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(54) **ASSEMBLY HOOD AND CABINET**

(57) The present invention concerns a hood (2) and cabinet (3) assembly (1) comprising a motorised hood (2) having a containing framework (4); a kitchen cabinet (3) that extends along a predefined direction of vertical extension (Y-Y) and having at least two side walls (11, 12) and a rear wall (13) to define a volume (V), said side walls (11, 12) and rear (13) walls extending parallel with respect to said predefined direction of vertical extension (Y-Y), said side walls (11, 12) being opposite one another; said motorised hood (2) being housed in said volume (V) of said cabinet (3). The assembly (1) has the characteristic of comprising a first pair of engaging elements (20) arranged on a respective side wall (11, 12) of said cabinet (3) and projecting from each respective side wall (11, 12) towards the opposite side wall (11, 12), said first pair of engaging elements (20) defining a rotation axis (X-X) that extends perpendicular with respect to said direction of vertical extension (Y-Y); a first pair of seats (30) provided in said containing framework (4) configured for fitting a respective engaging element of first pair of engaging elements (20) so as to allow a rotation of said containing framework (4) about said rotation axis (X-X) during a step of insertion/extraction of said hood (2) in said volume (V) of said cabinet (3); a second pair of engaging elements (40) arranged on said containing framework (4) so that each element of said pair of engaging elements (40) faces a respective side wall (11, 12) of said cabinet (3), when said motorised hood is received in said volume (V); a second pair of seats (50) arranged on a respective side wall (11, 12) of said cabinet (3) configured for fitting a respective engaging element of second pair of engaging elements (20) so as to pass from a first operative configuration in which said hood (2) is firmly constrained to said cabinet to a second operative con-

figuration in which said hood (2) is free to rotate about said rotation axis (X-X).

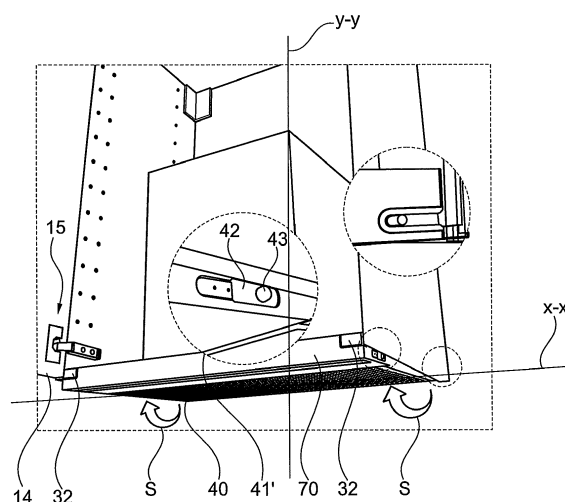


Fig. 3

Description

Technical field

[0001] The present invention refers to a hood and cabinet assembly, in accordance with the preamble of claim 1.

[0002] Particularly, but not exclusively, the present invention refers to an assembly of a motorised hood of the suction or filtering type for homes and of a modular kitchen cabinet that incorporates such a hood.

Prior art of the invention

[0003] Motorised hoods, of the suction or filtering type, which can be built-in or which can be incorporated or housed inside a kitchen cabinet are known.

[0004] Such a type of installation can provide that the hood remains completely concealed from the user's view until he/she needs to activate the hood after opening a door forming part of the cabinet itself.

[0005] In order to allow the installation of such a hood, it is usually provided for the hood to be constrained, for example through screws and/or dowels, to the side walls of the cabinet and/or with the bottom wall of the cabinet.

[0006] For this purpose, the framework of the hood provides for suitable slots or seats through which the screws can be arranged, which engage, for example, in the side walls of the cabinet.

[0007] In particular, in order to allow the installation operations of the hood in the cabinet, it is necessary for at least two people to be present simultaneously, one of which has the task of supporting the hood and, meanwhile, the other has the task of constraining it, for example, to the side walls of the cabinet.

[0008] This clearly results in a serious drawback in all cases in which the user wishes to carry out an installation by himself/herself, i.e. without the help of other people, or in all cases in which the installation is carried out by specialised professionals/companies.

[0009] In particular, in this last case, it is clear that the use of a greater number of people for the installation of the hood in the cabinet results in necessarily higher costs for the end user.

[0010] Examples of such hoods are described in documents DE 19906322, DE 29809744, US 4,011803, US 2008/302352, US 3,372,632 and US 201/352151.

SUMMARY OF THE INVENTION

[0011] In this context, the technical task forming the basis of the present invention is to propose a hood and cabinet assembly that overcomes the aforementioned drawbacks of the prior art.

[0012] In particular, a purpose of the present invention is to provide a hood and cabinet assembly capable of allowing a single user to install the hood in the cabinet space.

[0013] A further purpose of the present invention is to use the classical hinges that allow a rotation (or roto-translation) instead of the hinges provided with pistons or complex mechanical mechanisms.

[0014] The outlined technical task and the specified purposes are substantially achieved by a cabinet and hood assembly comprising the technical characteristics outlined in one or more of the attached claims.

Advantages

[0015] In particular, thanks to the cabinet and hood assembly in accordance with the present invention it is possible to install and extract a hood in the space of a cabinet with greater ease without it being necessary for two users to operate.

[0016] Moreover, thanks to the cabinet and hood assembly in accordance with the present invention it is possible to keep the classical hinges of kitchen cabinets whilst using a hood that exploits the entire depth of the cabinet.

LIST OF FIGURES

[0017] Further characteristics and advantages of the present invention will become clearer from the indicative, and therefore not limiting, description of a preferred but not exclusive embodiment of a hood and cabinet assembly, as illustrated in the attached drawings, in which:

- Figure 1 is a front view of the hood and cabinet assembly in accordance with the present invention;
- Figure 2 is a perspective view of the assembly of Figure 1, in which the hood is partially inserted in the space of the cabinet and with an enlargement of a first detail;
- Figure 3 is a perspective view of the assembly of Figure 1, in which the hood is partially inserted in the space of the cabinet and with an enlargement of the first and of a second detail;
- Figure 4 is a front perspective view of the assembly of Figure 1, when the hood is inserted in the space of the cabinet with the enlargement of the second detail of Figure 3;
- Figure 5 is a perspective view of a side portion of the hood and of some components necessary for the insertion/extraction of the hood from the space of the cabinet in accordance with the present invention.

DETAILED DESCRIPTION

[0018] Even if not explicitly highlighted, the single characteristics described in reference to specific embodiments should be considered as accessory and/or interchangeable with other characteristics, described in reference to other embodiments.

[0019] With reference to the attached figures, reference numeral 1 indicates a hood 2 and cabinet 3 assem-

bly, preferably a motorised hood 2 of the suction or filtering type and a kitchen cabinet 3 of the modular type.

[0020] The hood 2 in the attached Figures is for example a hood commonly known as inverted-T hood. Hereinafter, reference will be made to such a specific form of the hood without however limiting the hood 2 and cabinet 3 assembly to the aforementioned type of inverted-T hood.

[0021] The hood 2 comprises a containing framework 4, preferably made of metallic material with possible decorative parts. The term "containing framework", in the context of the present invention, means a structural element intended to contain devices suitable for the operation of the hood including shaped elements and/or coating panels that give the hood a particular aesthetic shape.

[0022] The containing framework 2 comprises an upper wall 5, from which a chimney for expelling fumes 6 departs, a bottom 7 opposite to the upper wall 5, through which the fumes arising during the preparation of foods are suctioned, two side walls 8, 9 opposite to one another laterally joining the upper wall 5 and the bottom 7 as well as a front wall 10 frontally joining the upper wall 5 and the bottom 7 itself.

[0023] The cabinet 3 extends along a predefined direction of vertical extension Y-Y and has at least two side walls (or panels) 11, 12 and a rear wall 13 to define a volume V. Such side walls 11, 12 and the rear wall 13 extend parallel to the predefined direction of vertical extension Y-Y. In particular, the side walls 11, 12 are opposite and face one another.

[0024] The containing framework 4 is intended to be fixed to the side walls 11, 12 in an area arranged above a cooking surface having one or more burners (not illustrated in the Figures).

[0025] Concerning this, the terms "vertical direction" or "transversal direction", refer to a configuration in which the hood 2 is installed, therefore the term vertical direction is meant to indicate a direction substantially perpendicular to the cooking surface and the term transversal direction is meant to indicate a direction that forms an angle with a vertical plane.

[0026] According to one aspect, the chimney for expelling fumes 6 extends along a vertical direction that is parallel to the predefined direction of vertical extension Y-Y.

[0027] The cabinet 3, again with reference to Figure 1, also comprises a front panel 14 that has the task of concealing the motorised hood 2 from the user's view when it is not in use and of making it accessible when it is intended to be activated.

[0028] For this purpose, the cabinet 3 comprises a hinge 15 that makes it possible to move the front panel 14 between a configuration in which the hood 2 is concealed from view and a configuration in which the hood 2 is accessible for the user.

[0029] According to one aspect, also with reference to Figure 2, the hinge 15 comprises:

- a fixed portion 16, constrained to a side wall 11 (or 12),
- a mobile portion 17 constrained to the front panel 14 and
- articulation means 18 operative on the fixed portion 16 and mobile portion 17 to rotatably associate the front panel 14 with respect to the side wall 11 (or 12).

[0030] The hinge 15 and its operation are known and therefore will not be described.

[0031] The Figures show a front panel 14 that is rotatably associated with the side panel 11 but, of course, it could be rotatably associated with the other side panel 12.

[0032] Again with reference to Figure 1, it should be noted that the cabinet 3 comprises an upper panel 18 that joins with the other panels 11, 12 and 13. Such an upper panel 18 makes it possible to upperly delimit the volume V of the cabinet itself.

[0033] It should be noted that the side walls 11, 12 of the cabinet 3 comprise a plurality of holes 19 that, with the help of suitable dowels, pins or screws (not illustrated in the figures), allow the positioning of the upper panel 18 at various heights, so as to make the volume V of the cabinet 3 adjustable.

[0034] Such a plurality of holes 19 is made in number, shape, depth and arrangement by the manufacturer for all of the vertical panels of the modular kitchen so as to standardise the production, decrease the elements and help the user in mounting the cabinet.

[0035] For example, the fixed portion 16 of the hinge 15 indeed exploits some of the holes of the plurality of holes 19 to carry out its fitting to the vertical panel 11 (or 12).

[0036] According to one aspect, also with reference to Figures 2 to 5, the hood 2 and cabinet 3 assembly 1 comprises:

- a first pair of engaging elements 20 (only one of which is visible in the attached figures but the other is arranged symmetrically to the visible one) arranged on a respective side wall 11, 12 of the cabinet 3;
- a first pair of seats 30 (only one of which is visible in the attached figures but the other is arranged symmetrically to the visible one) provided in the containing framework 4;
- a second pair of engaging elements 40 (only one of which is visible in the attached figures but the other is arranged symmetrically to the visible one) arranged on the containing framework 4;
- a second pair of seats 50 (only one of which is visible in the attached figures but the other is arranged symmetrically to the visible one) arranged on a respective side wall 11, 12 of the cabinet 3.

[0037] In particular, the first pair of engaging elements 20 projects from each side wall 11, 12 towards the op-

posite side wall 12, 11, respectively, for a certain segment "T" and such a pair of engaging elements 20 defines a rotation axis X-X that extends perpendicular to the direction of vertical extension Y-Y.

[0038] More in particular, the first pair of engaging elements 20, also with reference to Figure 2, project for a segment "T" that extends along a direction of extension that is perpendicular to the direction of vertical extension Y-Y, so that the rotation axis X-X lies in a plane that is perpendicular with respect to the direction of vertical extension Y-Y.

[0039] According to a preferred embodiment, each engaging element of the first pair of engaging elements 20 comprises a stem 20', for example cylindrical in shape with circular section, and a head 20'', for example also cylindrical with circular section, the latter having a greater diameter than the stem 20'.

[0040] As far as the first pair of seats 30 is concerned, they are configured for fitting a respective engaging element of the first pair of engaging elements 20 so as to allow a rotation of the containing framework 4 around the rotation axis X-X during a step of insertion/extraction of the hood 2 in the volume V of the cabinet 3.

[0041] According to one aspect, in order to arrange the first pair of engaging elements 20 on the respective side wall 11, 12 of the cabinet 3, the latter, close to said rear wall 13 of the cabinet 3 itself, comprise a seat 60 shaped to fit the respective element of the first pair of engaging elements 20.

[0042] Preferably, the seat 60 has a blind cylindrical hole and forcibly receives the stem 20' (in the preferred embodiment only a portion thereof) of the engaging elements 20.

[0043] Such a seat 60 is formed in the thickness of the side panel 11, 12 of the cabinet 3.

[0044] According to one aspect, each seat 30 of the first pair of seats is in the form of a notch of a certain width "L" and depth "P" with which an insert 30' is preferably associated, for example forcibly.

[0045] Such an insert 30', for example made of plastic material, defines a channel 30'' having a blind bottom at the mouth of which it comprises a conformation adapted to facilitate the fitting with the respective engaging element of the first pair of engaging elements 20.

[0046] It should be noted that each engaging element of the second pair of engaging elements 40 is configured so as to pass from a first operative configuration in which the hood 2 is stably constrained to the cabinet 3, in particular to the vertical walls 11, 12 thereof, to a second operative configuration in which the hood 2 is free to rotate about such a rotation axis X-X.

[0047] In particular, the second pair of engaging elements 40 is configured so that each element of said pair of engaging elements 40 faces a respective side wall 11, 12 of the cabinet 3, when the motorised hood 2 is received in said volume V of the cabinet 3.

[0048] According to one aspect, the second pair of engaging elements 40 is arranged distal with respect to the

first pair of seats 30, i.e. close to the front wall 10 of the hood 2.

[0049] In a preferred embodiment, the second pair of engaging elements 40, also with reference to Figure 5, comprises a sheet 41 of the elastically deformable type, having a body that comprises a first portion 41' and a second portion 41''.

[0050] The first portion 41' has a substantially flat end 42 on the surface of which, facing towards the vertical walls of the cabinet 3, a boss 43 is arranged. The end 42 of the first portion 41' is hinged to the side wall 8, 9 of the framework 2 whereas the second portion 41'' is free.

[0051] In particular, it is provided for:

- the end 42 to be hinged in the respective seat 40 of its side wall 8, 9 of the hood 2 and
- the boss 43 to be inserted, when the assembly is in use, with the respective seat 50 of the second pair of seats arranged on the respective side wall 11, 12 of the cabinet 3.

[0052] The second portion 41'' is free to move and is, in particular, shaped to be gripped by the user or by a tool, as described hereinafter.

[0053] According to a preferred embodiment, the second portion 41'' extends on at least one plane (extending along the direction Y-Y) different with respect to the plane in which the first portion 41' extends. Preferably, the second portion extends in a zig-zag.

[0054] According to a special aspect, the first portion 41' lies outside of the framework 2 whereas the second portion 41'' lies inside the volume defined by the framework 2.

[0055] For this purpose, each seat 40 comprises a window or a notch (not visible in the figures) that acts as communication route between the outside and the inside of the framework 2, so that the first portion 41' faces the vertical walls of the cabinet 3 while the second portion 41'' inserts through such a window or notch in the volume of the framework 4 so as to be completely received in the framework 4.

[0056] In other words, the second portion 41'' of the sheet 41 is not visible by the user either in the act of inserting the hood 2 and in the act of extracting it. Such a second portion 41'' is visible by the user only when the filter grids 70 are removed, for example for the necessary cleaning operations.

[0057] According to one aspect, the second pair of seats 50 is arranged distal with respect to the first pair of engaging elements 20, i.e. close to the front panel 14 of the cabinet 3.

[0058] Preferably, also with reference to Figure 4, each seat 50 has a blind cylindrical hole and forcibly receives the boss 41'' of the engaging elements 40.

[0059] Such a seat 50 is formed in the thickness of the side panel 11, 12 of the cabinet 3.

[0060] Moreover, it should be noted that, for safety pur-

poses, in addition to the aforementioned first and second engaging means 20, 40 there can optionally be further mechanical constraints, like for example screws (not illustrated in the Figures) that engage the framework 4 with the side walls 11, 12 of the cabinet 3.

[0061] It should be noted here that, advantageously, the passage from the condition in which it is possible to rotate the hood 2 around the axis X-X to insert it in the volume V of the cabinet and then reach the stable condition constrained to the side walls 11, 12 of the cabinet 3 is carried out by a single user.

[0062] Indeed, the user only has to engage the first pair of engaging means 20 with the seat 30 of the containing framework 4 and, after such engagement, it is possible to rotate the hood 2 around the axis X-X with a rotary movement that goes from the bottom towards the top, as shown by the arrows "S" in Figure 3.

[0063] In particular, also with reference to Figure 2, once the stem 20' is inserted in the seat 60 of each respective side wall 11, 12 of the cabinet 3, then the head 20" is inserted in the channel 30" of the insert 30' where it can slide until it reaches the bottom of the insert. Once such a position has been reached, then it is possible to rotate the hood 2 with a rotary movement that goes from the bottom towards the top (arrows "S" in Figure 3).

[0064] During the end step of the rotation around the axis X-X, the second pair of engaging elements 40 engages with the second pair of seats 50.

[0065] In particular, after the rotation given to the hood 2 by the user, the second engaging means 40 elastically deform and engage the seat 50 of the walls 11, 12 of the cabinet 3.

[0066] In other words, thanks to the elastic characteristics of the sheet 41, since the latter is constrained in its end 41', it is possible for the boss 43 to insert in the seat 50, so as to constrain the hood 2 in a stable position.

[0067] Advantageously, in order to be able to carry out the extraction operation of the hood 2 from the volume V of the cabinet 3, it is foreseen for the hood 2 to comprise two slits formed in the front 10 and/or upper 5 wall of the hood itself, which are preferably closed by a respective closing cap 32.

[0068] Such slits, once the closing cap 32 has been removed, allow access inside the volume defined by the framework itself.

[0069] It should be noted that the slits are provided close to the arrangement of the second pairs of engaging elements 40.

[0070] According to one aspect, such operations are usually carried out through suitable tools, like for example a screwdriver. Therefore, the slit must be configured so that it can receive such tools, i.e. it must have depth and width measurements sufficient to receive and move such tools.

[0071] Therefore, in order to carry out the extraction operation of the hood 2, it is foreseen to remove the closing caps 32, to insert the tool (or the finger of a user's hand) that grips the portion 41" of the sheet 41 (i.e. the

portion that is inside the volume defined by the framework 2) to move it towards a more internal area of such a volume so that the boss 43 can disengage from the seat 50 and thus release the framework 2 from the side walls of the cabinet 3 so as to allow the rotation of the first pair of engaging means 20 around the axis X-X and then extract it from the volume V of the cabinet 3.

[0072] Clearly, those skilled in the art can bring numerous modifications and variants to the configurations described above, in order to satisfy contingent and specific requirements. Such variants and modifications are all moreover covered by the scope of protection of the invention as defined by the following claims.

Claims

1. Motorised hood (2) and cabinet (3) assembly (1) comprising:

- a motorised hood (2) having a containing framework (4);
- a kitchen cabinet (3) extending along a predefined direction of vertical extension (Y-Y) and having at least two side walls (11, 12) and one rear wall (13) for defining a volume (V), said side (11, 12) and back (13) walls extend parallel with respect to said predefined direction of vertical extension (Y-Y), said side walls (11, 12) being opposite to one another;
- said motorised hood (2) being housed within said volume (V) of said cabinet (3);

said assembly (1) being **characterised by** comprising:

- a first pair of engaging elements (20) arranged on a respective side wall (11, 12) of said cabinet (3) and projecting from each respective side wall (11, 12) towards the opposite side wall (11, 12), said first pair of engaging elements (20) defining a rotation axis (X-X) extending perpendicular with respect to said direction of vertical extension (Y-Y);
- a first pair of seats (30) provided in said containing framework (4) configured for fitting a respective engaging element of first pair of engaging elements (20) so as to allow a rotation of said containing framework (4) about said rotation axis (X-X) during a step of insertion/extraction of said hood (2) in said volume (V) of said cabinet (3);
- a second pair of engaging elements (40) arranged on said containing framework (4) so that each element of said pair of the engaging elements (40) faces a respective side wall (11, 12) of said cabinet (3), when said motorised hood is housed in said volume (V);

- a second pair of seats (50) arranged on a respective side wall (11, 12) of said cabinet (3) configured for fitting a respective engaging element of second pair of the engaging elements (20) so as to switch from a first operative configuration, wherein said hood (2) is firmly constrained to said cabinet to a second operative configuration, wherein said hood (2) is free to rotate about said rotation axis (X-X).
2. Motorised hood and cabinet assembly in accordance with claim 1, wherein said containing framework (4) comprises an upper wall (5), from which a chimney (6) for expelling fumes departs, a counterposed bottom (7), through which the fumes arising during the preparation of foods are suctioned, two side walls (8, 9) opposite to one another laterally joining said upper wall (5) and said bottom (7) and a front wall (10) frontally joining said upper wall (5) and said bottom (7), each seat of said first pair of seats (30) is arranged in a respective side wall (8, 9) of said hood (2) in proximity of said rear wall (13) and is shaped for fitting the respective element of said first pair of engaging elements (20).
 3. Motorised hood and cabinet assembly in accordance with any of the preceding claims, wherein each element of said first pair of engaging elements (20) comprises a stem and a head, the latter having a diameter greater than the stem when said assembly is in use, said stem is inserted in said seat of each respective side wall (11, 12) of said cabinet (3) and said head is inserted in said seat of said first pair of seats provided in a respective side wall (8, 9) of said hood (2).
 4. Motorised hood and cabinet assembly in accordance with claim 1, wherein each respective side wall (11, 12) of said cabinet (3), in proximity of said rear wall (13) of said cabinet (3), comprises a seat (60) shaped for force-fitting the respective element of said first pair of engaging elements (20, 21).
 5. Motorised hood and cabinet assembly in accordance with any one of the preceding claims, wherein each seat of said second pair of seats (50) is arranged in a distal position with respect to the position of the first pair of engaging means (20).
 6. Motorised hood and cabinet assembly in accordance with any one of the preceding claims, wherein each element of said second pair of engaging elements comprises a sheet (41) of the elastically deformable type having a body which comprises a first portion (41') and a second portion (41''), said first portion (41') facing the two side walls (11, 12) of the cabinet (3), whereas the second portion (41'') is internal to the containing framework (4).
 7. Motorised hood and cabinet in accordance with claim 6, wherein said first portion (41') has a flat end (42), on the surface of which, a boss (43) facing the two side walls (11, 12) of the cabinet (3) is arranged, wherein said end (42) is hinged to the respective side wall (8, 9) of the framework (4).
 8. Motorised hood and cabinet assembly in accordance with any one of the preceding claims 6 to 7, wherein said second portion (41'') is shaped so as to be gripped by the user or by a tool.
 9. Motorised hood and cabinet assembly in accordance with claim 7 or 8, wherein said second portion (41'') develops on at least one plane extended along said vertical direction (Y-Y) different with respect to the plane where said first portion (41') extends.
 10. Motorised hood and cabinet assembly in accordance with claim 1, wherein each seat of the first pair of seats (30) has a notch having a given width "L" and a depth "P" which is an insert (30') having a blind bottom, at the mouth of which it comprises a conformation adapted to facilitate the fitting with the respective engaging element of the first pair of engaging elements (20).

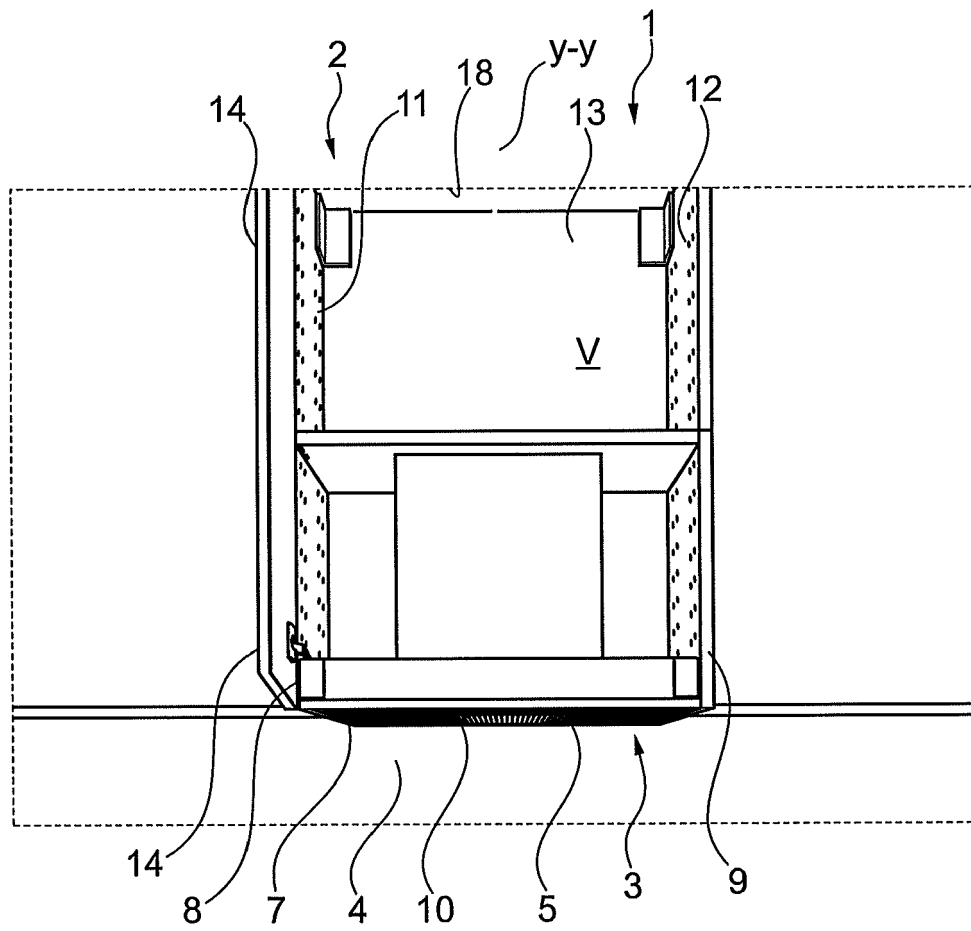


Fig. 1

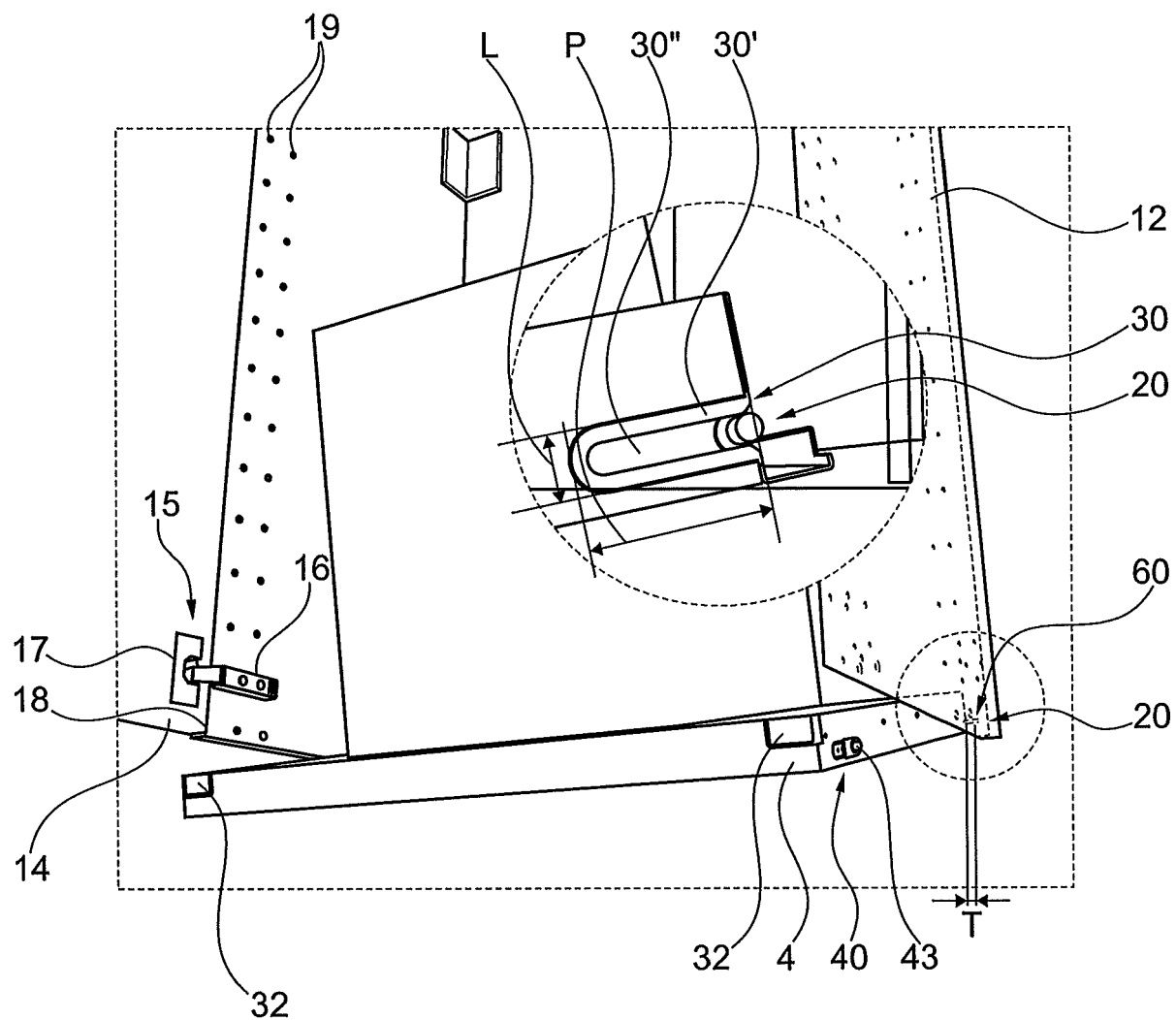


Fig. 2

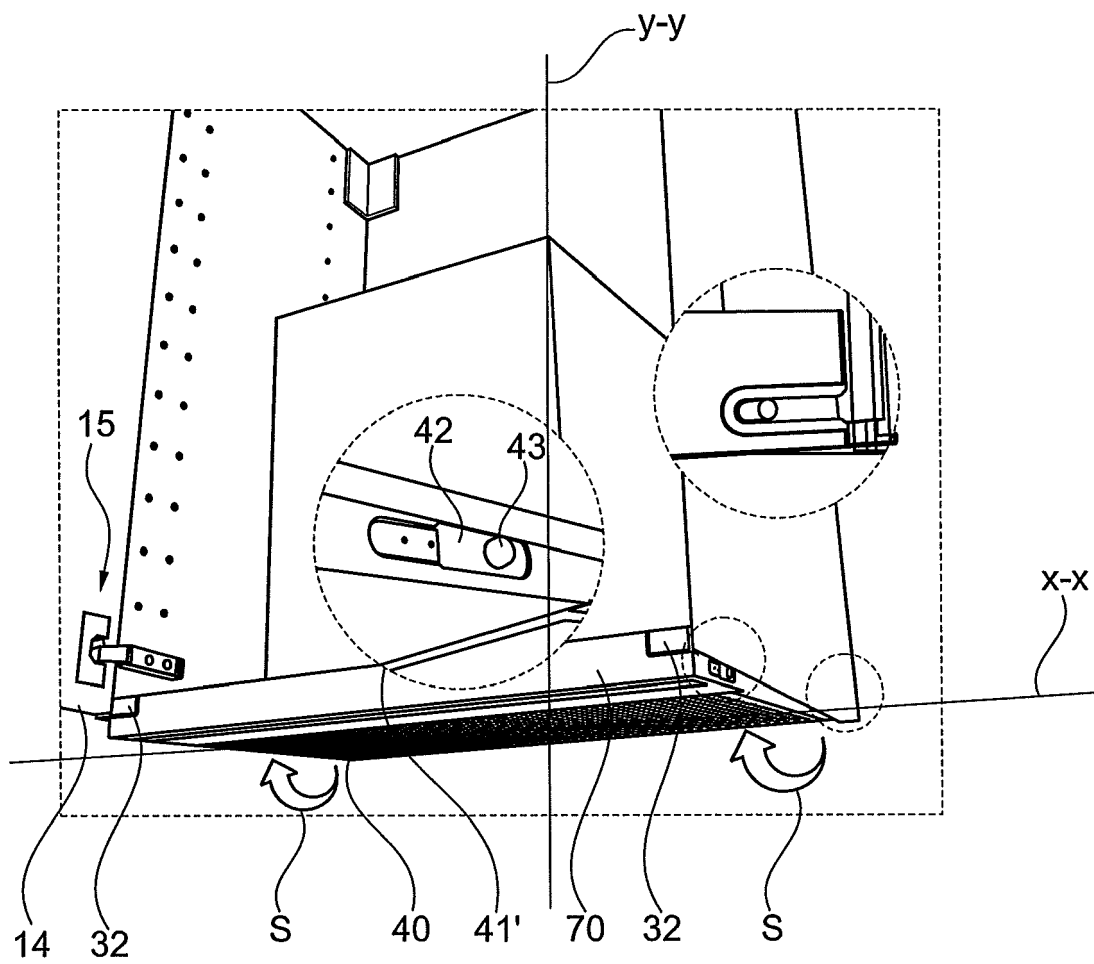


Fig. 3

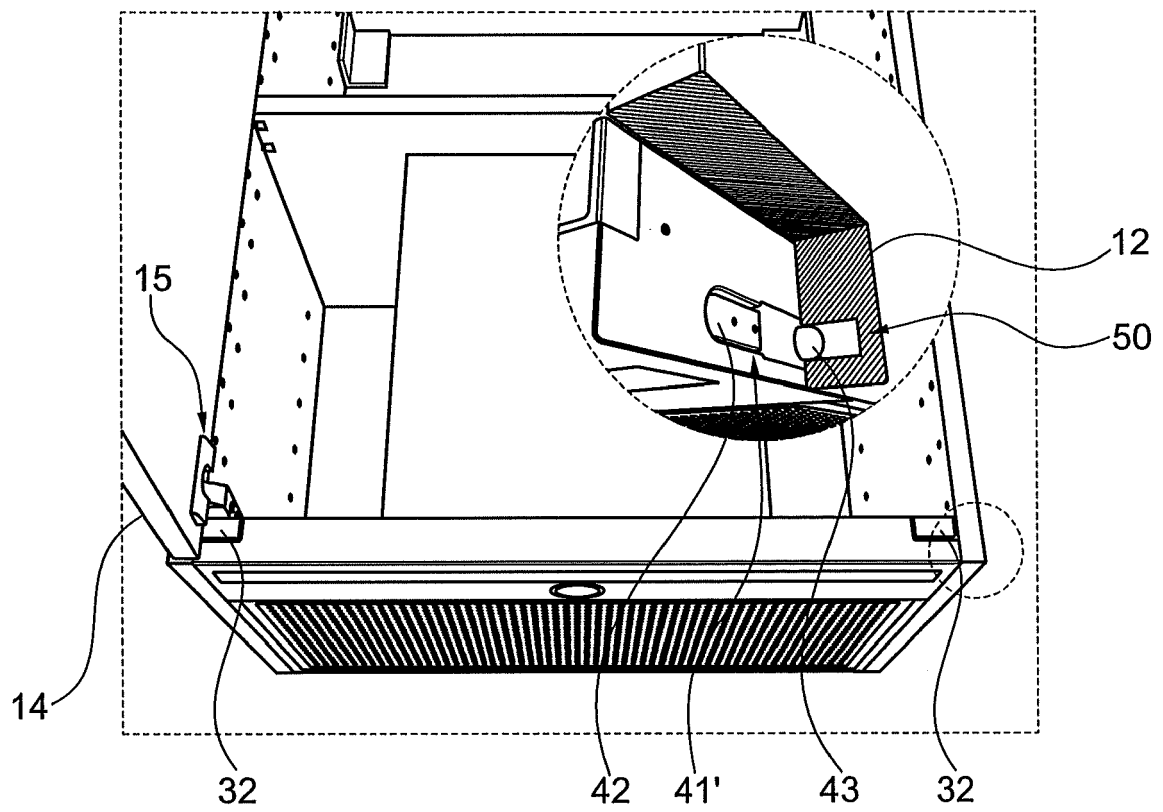


Fig. 4

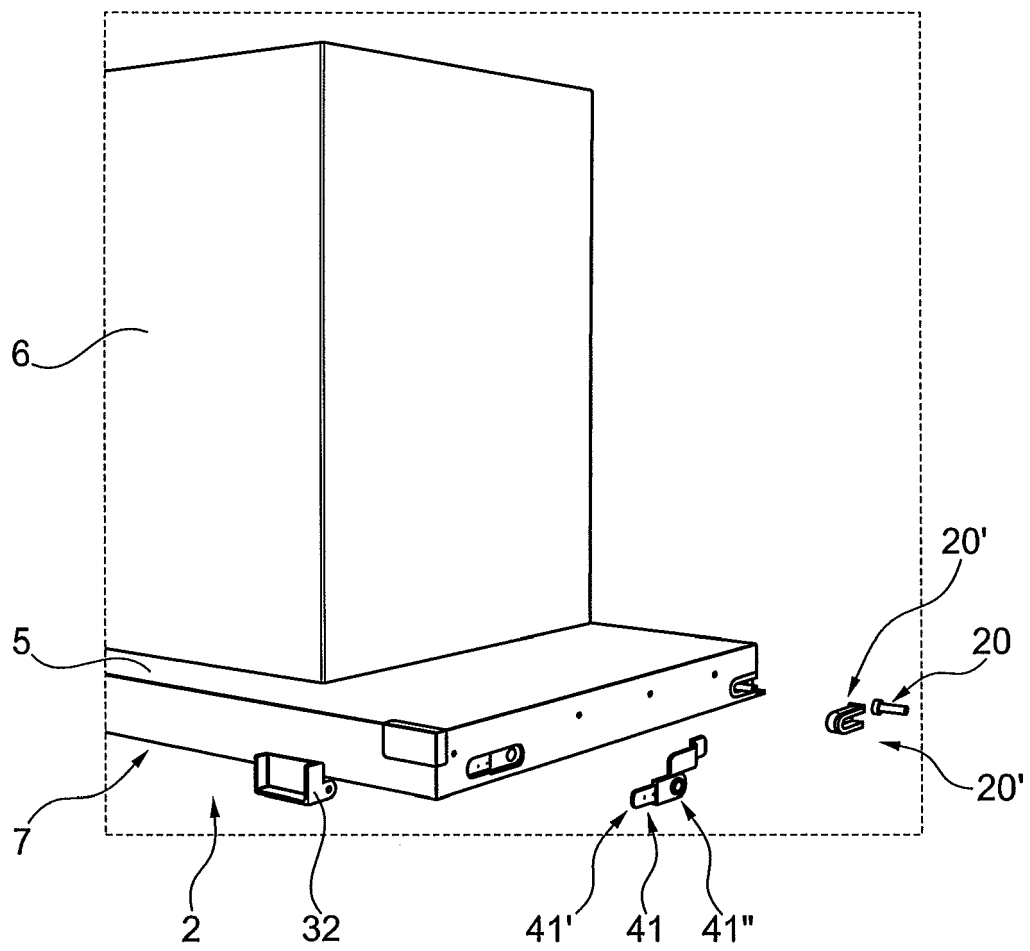


Fig. 5



EUROPEAN SEARCH REPORT

 Application Number
 EP 17 18 8687

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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 22 January 2018	Examiner Fest, Gilles
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 17 18 8687

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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