 5 coupled with the hood body 2.

[0051] In the example the illuminating panel 5 has a rectangular plan shape, but it may have other shapes (circular, square, oval, polygonal, etc) and the body 2 is associated to the panel 5 in an offset position, that is a position not symmetric with respect to the barycenter of the panel 5.

[0052] The illuminating panel in turn comprises a supporting frame 8 connected to a first sheet 91 of transparent material, preferably glass and at least one light source 81. The sheet 91, that is the lower one, is coupled with the hood body 2 by an end plate 24 provided with a support peripheral border 25 (see figs. 6, 7) that projects towards the outside.

[0053] The end plate 24 is placed, with respect to the hood body 2, at its end opposite to the free end.

[0054] The sheet 91 is then coupled with the frame 8 by a recess or seat 82 (see fig.7) wherein a peripheral portion of the sheet 91 is housed. Therefore the frame 8 rests on and is supported by the sheet 91.

[0055] With reference to the non limitative example shown, the panel 5 comprises three transparent sheets 91, 92, 93 - further reference is made below - but now it has to be noted that the number of such sheets may vary from one (sheet 91) to a plurality of them, depending on constructional needs, without for this reason departing from the teaching of the present invention.

[0056] Then the hood 1 comprises, in addition to the first hanging means 21, also a second hanging means 51 associated to the illuminating panel 5.

[0057] In the example two tie rods 53 are provided each

one coupled to a hanging means 51, but only one, or three or more of them can be provided.

[0058] The hood 1 thus is hung from a wall, particularly the ceiling, by means of the hanging means 21 and 51.

[0059] The supporting frame 8, preferably a metal one, is a surround frame and it is completely separated from the hood body 2; the connection between the frame 8 and the hood body 2 is accomplished only by means of at least one sheet of transparent material (the lower sheet 91) of the panel 5.

[0060] Thus the sheet 91 is a real stressed element - that is a structural element - of the hood 1, meaning that, as mentioned above, the sheet becomes a part of the structure of the hood, and without it the hood structure would collapse.

[0061] The hood is hung on one side by the tie rods 53 that are secured to the frame 8, but it is kept in position by means of the sheet 91, that in turn rests on the end plate 24. By removing the sheet 91, the frame 8 would not remain in position.

[0062] Now with reference again to the transparent sheets, in the figures they comprise a second sheet 92 of transparent material facing the first sheet 91 and spaced therefrom and a third sheet 93 of transparent material interposed between the first sheet 91 and the second one 92.

[0063] The three sheets, in the plan view, substantially occupy all the space inside the surround defined by the metal frame 8, obviously leaving the window open where the intake opening 27 of the hood is placed, which conveys the fumes towards the chamber 31 for giving the hood its normal operation, it being in fluid communication with the extraction means 3.

[0064] It has to be noted that, it is possible to provide, housed in the intake opening 27, conventional filters, for example anti-grease metal filters or the like, known per se and no further reference is made thereto.

[0065] The intake opening 27 is peripherally defined by the end plate 24.

[0066] The connection of the three sheets 91, 92, 93 is as follows: the second upper sheet 92 rests both on the third sheet 93 and on a support 23 associated to the hood body 2.

[0067] The resting on the third sheet 93, in the example, occurs by means of spacing/centering elements 97 (see figs.4,5) preferably made of methacrylate, such to make the connection more elastic; in some variants not shown the spacing/centering elements 97 are omitted, therefore they have to be considered as optional.

[0068] The third sheet 93 is interposed between the first lower sheet 91 and the second upper sheet 92.

[0069] Even in this case, spacer elements 96 (see fig. 4) are optionally provided, preferably plastic inserts, for example made of methacrylate, extending only for a part in the plan view.

[0070] The spacer elements 96 and the spacing/centering elements 97, in the preferred solutions, do not extend for the whole plan extension of the panel 5,

such that between the three sheets (first, second and third sheets) air cavities are generated. Particularly such spacing elements are preferably placed only near the hood body 2 and/or the surround frame 8, such to strengthen the whole structure without making it too much heavy.

[0071] In the shown example the material of the first and second sheet is transparent glass, but it may be also a coloured glass, while the third sheet is made of plastic material, preferably methacrylate.

[0072] The presence of the first sheet 91, the stressed element of the structure of the hood 1, made of glass leads the structure to have high stiffness properties.

[0073] Such properties are particularly useful when considering the fastening of the hood body 2 to the sheet 91: in the shown embodiment such fastening occurs by means of the peripheral border 25 protruding from the end plate 24.

[0074] Such end plate 24 can be both as one piece with an outer case of the hood body and a separate piece, fastened in several manners to the hood body 2 (e.g. by screws, rivets or the like).

[0075] As it is seen in the annexed figures the border 25 has a limited extension with respect to the whole dimensions of the sheet 91 in the plan view: it results in a limited total weight, but also in the need for the sheet 91 to be rigid enough not to be elastically deformed (at least in the area engaging the border), such to avoid the two from possibly disengaging, which would inevitably cause the panel to fall down.

[0076] This need is optimally satisfied by using a glass for the sheet 91, since it has a high stiffness and it is able to keep it over time in the typical operating conditions of the hood 1 when installed in its operating space.

[0077] The glass sheet 91 moreover gives the hood 1 a pleasant aesthetical aspect and it allows the light generated from the inner light sources to be irradiated below and to illuminate the area below the hood in an optimal manner, with no shadows or reflections.

[0078] On the other hand also the use of the methacrylate for making the sheet 93 leads to many advantages.

[0079] Firstly it has a stiffness lower than the glass and it can slightly be elastically deformed in cases of small stresses: to this end it has to be noted (see fig.5) that the second hanging means 51 comprises an engagement bushing 52 for the tie rod 53; the bushing 52 is coupled just to the third sheet 93, that has such properties.

[0080] The fact of hanging a hood by means of tie rods makes it subjected - due to the elasticity of the steel cable of the tie rod - to oscillatory micro-movements generated for example by air streams or by the movement of the fan (if it is not perfectly balanced).

[0081] Therefore moreover it has to be noted that the coupling with the bushing is a quite delicate coupling on the whole, since all the weight is discharged on a very small area; therefore it is important to have available a structure that is able to elastically absorb the micro-oscillations without stressing too much such coupling.

[0082] The sheet made of methacrylate optimally satisfies these needs and moreover it provides a further advantage: it allows the light produced by the light sources such as LEDs to be irradiated in a diffuse and homogeneous manner.

[0083] Thus it is possible to use the methacrylate sheet for optimizing the illumination provided by the hood 1, such that it can be used a real light for the room wherein it is installed.

[0084] With reference briefly to the second hanging means 51 it has to be noted (see fig.5) that the hood 1 of the invention further comprises a strut 57, preferably a metal one, coupled with the frame 8.

[0085] Such strut 57 is designed to match with the third sheet 93, at least in its portion adjacent to that wherein the bushing 52 is placed.

[0086] Now as regards the sheet of methacrylate it has to be noted that the diffusion of the light therein occurs on the larger faces, while LEDs are placed such to project the light beam into the thickness of the sheet 93; together with the fact that the frame 8 is peripheral and it does not obstruct the larger faces of the panel 5, this provides an optimal illumination both upwardly and downwardly, without shadows or reflections.

[0087] As regards the LED light sources, they can be one, two or more strips of LEDs 81 arranged on one border of the frame 8.

[0088] From experimental tests it has been found that an optimal illumination is achieved even only with two strips of LEDs placed at the larger peripheral borders of the frame 8.

[0089] In order to further improve such illumination it is provided also optionally to provide the third sheet 93 with notches for the light diffusion, such as for example those that can be obtained by a laser technique, for irradiating the light beam towards the larger faces of the third sheet 93.

[0090] Suffice it to note only that, in a manner known per se, the hood 1 comprises also a control push-button panel and the electrical connections necessary for the operation thereof.

[0091] From the description shown above it is clear how the described hood allows the mentioned objects to be achieved by using a transparent panel as the structural element of the hood.

[0092] Therefore it is clear, for a person skilled in the art, that it is possible to make changes and variants to the solution described with reference to the annexed figures, without for this reason departing from the teaching of the present patent and from the scope of protection as defined by the annexed claims.

[0093] For example, among the several alternatives, it is possible to provide that instead of the flexible tie rods 53 (typically steel cables) that hang the hood from a wall (e.g. the ceiling) it is possible to use, in a completely similar manner, rigid bars or also posts that discharge the weight towards the bottom, that is towards the floor, therefore they being intended to support the illuminating

panel from below.

[0094] In this case the second hanging means, coupled to the illuminating panel, can be free from the bushing system described above; the post may be connected directly to the surround frame 8 and/or to the first sheet 91 by suitable connection means (for example by a seat for the post provided on the frame and/ or an enlarged head of the post coupled to the sheet 91, such to avoid bending and compressive stress on the glass).

Claims

1. An extractor hood (1) for kitchens and the like, comprising

- a hood body (2) intended to house extraction means (3),
- an illuminating panel (5) coupled to one end of the hood body (2) and in turn comprising a frame (8),
- a first sheet of transparent material (91), preferably glass, coupled to said frame (8) and at least one light source,

- hanging means (21,51) designed to keep the hood hung with respect to a hob, said hanging means comprising first hanging means fastened to the hood body (2) and second hanging means fastened to the illuminating panel (5),

characterized in that

the supporting frame (8) is a surround frame separated from said hood body (2) and coupled thereto by means of the sheet of transparent material (91),

in that the illuminating panel (5) further comprises

- a second sheet of transparent material (92) facing the first sheet (91) and spaced therefrom,
- a third sheet of transparent material (93) interposed between the first (91) and the second (92) sheets,

in that the light source comprises a plurality of LEDs (81) arranged on a peripheral border of said frame (8) and aligned with the third sheet (93) for projecting a light beam into the thickness of the third sheet (93),

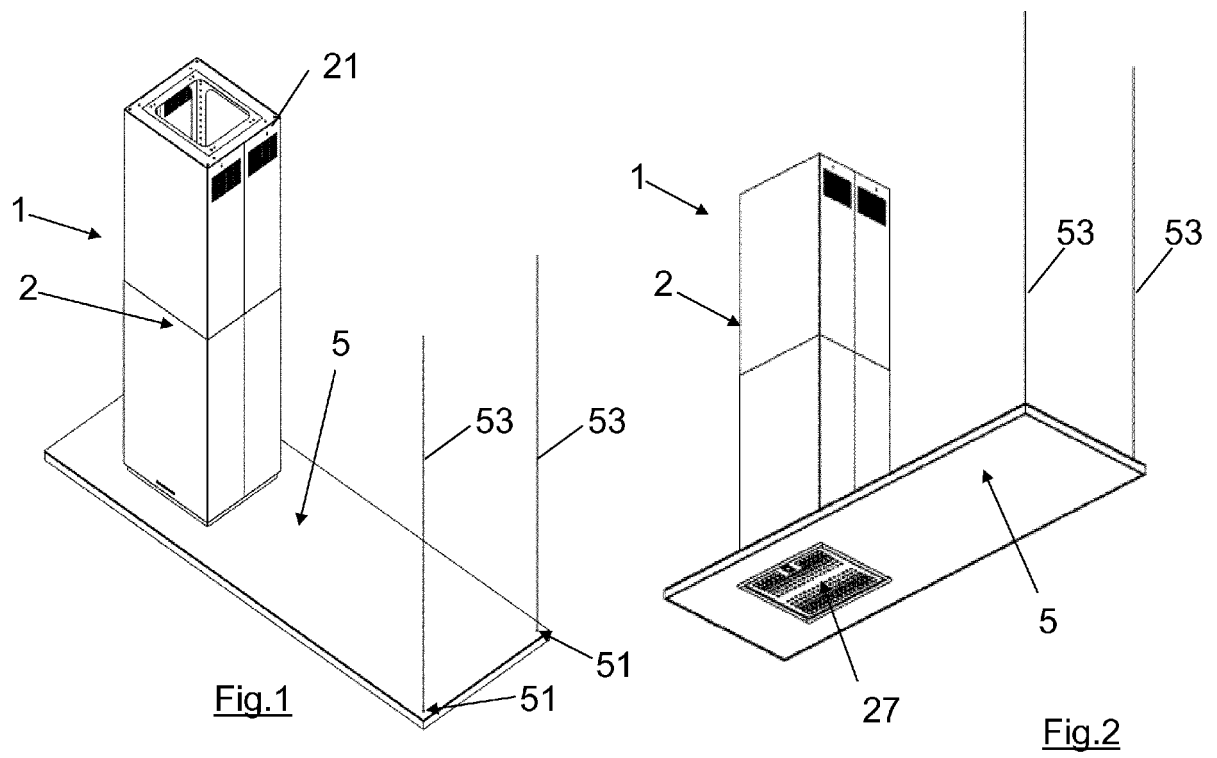
in that the hood (1) comprises an end plate (24) which defines at least in part an intake opening (27) in fluid communication with the extraction means (3), the end plate (24) being provided with a peripheral border (25) that protrudes towards the outside,

in that the first sheet (91) is coupled:

- to the hood body (2) by means of the peripheral border (25) of the end plate (24),
- to the frame (8), by means of at least one housing recess (82) provided on the frame (8) and intended to house a peripheral portion of the first

sheet (91).

2. A hood (1) according to claim 1, wherein the third sheet (93) has notches for the light diffusion, preferably made by a laser technique, for irradiating the light beam towards the larger faces of the third sheet (93).
3. A hood (1) according to claim 2, wherein the third sheet (93) is made of a plastic material, preferably methacrylate.
4. A hood (1) according to claim 3, wherein the first (91) and the second sheet (92) are made of glass.
5. A hood (1) according to any of the claims 1 to 4, wherein the second hanging means (51) comprises an engagement bushing (52) for a tie rod (53), said bushing (52) being coupled to said third sheet (93), and there being provided a strut (57) associated with the frame (8), and designed to match with the third sheet (93).
6. A hood (1) according to any claim 1 to 4, wherein the second hanging means (51) comprises means for coupling with a post adapted to support from below the illuminating panel (5), said coupling means being associated alternately or in combination with the frame (8) or with the first sheet (91).
7. A hood (1) according to one or more of claims 1 to 6, in which the first (91), the third (93) and the second (92) sheets are separated at least in part by spacer elements (96) and centering/ spacing elements (97) respectively which preferably extend for only part of the entire plan extension of the illuminating panel (5), so as to generate air cavities between the first (91) and the third (93) and between the third (93) and the second (92) sheets respectively.



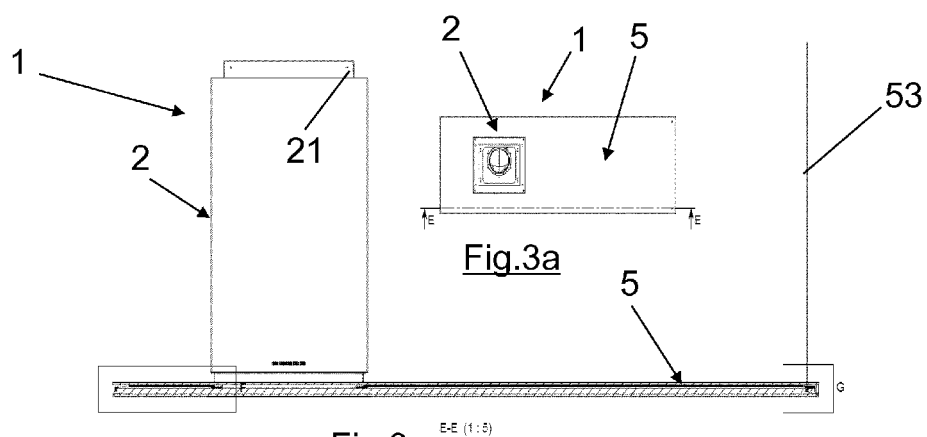
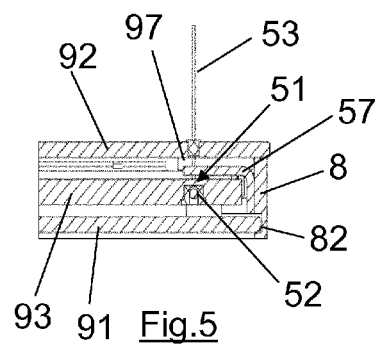
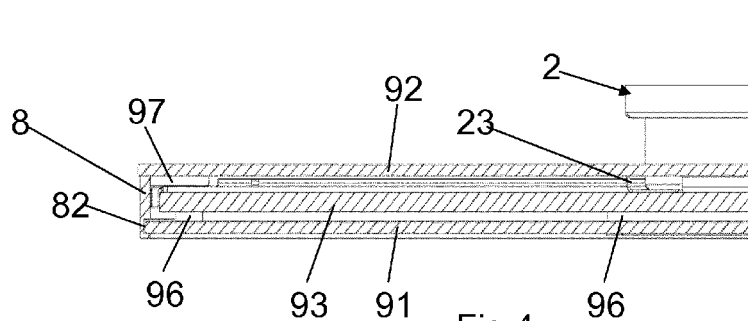
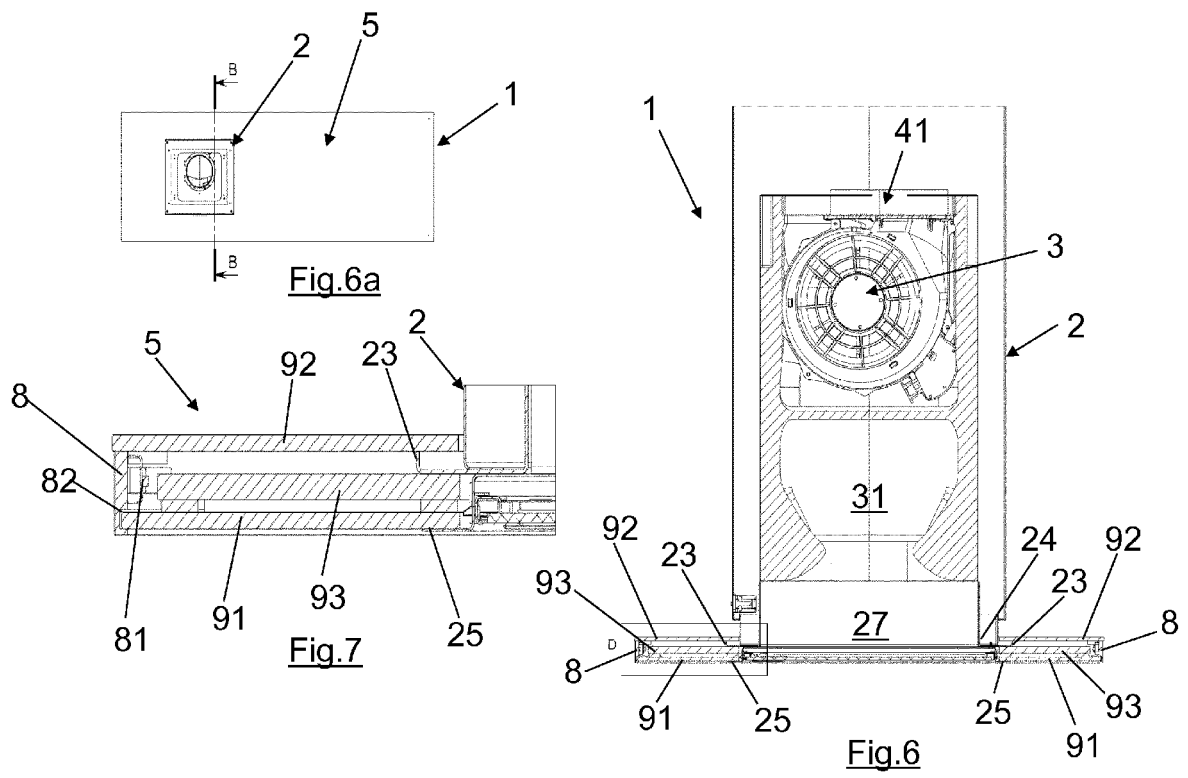


Fig.3a







EUROPEAN SEARCH REPORT

Application Number
EP 15 24 8022

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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 31 July 2015	Examiner Moreno Rey, Marcos
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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