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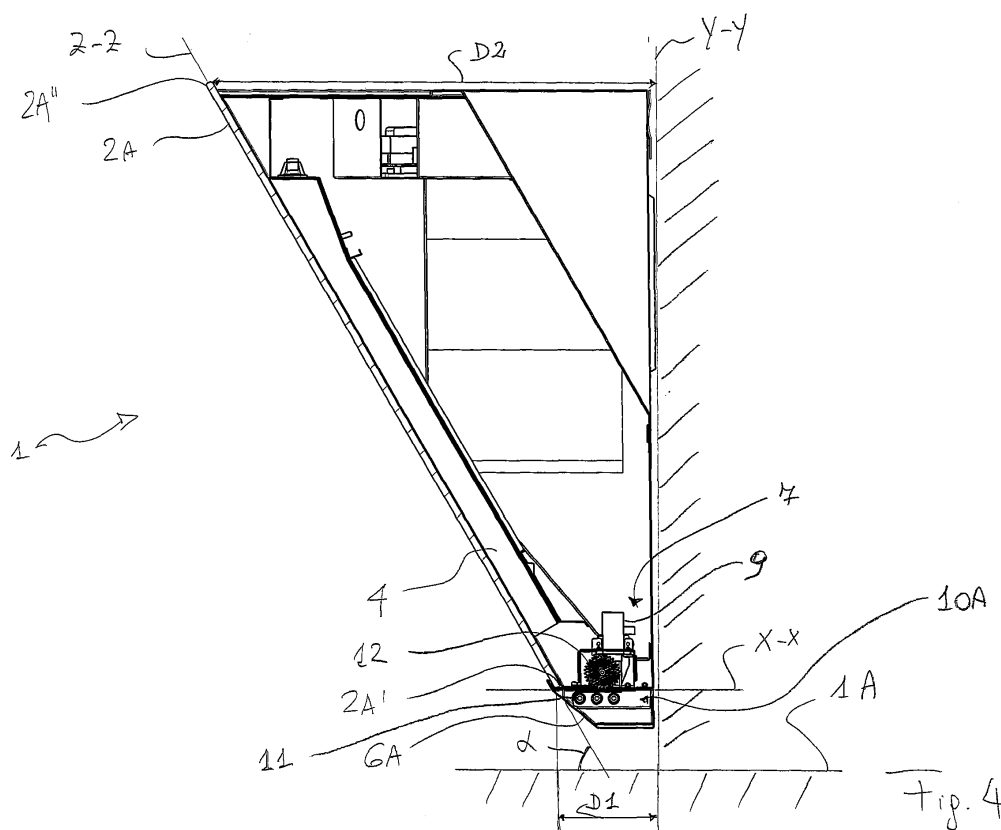
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(54) **Household extractor hood provided with a fluid collection container**

(57) The present invention refers to a hood with vertical installation having a forced extraction unit (3) for extracting the aeriform elements, fluid collection container (6) for collecting the dripping condensation fluids. The characteristic is that of comprising electrical actuation

means (7), operatively connected with a fluid collection container (6), for moving the fluid collection container (6) between an idle position and an operating position with a predetermined delay period (T1, T2) with respect to the activation/deactivation of said forced extraction unit (3).



Description

TECHNICAL FIELD

[0001] The present invention refers to a household extractor hood provided with a fluid collection container, in particular a hood with vertical installation, according to the preamble of claim 1.

PRIOR ART

[0002] It is known to provide motorised hoods for cooktops of households capable of suctioning fumes and vapours, produced during the cooking of food for filtering such aeriform elements.

[0003] Through the extractor hoods, the filtered aeriform elements are conveyed outside the household through a duct connected to a special flue, while with the use of filtering hoods the filtered aeriform elements are reintroduced into the household.

[0004] Among the various types of extractor hoods in the market there are known the so-called hoods with vertical installation, i.e. hoods in which the intake for extracting the aeriform elements is obtained in a front side which extends along a transverse direction with respect to a vertical axis whose axis, for example, extends perpendicularly to the fire surface.

[0005] It should be observed that the inclination of the front side allows the extracting opening to be faced towards the household so as not to be directly facing the fire surface.

[0006] In such hoods with vertical installation, following the activation of the extracting unit (i.e. once the suctioning hood is supplied electrically), there is generated a flow of aeriform elements which touch the external surface of the front side.

[0007] Due to the temperature difference between the temperature of flow of aeriform elements and that of the external surface of the front side condensate is created on such front side.

[0008] The condensate comprises a mixture of water and oils (as residues of cooking food) as well as dust which is possibly deposited on the surface of the front side.

[0009] Such condensate, due to gravity and given that the front side is inclined, may slide along the side up to dripping on the cooktop, in which the foods are cooked.

[0010] Thus, such dripping implies obvious and imaginable negative effects.

[0011] In order to overcome such problem in the hoods, not with vertical installation, it was proposed to provide a container (trays or drip collectors) for collecting dripping condensation fluids, which is arranged in proximity of the perimeter of the extracting section for intercepting the condensate drops.

[0012] The container adopted in such hoods however, it cannot be applied indiscriminately in the hoods with vertical installation, in that it would receive only a minimal

part of the condensate and, especially, it would ruin the extract flow, thus deteriorating the extracting performance of the hood.

[0013] Thus, the latter problem is even more felt proportionally to the size of the container.

[0014] It should be observed that as regards this the operations of cleaning the container cannot be that frequent to be a nuisance for the user and thus the volume of the container must be sufficient to contain a given amount of condensate, whose production strongly depends on the type of cooking.

[0015] Actually, given the configuration of the hood with vertical installation, the presence of a voluminous container, arranged in proximity of the opening, would represent an obstacle to the extracting of the aeriform elements.

[0016] Such obstacle would be overcome either by increasing the power of the extracting unit and thus increasing the energy consumption and the generated sound or by limiting the volume of the container at a value so low to require frequent cleaning operations.

[0017] Document CN 202938386U describes a vertical hood having a condensate fluid collection container. Such container is mobile from the idle position to the operating position following a manual actuation performed by the user.

[0018] The configuration problem illustrated in document CN 202938386U lies in the fact that by the time the user notices the formation of the condensate on the front panel of the hood some drops may have actually dripped on the food being cooked.

[0019] Thus the manual actuation of the collection container does not guarantee that there is no contamination of the food being prepared.

[0020] Another example present in the state of the art is the one shown in document CN 202125975U. In particular described therein is a vertical hood in which instead of moving the container the front panel is made mobile. Such front panel, upon reaching the operating position thereof, projects with respect to the shape of the hood while the container for the collection of the condensate remains fixed.

[0021] The problem of such configuration lies in that the condensate drops may drop outside the collection container contaminating the underlying food being prepared.

[0022] Thus, there arises the need, by the manufacturers of hoods, to provide hoods with vertical installation, that are capable of overcoming or at least reducing the disadvantages described above.

SUMMARY OF THE INVENTION

[0023] According to the present invention, the indicated technical task and the specified objects are attained through the household extractor hood according to claim 1.

[0024] The present invention allows collecting the con-

densate drops and considerably reducing loss of performance due to the presence of the fluid collection container.

BRIEF DESCRIPTION OF THE DRAWINGS

[0025] Further characteristics and advantages of the present invention shall be more apparent from the indicative, and thus non-limiting, description of a preferred but non-exclusive embodiment of the household extractor hood, as illustrated in the attached drawings, wherein:

- figure 1 shows a perspective view of a household extractor hood in which the fluid collection container is in a first operating position, or idle, according to the present invention;
- figure 2 shows a perspective view of the hood of figure 1 in which the fluid collection container is in a second operating position, or extracted, according to the present invention;
- figure 3 a sectional view of the hood of figure 2 along line III-III;
- figure 4 shows a sectional lateral view of figure 1;
- figure 5 shows a sectional lateral view of figure 2;
- figure 6 shows a pair of explanation charts of the operation of the hood according to the present invention.

DETAILED DESCRIPTION

[0026] Even where not explicitly indicated, the single characteristics described with reference to the specific embodiments shall be deemed to be accessories and/or interchangeable with other characteristics, described with reference to other embodiments.

[0027] In addition, the reference numbers indicated in the present description and in the attached claims shall be deemed preceded by the term "approximately" and they shall be deemed with a tolerance range of $\pm 15\%$.

[0028] With reference to the attached figures, a forced extractor hood, of the type with vertical installation, which can be installed in households such as for example a kitchen is indicated with 1.

[0029] The hood 1 is preferably arranged at a predetermined distance, for example equivalent to or greater than 55 cm, from a fire surface 1A, which are required for preparing hot dishes.

[0030] Hereinafter, the term hood with vertical installation, is used to indicate a hood comprising a front side, provided with an opening for extracting aeriform elements, such front side having a transverse direction of extension Z-Z with respect to a vertical axis Y-Y such as for example an axis perpendicular to the fire surface 1A.

[0031] In particular the front side has an inclination angle α typically greater than 60° .

[0032] It should be observed that the inclination α of the front side 2A is such that the opening is faced towards the household and not directly facing the fire surface 1A.

[0033] In particular, even with reference to the attached figures, the inclination angle α is the angle comprised between the fire surface 1A and the direction of extension Z-Z, hypothesising the vertical axis Y-Y as the axis of the ordinates of a cartesian plane and the fire surface 1A as the axis of the abscises of such cartesian plane.

[0034] With reference to the specific embodiment illustrated in the figures, the inclination allows the front side 2A of the hood 1 to have the front end terminal portion 2A' at a distance D1, with respect to a vertical wall (identified as the vertical axis Y-Y), which serves as support for the hood, lesser with respect to the distance D2 existing between upper end terminal portion 2A" of such front side 2A from the vertical wall.

[0035] The hood 1 with vertical installation comprises:

- a containment framework 2 which identifies a front side 2A, which extends along a transverse direction Z-Z with respect to a vertical axis Y-Y, such as for example an axis perpendicular to the fire surface 1A, where there is obtained an opening 4 through which the fumes are extracted;
- a second opening 5 obtained in the containment framework 2.

[0036] The containment framework 2 of the hood 1 encloses a forced extraction unit 3 having a extracting section 3A and an outlet section 3B, in which the first opening 4 is placed in fluid communication with the extracting section 3A when the forced extraction unit 3 is activated and the outlet section 3B is in fluid communication with the second opening 5 to eject the aeriform elements.

[0037] The containment framework 2 comprises one or more filters (not illustrated) for filtering the aeriform elements which traverse the extracting section 3A. Such filters are interposed between the opening 4 and the extracting section 3A of the extracting unit 3.

[0038] The hood 1, with the aim of collecting the condensate drops which are formed on the surface of the front side 2A, due to the temperature difference between the fumes and the surface of the front side 2A, comprises a fluid collection container (or tray) 6 for collecting the condensation fluids which drip along the inclined front side 2A.

[0039] Besides being airtight, such container 6 is positioned, according to the specific embodiment shown in the attached figures, in proximity of the lower terminal end 2A' of the front side 2A.

[0040] In particular the front side 2A has a predetermined width L, height H and thickness S and, preferably, the fluid collection container 6 extends along the entire width L of the front side 2A.

[0041] This guarantees that the volume of the container 6 is sufficient so as not to require frequent cleaning operations.

[0042] Advantageously the hood 1 comprises electrical actuation means 7 which are operatively connected with the fluid collection container (6) as described more

in detail hereinafter. Advantageously, the electrical actuation means 7 are configured to move the fluid collection container 6, between the idle position and the operating position or vice versa, regardless of the activation or deactivation of the forced extraction unit (3).

[0043] In particular the container 6 is mobile with respect to the containment framework 2 for passing between an idle position (figures 1 and 4), in which the container 6 is retracted with respect to the containment framework 2, substantially concealable to the external, to an operating position (figures 2, 3 and 5) in which the container 6 is at least partly extracted with respect to the containment framework 2 for collecting the aforementioned dripping condensation fluids.

[0044] In particular, as observable in the attached figures, in the case where the container 6 is retracted with respect to the containment framework 2 it occurs that such container 6 is, preferably, contained in the volume defined by the framework 2 while, in cases where the container 6 is at least partly extracted with respect to the containment framework 2, it occurs that such container 6 surpasses the lower terminal end 2A' of the front side 2A.

[0045] The mobility of the container 6 also allows concealing, from the sight of the user, the condensate that progressively accumulates in the container when such container 6 is in the idle position.

[0046] In addition, it should be observed, also with reference to the attached figures, that a front wall 6A of the collection container 6, i.e. the wall facing the container when the latter is in the idle position, is shaped so as to have a direction of extension substantially parallel to the direction of extension Z-Z of the front side 2A.

[0047] This facilitates the extraction of the aeriform elements through the opening 4 both in idle and operating condition of the container 6, thus preventing the overdimensioning of the extracting unit 3.

[0048] The hood 1 comprises electrical supply means (not shown in the figures) which are suitably configured for electrically supplying both the extracting unit 3 and the electrical actuation means 7.

[0049] According to an aspect, the electrical actuation means 7 are configured to control the actuation of the fluid collection container 6, between the idle position and operating position or vice versa, independently with respect to the activation of the forced extraction unit 3.

[0050] In other words, they may be activated simultaneously or, preferably, with delay with respect to the activation/deactivation of the forced extraction unit 3.

[0051] In the preferred embodiment, the passage of the fluid collection container 6 from the idle position (figures 1 and 4) to the operating position (figures 2, 3 and 5) occurs, automatically and without the help any intervention from the user, with a predetermined delay period of time T1, for example variable between 2 and 10 minutes with respect to the instant of activation of the extracting unit 3.

[0052] Similarly, the passage from the operating posi-

tion (figures 2, 3 and 5) to the idle position (figures 1 and 4) occurs, automatically and without the help of any intervention of the user, after a predetermined period of time T2, for example variable between 2 and 10 minutes, from the instant of deactivation (or switching off) of the extracting unit 3.

[0053] In other words, once the user activates the forced extraction unit 3 of the hood 1, for extracting the fumes generated by the cooking of the foods, the electrical actuation means 7 move, after a given period of time T1 has elapsed, the container 6 to pass from the idle position to the operating position.

[0054] Analogously, in the case where the user switches off the forced extraction unit 3 of the hood 1, the electrical actuation means 7 move, after a given period of time T2, has elapsed, the container 6 to pass from the operating position to the idle position.

[0055] The delayed movement of the container 6 with respect to the activation/deactivation of the forced extraction unit 3 guarantees that:

- the extraction of the container 6 occurs only when there actually arises the need to collect the condensate drops, given that the latter form on the surface of the front side at a considerable amount after a given period of activation of the extracting unit 3, so as to limit the turbulence to the flow of extracted air and thus not deteriorate the performance of the hood 1;
- the retraction of the container 6 occurs when there is no longer the risk that the condensate drops may drip on the cooktop 1A.

[0056] In particular, Figure 6 illustrates two charts which identify the characteristic according to which the electrical actuation means 7 are activated with a delay T1, T2 with respect to the activation/deactivation of the forced extraction unit 3.

[0057] Actually, chart 13 refers to the activation/switching off of the forced extraction unit 3 while chart 14 refers to the activation/switching off of the electrical actuation means 7.

[0058] In particular, it should be observed that, once the period T1 has elapsed from the activation of the forced extraction unit 3, the electrical actuation means 7 are activated to extract the container 6 in the operating position thereof and, once the period T2 has elapsed from the switching off of the forced ventilation unit 3, the electrical actuation means 7 are activated for retracting the container 6 in the idle position thereof.

[0059] It should be observed that the periods T1 and T2 may coincide in their duration.

[0060] For such purpose, the electrical actuation means 7 comprise actuator means 8 and electrical actuation driving means 9, where the actuator means 8 are operatively connected with the electrical actuation driving means 9 which, through a support structure 10, coupled with the driving means 9, are capable of supporting in

translation the fluid collection container 6 from the idle position to the operating position and/or vice versa with respect to the containment framework 2.

[0061] It should be observed that the electrical actuation driving means 9 move the container 6, through the support structure 10 along the direction X-X, for a pre-determined distance or time required to attain the operating position, once they are controlled by the actuation means 8.

[0062] For example the electrical actuation driving means 9 comprise an electrical motor which is in signal communication with the actuator means 8 and it is mechanically coupled with the support structure 10 to transfer motion to the fluid collection container 6.

[0063] It should be observed that it is actually the actuator means 8 which can be provided for actuating the electrical motor for activating it independently from the activation/deactivation of the extracting unit 3.

[0064] In particular, the actuator means 8 comprise a thermo-electrical actuator which has the characteristic of being able to control the electrical motor so that the fluid collection container 6 passes from the idle position to the operating position or vice versa depending on the pre-determined tempi T1 and T2.

[0065] In an embodiment, the support structure 10 comprises:

- a guide element 11 associated to the containment framework 2 and extended along said direction of movement of the drawer X-X;
- a series of gears 12, coupled to such guide element 11, which takes motion from the power output of the electrical motor 9.

[0066] According to an embodiment, the guide element 11 is provided by a rack and pinion.

[0067] Alternatively the guide element 11 is provided by a worm screw.

[0068] If cleaning operations on the container 6 are required, it will be sufficient to remove it entirely lengthwise so as to free it from the support structure 10.

[0069] Obviously, the configurations described above may be subjected to numerous modifications and variants by a man skilled in the art with the aim of meeting contingent and specific requirements.

[0070] Such variants and modifications fall within the scope of protection of the invention as defined by the claims that follow.

Claims

1. A household extractor hood comprising:

- a containment framework (2) which identifies a front side (2A), which extends along a transverse direction (Z-Z) with respect to a vertical axis (Y-Y) which is perpendicular to a fire surface

(1A);

- a forced extraction unit (3) having a extracting section (3A) and an outlet section (3B);
- a first opening (4), obtained in said front side (2A), through which the aeriform elements are extracted, said first opening (4) being placed in fluid communication with said extracting section (3A) when said forced extraction unit (3) is activated, said first opening (4) being faced towards the household and it is not directly facing said fire surface (1A);
- a second opening (5), obtained in said containment framework (2), placed in fluid communication with said outlet section (3B) to eject the fumes into the environment outside the containment framework (2),
- a fluid collection container (6) for collecting the dripping condensation fluids along said front side (2), said fluid collection container (6) being mobile with respect to said containment framework (2) for passing between an idle position, in which it is retracted with respect to said containment framework (2), substantially concealable to the external, to an operating position in which said fluid collection container (6) is at least partly extracted from said containment framework (2) for collecting said dripping condensation fluids, or vice versa,

characterised in that it comprises:

- electrical actuation means (7), operatively connected with said fluid collection container (6) and configured to move said fluid collection container (6) between the said idle position and said operating position or vice versa with a predetermined delay period (T1, T2) with respect to the activation/deactivation of said forced extraction unit (3).

2. The hood for filtering aeriform elements according to claim 1, wherein said electrical actuation means (7) comprise:

- actuator means (8) and electrical actuation driving means (9), said actuator means (8) being operatively connected with said electrical actuation driving means (9) and
- a support structure (10) coupled with said electrical actuation driving means (9) for supporting the fluid collection container (6) in translation from the idle position to the operating position and/or vice versa with respect to the containment framework (2).

3. The hood for filtering aeriform elements according to claim 2, wherein said actuator means (8) comprise a thermo-electrical actuator operatively connected with said electrical actuation driving means (9).

4. The hood for filtering aeriform elements according to any one of the preceding claims, wherein said electrical actuation driving means (9) comprise an electrical motor in signal communication with said actuator means (8) and they are mechanically coupled with said support structure (10) for transferring motion to said fluid collection container (6). 5
5. The hood for filtering aeriform elements according to claim 2, wherein said support structure (10) comprises a fixed guide element (11) and associated to said containment framework (2) and extended along said direction of movement of the drawer (X-X). 10
6. The hood for filtering aeriform elements according to claim 5, wherein said mechanical coupling between said electrical motor (9) and said fixed guide element (11) comprises a rack and pinion and a series of gears (12). 15
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7. The hood for filtering aeriform elements according to any one of the preceding claims, wherein said front side (2A) has a predetermined width, height and thickness, said fluid collection container (6) extending at least partly over said predetermined width. 25
8. The hood for filtering aeriform elements according to any one of the preceding claims, comprises electrical supply means configured for electrically supplying said forced extracting unit (3) and said electrical actuation means (7). 30

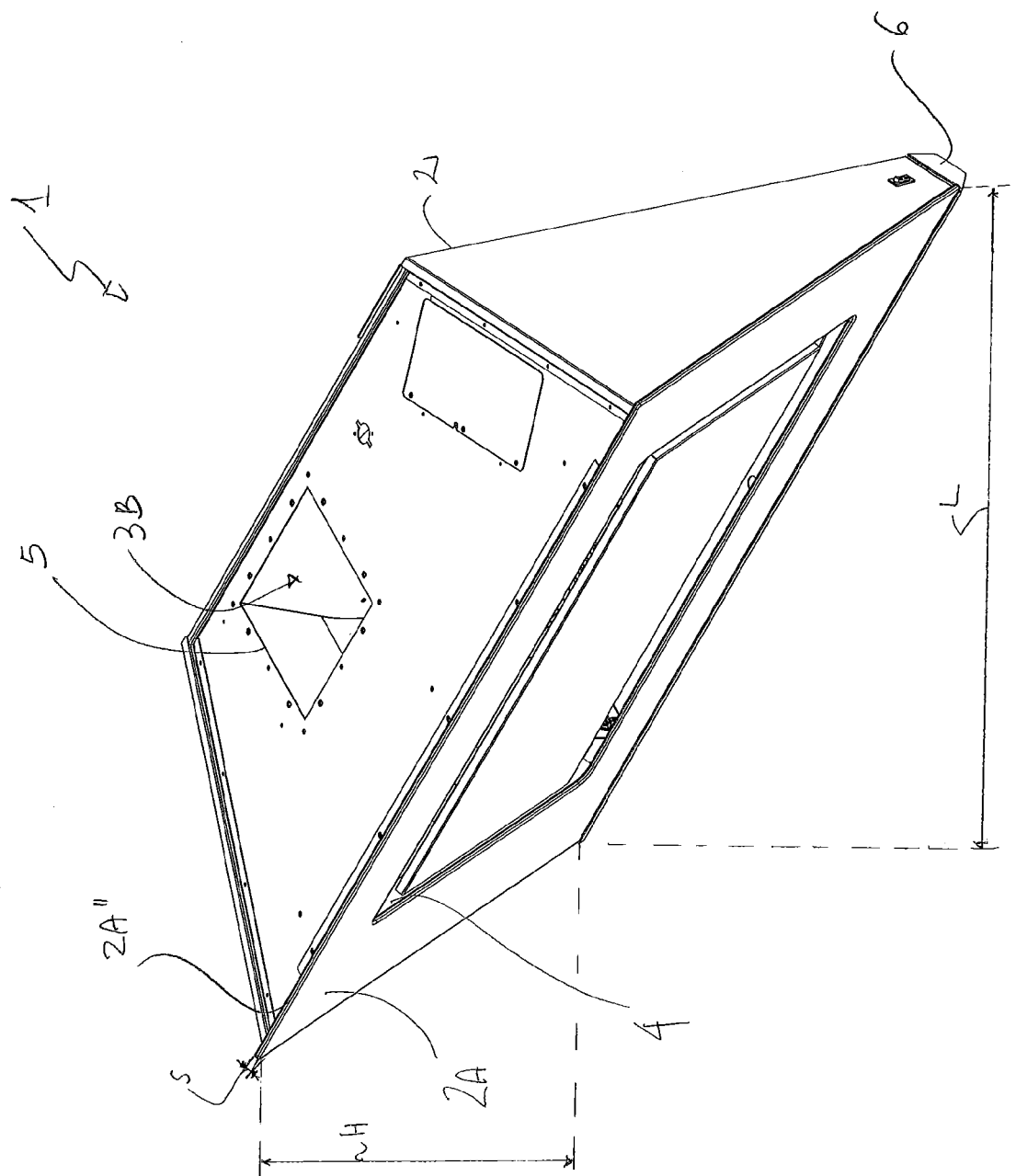
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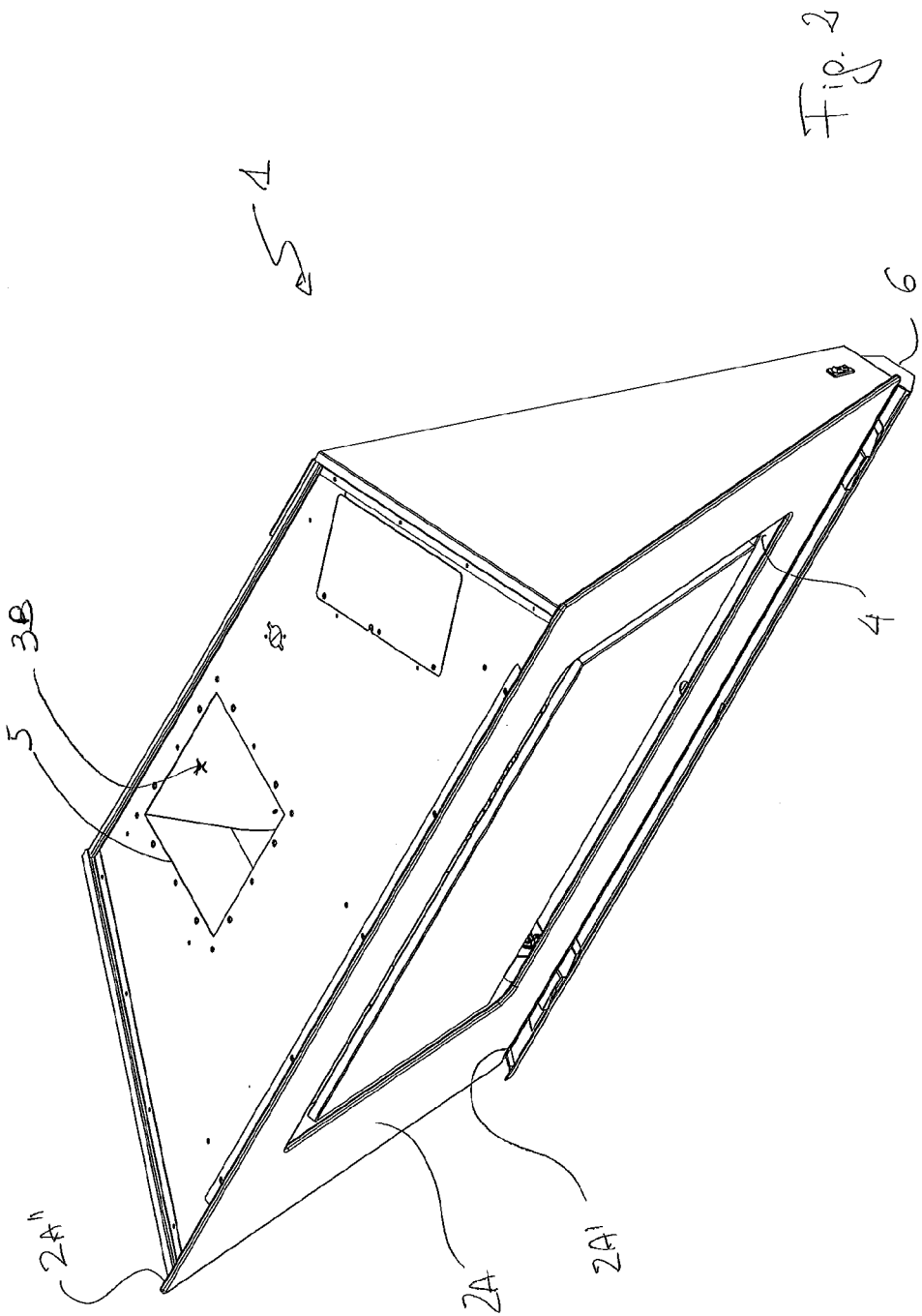
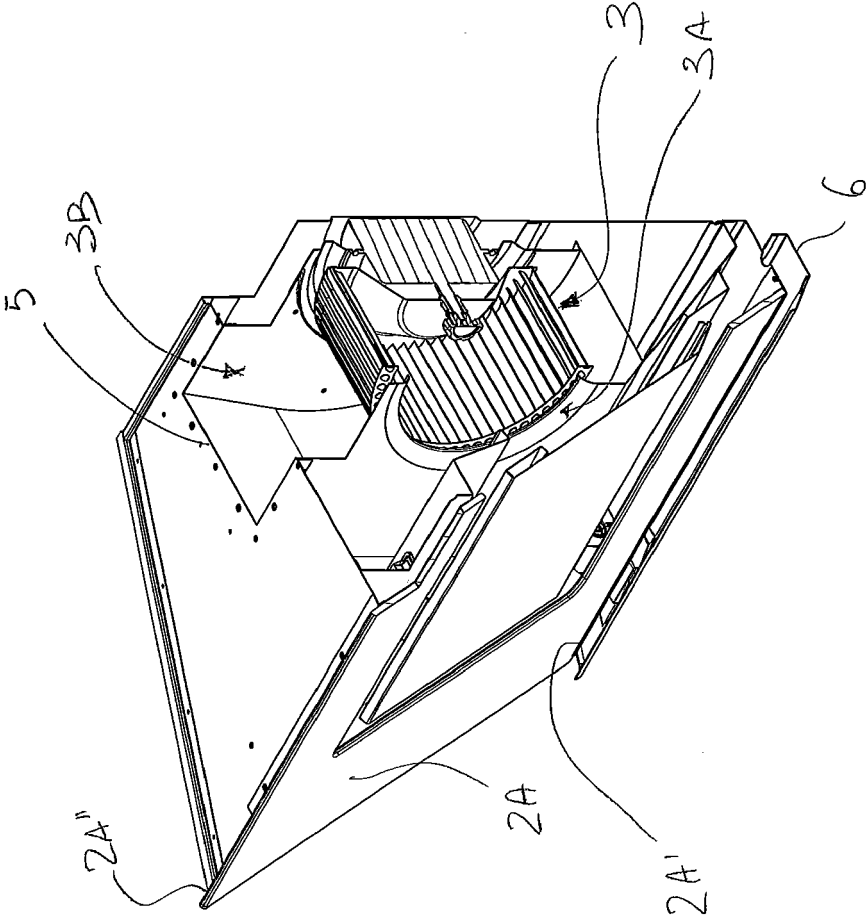
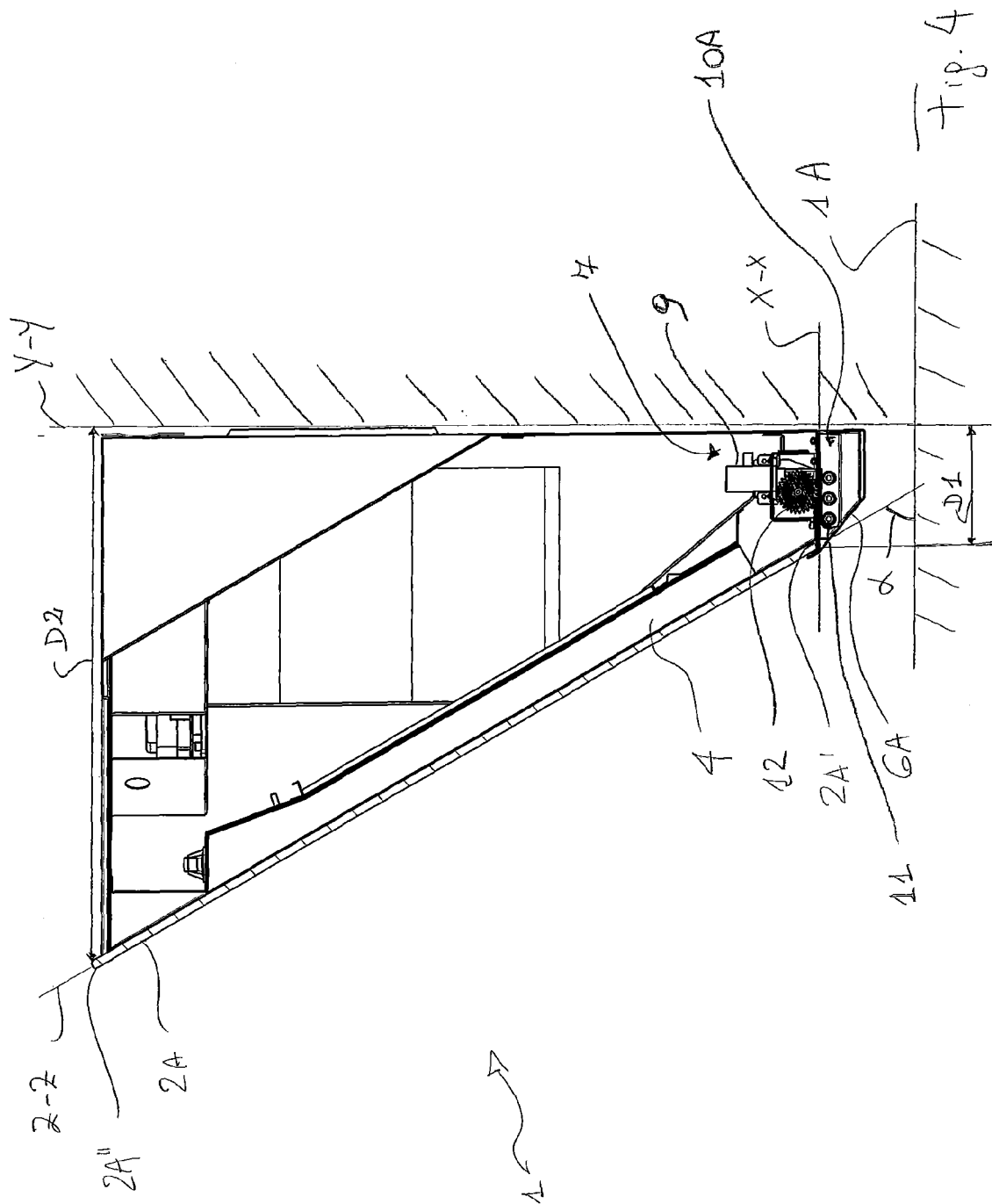


Fig. 2

Fig. 3





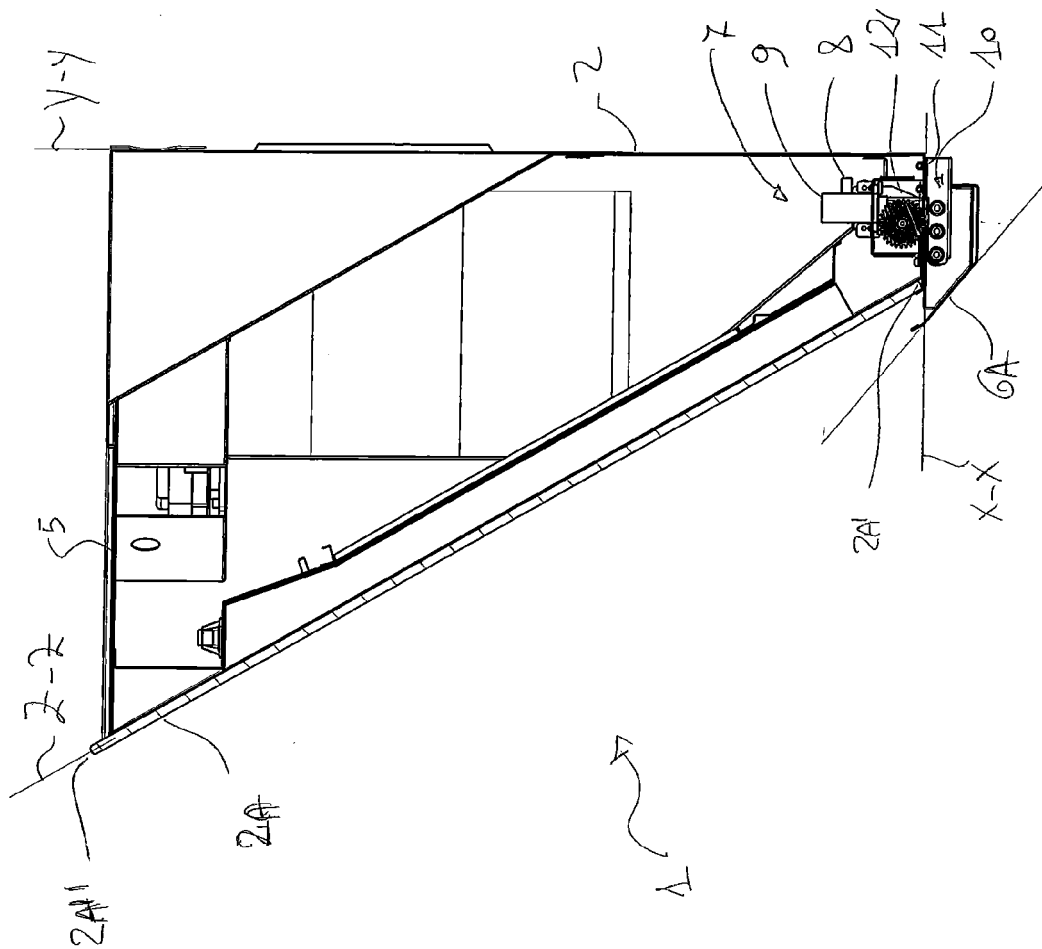


Fig. 5

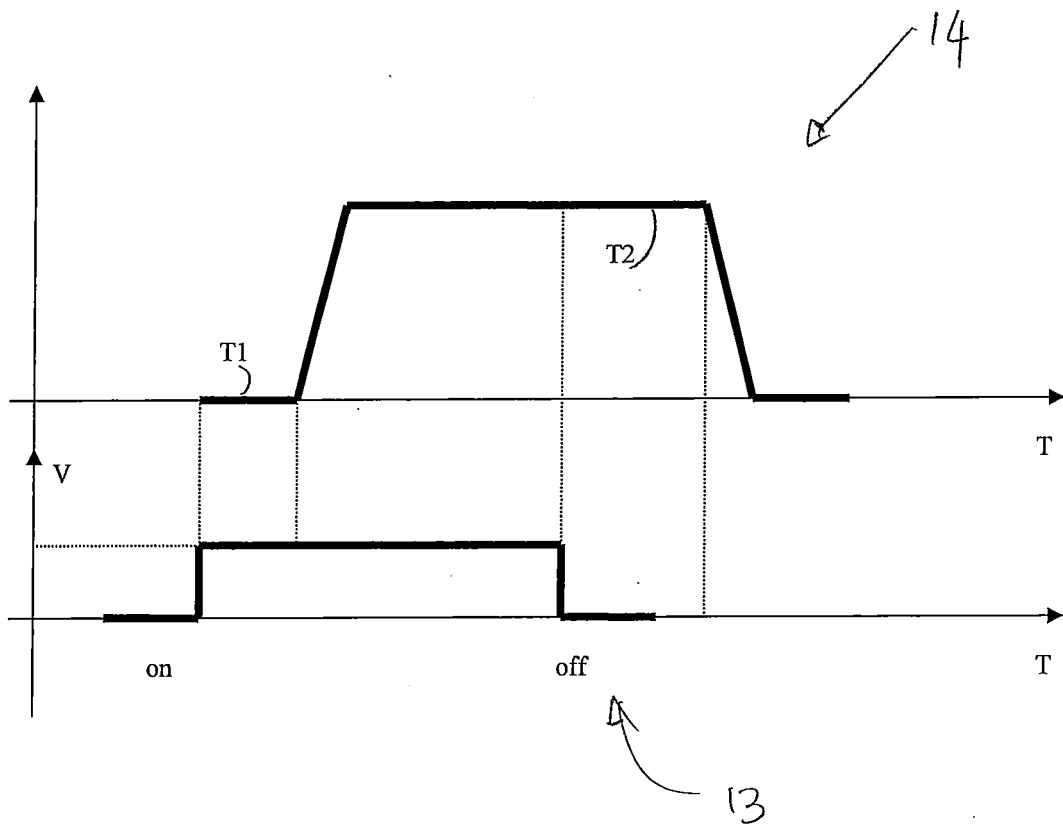


Fig. 6



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 Application Number
EP 14 17 4430

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Place of search The Hague		Date of completion of the search 10 November 2014	Examiner Verdoodt, Luk
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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