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(54) HOUSEHOLD APPLIANCE FOR COOKING DISHES COMPRISING A STOVETOP AND A DOWNDRAFT HOOD

(57) The present invention relates to a household appliance (1) for cooking dishes extending along a height direction (Z-Z), a width direction (X-X), and a depth direction (Y-Y) defining a three-dimensional Cartesian reference system, said household appliance (1) comprising:
- a stovetop (2) having at least one suction opening (20) for cooking fumes and extending mainly along the width and depth direction (X-X, Y-Y),
- a downdraft hood (3) comprising:
- a box-like body (30) extending below the stovetop (2) along the height direction (Z-Z) and defining an internal volume (V) accessible through a connection opening (31),
- a suction unit (32) arranged in the internal volume (V) of the box-like body (30) and having a discharge duct (33) protruding from the box-like body (30), the suction unit (32) being configured to generate a suction flow of the cooking fumes directly along a fluid-dynamic path (P) extending from the suction opening (20) to the discharge duct (33) passing through the connection opening (31);

- a filter unit (4), arranged along the fluid-dynamic path (P) between the suction opening (20) and the suction unit (32),
- a suction manifold (5) interposed between the stovetop (2) and the box-like body (30) along the height direction (Z-Z) and defining a suction chamber (A) placed in fluid connection with the suction opening (20) and with the connection opening (31), said suction chamber (A) extending mainly along the width and depth direction (X-X, Y-Y) below the stovetop (2).

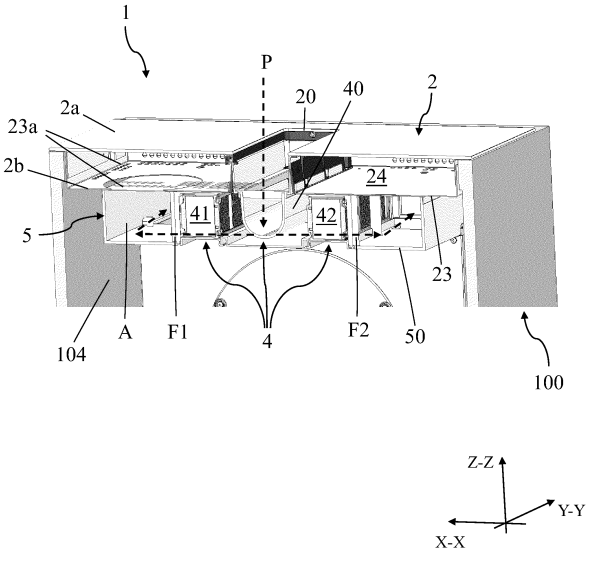

Fig. 4

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Description

Technical Field

[0001] The present invention relates to a household appliance for cooking dishes that finds useful application in the kitchen equipment sector, according to the preamble of claim 1.

State of the art

[0002] Suction stovetops have long been known, that is, equipment for cooking food that combines a stovetop and a suction hood in a single household appliance.

[0003] This type of equipment has a suction opening made on the stovetop in the vicinity of the food cooking regions, and a suction unit fluid-dynamically connected to the suction opening to generate a suction flow through the latter.

[0004] The suction opening can have various geometries as well as arrangements on the stovetop. For example, suction stovetops with central suction openings of circular geometry but also peripheral and quadrangular geometry are known.

[0005] An example of such suction stovetops can be found in DE102013007722B4 wherein a suction duct extends between a first portion that geometrically traces the suction opening and a second portion associated with the suction unit.

[0006] Another example of such stovetops can be found in WO2019096701A1 in which the suction duct, similarly to what is shown in DE102013007722B4, extends along a predetermined path between a first portion surrounding the suction opening and a second portion associated with the suction unit.

[0007] It should be noted that in known stovetops the geometry and arrangement of the suction opening requires the use of specific suction ducts that fluid-dynamically connect it to the suction unit. This is confirmed by what is stated on page 14, lines 9-10 of WO2019096701A1 (*"Der Verbindungskanal 34 weist eine Abmes- sung auf, die der Länge der Aussparung 20 entspricht"*) which highlights a clear geometric/dimensional link between the dimension of the suction duct and the suction opening.

[0008] It is therefore evident that the design of a range of suction hoods having different geometries and arrangements of the suction opening is particularly time-consuming and costly.

[0009] It should also be noted that the variability of the geometry and arrangement of the suction opening, in addition to the design, also complicates the production of a range of suction stovetops with different arrangements and shapes of the suction opening. In fact, in this case, it is necessary to organize the supply of different components, as well as to instruct the personnel or program the production lines to carry out different assembly operations depending on the arrangement and geometry of the suction opening.

[0010] The critical issues highlighted above are emphasized if the suction stovetop has a plurality of suction openings, each of which may have different geometries and arrangements on the stovetop.

Object of the invention

[0011] In this context, the technical task underlying the present invention is to propose a household appliance for cooking dishes which overcomes the drawbacks of the prior art mentioned above.

[0012] In particular, it is an object of the present invention to provide a household appliance for cooking dishes that facilitates the design and manufacture of a range of products with different arrangements and geometries of the suction opening for fumes on the stovetop.

[0013] It is therefore an object of the present invention to provide a household appliance capable of guaranteeing a high flexibility of arrangement and geometry in the design of the suction opening on the stovetop.

SUMMARY OF THE INVENTION

[0014] In accordance with the present invention, the technical task indicated and the specified objects are achieved by a household appliance for cooking dishes in accordance with one or more of the claims below.

[0015] In detail, the household appliance for cooking dishes according to the present invention extends along a height, width and depth direction forming a three-dimensional reference system.

[0016] This household appliance comprises a stovetop, which extends mainly along the width and depth direction, having at least one suction opening for cooking fumes.

[0017] The household appliance also comprises a downdraft hood having a box-like body that extends below the stovetop along the height direction. This box-like body defines an internal volume accessible by means of a connection opening that places it in fluid communication with the suction opening of the stovetop.

[0018] The downdraft hood further comprises a suction unit arranged in the box-like body and having a discharge duct protruding from the box-like body. In use, the suction unit is configured to generate a suction flow of the cooking fumes directly along a fluid-dynamic path extending from the suction opening of the stovetop to the discharge duct, passing through the connection opening.

[0019] A filter unit, configured to filter greases and/or odours present in the cooking fumes, is arranged along the fluid-dynamic path between the suction opening and the suction unit.

[0020] The household appliance further comprises a suction manifold interposed between the stovetop and the box-like body along the height direction. This manifold defines a suction chamber placed in fluid connection with the suction opening and with the connection open-

ing.

[0021] Advantageously, the suction chamber extends, below the stovetop, mainly along the width and depth direction so that, regardless of the location of the suction opening on the stovetop, it is fluid-dynamically connected to the suction unit.

[0022] It is therefore evident that the household appliance according to the present invention allows, without varying the geometry of the manifold or of the downdraft hood, to freely position the suction opening on the stovetop, thereby achieving the aforementioned purpose of facilitating the design and realization of a range of household appliances with different arrangements and geometries of the suction opening for the cooking fumes.

LIST OF FIGURES

[0023] Further features and advantages of the present invention will become more apparent from the illustrative, and therefore non-limiting, description of preferred, yet not exclusive, embodiments of a household appliance for cooking dishes, as illustrated in the appended figures, in which:

- Figure 1 shows a perspective view of a household appliance for cooking dishes recessed into a kitchen cabinet;
- Figure 2 shows a perspective view of the household appliance and kitchen cabinet of Figure 1 sectioned along a first plane of section A-A;
- Figure 3 shows a side view of the sectional view of Figure 2;
- Figure 4 shows a sectional perspective view of the household appliance and kitchen cabinet of Figure 1 sectioned along a second plane of section B-B;
- Figure 5 shows a front view of the sectional view of Figure 4;
- Figure 6 shows a perspective view of the household appliance of Figure 1;
- Figure 7 shows a perspective view of the household appliance of Figure 1 with some components removed to better illustrate others;
- Figure 8 shows a view of the household appliance of Figure 6 sectioned along a third plane of section C-C.

DETAILED DESCRIPTION

[0024] The object of the present description is a household appliance for cooking dishes, indicated by 1 in the attached figures.

[0025] With reference to Figures 1 and 2, the household appliance 1 extends along a height direction Z-Z, a width direction X-X, and a depth direction Y-Y, which define a three-dimensional Cartesian reference system, specifically tri-orthogonal. Thus, the directions of height, width, and depth are oriented as mutually perpendicular.

[0026] In particular, with reference to Figure 6, the household appliance 1 extends along the depth direction Y-Y between a front portion 1a and a rear portion 1b, along the width direction X-X between a pair of opposite side portions 1c, and along the height direction Z-Z between an upper portion 1d and a lower portion 1e.

[0027] Still with reference to Figures 1 and 2, preferably, the household appliance 1 is recessed in a kitchen cabinet 100 comprising a plurality of drawers 101. The aforementioned width, depth, and height directions X-X, Y-Y, Z-Z extend respectively along the directions conventionally used to measure the height, width, and depth of furnishing elements.

[0028] The household appliance 1 comprises a stovetop 2, i.e. a kitchen appliance having one or more cooking regions adapted to receive containers containing dishes to be heated or cooked on a support.

[0029] It should be specified that, for the purposes of the present invention, the stovetop 2 can be of any type such as, for example, gas, electric, induction or hybrid.

[0030] Referring to Figure 6, the stovetop 2 is arranged in the upper portion 1d of the household appliance and extends predominantly along the width X-X and depth Y-Y directions.

[0031] In particular, the stovetop 2 extends along the width direction X-X between the side portions 1c of the household appliance 1, and along the depth direction Y-Y between the front portion 1a and the rear portion 1b.

[0032] According to an aspect shown in Figure 1, the stovetop 2 extends along the width direction X-X for a first width value L1 between 500 mm and 1500 mm, and along the depth direction Y-Y for a first depth value P1 between 200 mm and 600 mm.

[0033] Furthermore, with reference to Figure 3, the stovetop 2 extends along the Z-Z height direction between a support portion 2a arranged to support food containers and a bottom portion 2b opposite the support portion 2a.

[0034] Since the stovetop 2 extends mainly along the width X-X and depth Y-Y directions, it follows that its extension in the height Z-Z direction is less than that in the width and depth X-X, Y-Y directions.

[0035] The stovetop 2 extends along the height direction Z-Z for a first height value A1 lower than the first width value L1 and the depth value P1. The first height value A1 is preferably between 100 mm and 250 mm;

[0036] According to one aspect, the stovetop 2 comprises a plate 25 defining the support portion 2a. This plate 25 is, for example, made of glass-ceramic material.

[0037] With reference to Figures 1 and 2, it should be noted that, when the household appliance 1 is recessed in the kitchen cabinet, the plate 25 is oriented orthogonally to the height direction Z-Z and is either abutting on an

upper level 102 of the kitchen cabinet 100 or is housed in a designated recess (not shown in the figures) of the kitchen cabinet 100 so as to be "flush" with said upper level 102.

[0038] The stovetop 2 has at least one suction opening 20 for cooking fumes, i.e. an opening through which a suction flow adapted to capture the cooking fumes from the containers containing the dishes being cooked can be generated.

[0039] In the embodiment shown in Figure 2, the suction opening 20 is embodied in a through hole that crosses the plate 25 along the height direction Z-Z.

[0040] It should be specified that the suction opening 20 can have any geometry and arrangement on the stovetop 2. In the embodiment shown in the attached figures, the suction opening 20 is arranged in a central region of the stovetop 2 and has a quadrangular geometry, however, in alternative embodiments, the suction opening 20 could be located in other regions of the stovetop 2 - such as, for example, in peripheral regions - and/or have non-quadrangular geometries.

[0041] It should also be specified that, in alternative embodiments from the one shown in the attached figures, the stovetop 2 can also have multiple suction openings 20 configured to be crossed by distinct suction flows of the cooking fumes which, downstream of these, can rejoin forming a single flow.

[0042] The household appliance 1 also comprises a downdraft hood 3, i.e. a suction apparatus configured to generate a suction flow directed from above downwards through the suction opening 20.

[0043] Referring to Figures 2, 3 and 6, the downdraft hood 3 comprises a box-like body 30 extending below the stovetop 2 along the height direction Z-Z.

[0044] The box-like body 30 defines an internal volume V accessible by means of a connection opening 31. The box-like body 30 is therefore hollow.

[0045] As shown in Figure 3, the internal volume V is placed in fluid communication with the suction opening 20 of the stovetop 2 through the connection opening 31.

[0046] Still with reference to Figures 2, 3 and 6, the downdraft hood 3 comprises a suction unit 32 arranged in the internal volume V of the box-like body 30 and having a discharge duct 33 protruding from the box-like body 30.

[0047] The suction unit 32, when operated, is configured to generate a depression in the box-like body 30 which results in a suction flow of the cooking fumes directed along a fluid-dynamic path P. As illustrated in Figure 3 by a series of dashed arrows, the fluid-dynamic path P extends from the suction opening 20 of the stovetop 2 to the discharge duct 33 passing through the connection opening 31. More details on the fluid-dynamic path P travelled by the suction flow will be provided in a subsequent part of the description.

[0048] Preferably, the connection opening 31 is arranged in an upper region of the box-like body 30 so as to face the stovetop 2.

[0049] In the embodiment of Figure 7, the connection opening extends along the width X-X and depth Y-Y directions, preferably for the entirety of the upper region of the box-like body 30. In other words, in a preferred embodiment the box-like body 30 has the upper face fully open and defining the connection opening 31.

[0050] In the event that the downdraft hood 3 is installed in suction mode, the discharge duct 33 is connected to a flue arranged to carry the cooking fumes to an environment external to that of the kitchen in which the household appliance 1 is placed. Otherwise, if the downdraft hood 3 is installed in filter mode, the discharge duct 33 is configured to discharge the air flow sucked into an inner portion of the cabinet (Figure 3) or return it directly into the kitchen. In the latter case, the expulsion of the suctioned air flow may take place, for example, from a rear wall 103 of the kitchen cabinet 100.

[0051] According to one aspect, the box-like body 30 is arranged in said rear portion 1b of the household appliance 1. Advantageously, as shown in Figure 2, this allows the footprint of the household appliance 1 below the stovetop to be reduced, so that crockery or kitchen equipment with a large height requirement can be stored in the drawers 101 of the kitchen cabinet 100.

[0052] The household appliance 1 that is the object of the present description further comprises a filter unit 4 configured to filter greases and/or odours present in the cooking fumes.

[0053] With reference to Figures 4, 5 and 7, the filter unit 4 is arranged along the fluid-dynamic path P between the suction opening 20 and the suction unit 32.

[0054] In the embodiment shown in Figure 7, the filter unit 4 is arranged upstream of the connection opening 31, i.e. it is arranged along the fluid-dynamic path P between the suction opening 20 and the connection opening 31.

[0055] In alternative embodiments, the filter unit 4 can be arranged in the connection opening 31 or downstream of the latter.

[0056] It should be specified that, whatever the placement of the filter unit 4, the arrangement must be such as to guarantee that the entire suction flow is filtered so that the suction unit 32 processes the filtered suction flow. This allows the integrity and efficiency of the components of the suction unit 32 to be preserved over time.

[0057] Preferably, the filter unit 4 comprises a grease filter 40 arranged below the suction opening 20 of the stovetop 2 and at least one odour filter 41, 42 arranged laterally to the grease filter 40 along the width or depth direction X-X, Y-Y.

[0058] Although the grease filter is necessarily arranged upstream of the suction unit 32 to prevent the greases present in the cooking fumes from affecting its operation, the odour filter 41, 42 can be placed both upstream and downstream of the suction unit 32. For example, in alternative embodiments to those shown in the attached figures, the odour filter 41, 42 is arranged in the discharge duct 33 or downstream of the latter.

[0059] It should be specified that in the context of the present invention the terms "grease filter" and "odour

filter" are understood to mean filter means respectively configured to filter the grease and molecules responsible for the odours of cooking fumes.

[0060] According to an aspect shown in Figure 4, the grease filter 40 has a concave shape and, when installed in the household appliance 1, the concavity is turned towards the suction opening 20.

[0061] The grease filter 40 is, for example, made from one or more metal grids or any other material with similar characteristics.

[0062] The odour filter 41, 42 is arranged downstream of the grease filter 40; therefore, the suction flow, flowing along the fluid-dynamic path P, passes in succession through the grease filter 40 and then the odour filter 41. This arrangement of the filters allows the integrity of the odour filter 41 to be preserved over time as it is known to be particularly sensitive to moisture.

[0063] For example, the odour filter 41, 42 is an activated carbon filter.

[0064] According to one aspect shown in Figures 4, 5 and 7, the filter unit 4 comprises a pair of odour filters 41, 42 arranged on opposite sides of the grease filter 40 along the width or depth direction X-X, Y-Y.

[0065] In the embodiment shown in Figures 4, 5 and 7, the suction flow, after passing through the suction opening 20, forks and partly passes through a first odour filter 41 and partly through a second odour filter 42. Therefore, in this embodiment, the fluid-dynamic path P has a bifurcation downstream of the suction opening 20 that defines a first path F1 through the first odour filter 41 and a second path F2 through the second odour filter 42.

[0066] It should be specified that the first and second paths F1, F2 converge in the internal volume V of the box-like body 30 where, once rejoined, they are processed by the suction unit 32 and discharged through the discharge duct 33.

[0067] Preferably, the household appliance 1 comprises a liquid collection tray arranged below the suction opening 20.

[0068] In the embodiment of Figure 4, the liquid collection tray is located downstream of the grease filter 40 but upstream of the odour filters 41, 42 along the fluid-dynamic path P.

[0069] In particular, if the filter unit 4 comprises a pair of odour filters 41, 42, preferably, the liquid collection tray is interposed between the odour filters 41, 42 along the width direction X-X or the depth direction Y-Y.

[0070] The household appliance 1 that is the object of the present description further comprises a manifold 5 which, as shown in Figures 6 and 8, is interposed between the stovetop 2 and the box-like body 30 along the height direction Z-Z.

[0071] The manifold 5 defines a suction chamber A placed in fluid connection with the suction opening 20 and the connection opening 31.

[0072] In particular, according to one aspect, the manifold 5 fluid-dynamically connects the suction opening 20 of the stovetop 2 to the connection opening 31 to convey the suction flow into the internal volume V of the box-like body 30. The suction chamber A is then interposed between the suction opening 20 and the connection opening 31 along the fluid-dynamic path P.

[0073] It should be specified that the actuation of the suction unit 32 generates a depression not only in the internal volume V of the box-like body 30, but also in the suction chamber A defined by the manifold 5.

[0074] As shown in Figures 2-8, the suction chamber A extends, below the stovetop 2, mainly along the width and depth direction X-X, Y-Y. Therefore, the extension of the suction chamber A in the height direction Z-Z is less than that in the width and depth directions X-X, Y-Y.

[0075] It should be specified that the suction chamber A and the stovetop 2 are vertically overlapping in the height direction Z-Z.

[0076] It should be noted that, the prevailing extension of the suction chamber A in the width and depth directions X-X, Y-Y, means that the suction opening 20 can be freely placed in different regions of the stovetop 2 without making any changes to the manifold 5 or to the other components of the downdraft hood 3. The suction opening 20 can in fact be placed in a central region of the stovetop 2 (see the attached figures) or, in embodiments not shown, moved along the width and depth directions X-X, Y-Y with respect to said central region, without modifications to the manifold 5 or the downdraft hood 3 being necessary.

[0077] It is therefore evident that the household appliance 1 according to the present invention, by standardizing the manifold 5 and the downdraft hood 3, facilitates the design and realization of a range of household appliances 1 for cooking dishes with different arrangements and geometries of the suction opening 20 for the cooking fumes.

[0078] According to one aspect shown in Figure 7, the suction chamber A extends along the width direction X-X for a second width value L2 between 50 mm and 1500 mm, and along the depth direction Y-Y for a second depth value P2 between 50 mm and 600 mm.

[0079] Preferably, the second width value L2 is comprised between 3% and 100% of the first width value L1, and the second depth value P2 is comprised between 8% and 100% of the first depth value L1.

[0080] Even more preferably, the second width value L2 is equal to 1-20 times the extension of the suction opening 20 along the width direction X-X, and/or the second depth value P2 is equal to 1-20 times the extension of the suction opening 20 along the depth direction Y-Y.

[0081] According to one embodiment, the second width value L2 is equal to 2-20 times, the extension of the suction opening 20 along the width direction X-X, and/or the second depth value P2 is equal to 2-20 times the extension of the suction opening 20 along the depth direction Y-Y.

[0082] It is therefore evident that, unlike the suction duct of the suction cooktop described in

DE102013007722B4, the manifold 5 does not geometrically trace (does not closely contour) the suction opening 20.

[0083] The suction chamber A and stovetop 2 extend overlapping vertically along the width direction X-X by a third width value L3 which, in the embodiment of Figure 5, is equal to the second width value L2.

[0084] Preferably, the third width value L3 is greater than 50% of the first width value L1.

[0085] Even more preferably, the third width value L3 is greater than 60%, even 75%, of the first width value L1.

[0086] The suction chamber A and stovetop 2 also extend overlapping vertically in the depth direction Y-Y for a third depth value P3.

[0087] Preferably, the third depth value P3 is greater than 30% of the first depth value P1.

[0088] Even more preferably, the third depth value P3 is greater than 50%, even 75%, of the first depth value P 1.

[0089] It should be specified that the expression *"vertically overlapping"* means that the suction chamber A and the stovetop 2 are arranged on top of each other in the height direction Z-Z.

[0090] In the embodiment shown in Figures 4 and 5, the suction chamber A is delimited above by the bottom portion 2b of the stovetop 2. In other words, in the embodiment of Figures 4 and 5, the suction chamber A is closed at the top along the height direction Z-Z by the bottom portion 2b of the stovetop 2.

[0091] In particular, according to an aspect shown in Figure 7, the manifold 5 has a box-like shape defining the suction chamber A therein and having an open upper face 52. According to one embodiment, when the manifold 5 is assembled to the stovetop 2, the upper face is closed by the bottom portion 2b of the stovetop 2 and the suction opening 20 is put in fluid communication with the suction chamber A.

[0092] Advantageously, the aforementioned box-like shape of the manifold 5, with its upper face 52 open, allows a reduction in the amount of raw materials used in the production process, which is beneficial to the environment and advantageous in terms of the production costs.

[0093] However, in alternative embodiments to that of Figure 7, the manifold 5 has a box-like shape closed at the top by a top wall.

[0094] With reference to the embodiment of Figure 7, the manifold 5 comprises a bottom 50 bordering underneath the suction chamber A along the height direction Z-Z. The bottom 50 then extends along the width X-X and depth Y-Y directions.

[0095] In detail, the bottom 50 has a further connection opening 51 which can be associated with the connection opening 31 of the box-like body 30 for fluid connection of the suction chamber A and the internal volume V.

[0096] According to one aspect, the connection opening 31 and the further connection opening 51 have the same extension along the width and depth directions X-X, Y-Y so as to be perfectly superimposable. Advantageously, this allows the pressure drops between the suction chamber A and the internal volume V to be minimised and, consequently, the suction effect of the cooking fumes through the suction opening 20 to be maximised.

[0097] Preferably, the further connection opening 51 extends along the width direction X-X for the entire extension in the width direction X-X of the suction chamber A. It should be noted that this allows a good suction to be obtained regardless of the position of the suction opening 20 on the stovetop 2 along the width direction X-X (i.e. in the center, on the left portion, on the right portion). Therefore, advantageously, by doing so it is possible to realize a range of household appliances for cooking dishes characterized by different arrangements of the suction opening 20, but the same shape of the manifold 5 and of the downdraft hood 3, wherein each household appliance of the range has good and comparable suction capacities.

[0098] In the embodiment shown in Figures 6 and 7, the manifold 5 extends along the depth direction Y-Y between the front portion 1a and the rear portion 1b of the household appliance 1.

[0099] Preferably, the further connection opening 51 is arranged in the rear portion 1b of the household appliance 1.

[0100] Even more preferably, the box-like body 30 is arranged in the rear portion 1b of the household appliance and connected to the manifold 5 below the further connection opening 51 along the height direction Z-Z. That is, the box-like body 30 and the manifold 5, when connected, define a geometry that, when viewed from the side, has an L-shape.

[0101] As can be deduced from Figure 2, this L-shape allows the height capacity of the drawers 101 of the kitchen cabinet 100 in which the household appliance 1 is recessed to be maximized.

[0102] According to one aspect shown in Figures 4, 5, 7 and 8, the filter unit 4 described above is mounted in the manifold 5 so as to be arranged in the suction chamber A.

[0103] In particular, preferably, the filter unit 4 is arranged in a central region of the manifold 5 along the length direction X-X and/or the width direction Y-Y. For example, in the design shown in Figure 7, the filter unit 4 is mounted in a central region of the manifold 5 along both the length X-X and width Y-Y directions.

[0104] With reference to Figures 4 and 5, preferably, the stovetop 2 comprises at least one heating element 21, a supply unit 22, and a cover element 23. The latter defines a seat 24 adapted to receive the heating element 21 and the supply unit 22.

[0105] Preferably, the stovetop 2 further comprises ventilation members (not shown in the figures) configured to remove the heat generated by the operation of the heating element 21 and the supply unit 22 in the seat 24. According to one embodiment, the ventilation members are configured to generate a direct cooling flow from the seat 24 towards the manifold 5 or an internal portion 104

of the kitchen cabinet 100 through special ventilation openings 23a obtained on the cover element 23 (Fig. 4).

[0106] It should be specified that since the stovetop 2 is arranged above the manifold 5, the heating element 21, the supply unit 22 and the cover element 23 are also arranged above the manifold 5 along the height direction Z-Z.

[0107] Preferably, the manifold 5 is configured to slide the suction flow in the vicinity of the cover element 23 so as to remove part of the heat generated by the heating element 21 and the supply unit 22 in the seat 24. In this embodiment, the cover 23 is skimmed on opposite sides by air volumes at different temperatures and, therefore, acts as a convective thermal bridge between the seat 24 and the suction chamber A of the manifold 5. Advantageously, this allows the operating intensity, and therefore the energy consumption, of the ventilation members to be reduced.

[0108] It should be specified that the arrangement of the heating element 21, the supply unit and the cover element 23 above the manifold 5 and the fact that the latter is configured to slide the suction flow in the vicinity of the cover element 23 are independent of whether or not the filter unit 4 is arranged in the suction chamber A. That is to say that the arrangement of the heating element 21, the supply unit and the cover element 23 above the manifold 5 and the fact that the latter is configured to slide the suction flow in the vicinity of the cover element 23 is implementable in both a first embodiment of the household appliance 1 in which the filter unit 4 is arranged in the suction chamber A and in a second embodiment of the household appliance 1 in which the filter unit 4 is arranged anywhere else in the fluid-dynamic path P between the suction opening 20 and the suction unit 32.

[0109] Clearly, in order to satisfy contingent and specific needs, a person skilled in the art may make numerous modifications and variants to the configurations described above. Such modifications and variations are all also contained within the scope of protection of the invention, as defined by the following claims.

Claims

1. A household appliance (1) for cooking dishes extending along a height direction (Z-Z), a width direction (X-X), and a depth direction (Y-Y) defining a three-dimensional Cartesian reference system, said household appliance (1) comprising:

    - a stovetop (2) having at least one suction opening (20) for cooking fumes and extending mainly along the width and depth direction (X-X, Y-Y),
    - a downdraft hood (3) comprising:

        - a box-like body (30) extending below the stovetop (2) along the height direction (Z-Z) and defining an internal volume (V) accessible through a connection opening (31), said internal volume (V) being placed in fluid communication with the suction opening (20) of the stovetop (2) through said connection opening (31),
        - a suction unit (32) arranged in the internal volume (V) of the box-like body (30) and having a discharge duct (33) protruding from the box-like body (30), said suction unit (32) being configured to generate a suction flow of the cooking fumes directed along a fluid-dynamic path (P) extending from the suction opening (20) of the stovetop (2) to the discharge duct (33) passing through the connection opening (31);
        - a filter unit (4), configured to filter greases and/or odours present in the cooking fumes, arranged along the fluid-dynamic path (P) between the suction opening (20) and the suction unit (32),

    characterized in that it comprises a suction manifold (5) interposed between the stovetop (2) and the box-like body (30) along the height direction (Z-Z) and defining a suction chamber (A) placed in fluid connection with the suction opening (20) and with the connection opening (31), said suction chamber (A) extending mainly along the width and depth direction (X-X, Y-Y) below the stovetop (2), the filter assembly (4) being arranged in the suction chamber (A) and comprising:

        - a grease filter (40) arranged below the suction opening (20) of the stovetop (2),
        - at least one odour filter (41, 42) arranged laterally to the grease filter (40) along the width direction (X-X) or the depth direction (Y-Y).

2. The household appliance (1) according to claim 1, wherein:

    - the extension of the suction chamber (A) along the width direction (X-X) is equal to 1-20 times the extension of the suction opening (20) along the width direction (X-X), and/or
    - the extension of the suction chamber (A) along the depth direction (Y-Y) is equal to 1-20 times the extension of the suction opening (20) along the depth direction (Y-Y).

3. The household appliance (1) according to claim 1 or 2, wherein:

    - the stovetop (2) extends along the width direction (X-X) for a first width value (L1);
    - the suction chamber (A) extends along the width direction (X-X) for a second width value

(L2),
- the suction chamber (A) and the stovetop (2) extend overlapping vertically in the width direction (X-X) for a third width value (L3) greater than 50% of the first width value (L1).

4. The household appliance (1) according to any of the preceding claims, wherein:

- the stovetop (2) extends along the depth direction (Y-Y) for a first depth value (P1);
- the suction chamber (A) extends along the depth direction (Y-Y) for a second depth value (P2),
- the suction chamber (A) and the stovetop (2) extend overlapping vertically in the depth direction (Y-Y) for a third depth value (P3) greater than 30% of the first width value (L1).

5. The household appliance (1) according to any of the preceding claims, wherein:

- the stovetop (2) comprises a support portion (2a) adapted to support food containers and a bottom portion (2b) opposite to the support surface (2a) along the height direction (Z-Z),
- the suction chamber (A) is delimited above by the bottom portion (2b) of the stovetop (2).

6. A household appliance (1) according to any of the preceding claims, extending along the depth direction (Y-Y) between a front portion (1a) and a rear portion (1b), wherein:

- the box-like body (30) is arranged in said rear portion (1b) of the appliance (1);
- the manifold (5) extends along the depth direction (Y-Y) between the front portion (1a) and the rear portion (1b) of the household appliance (1).

7. The household appliance (1) according to any of the preceding claims, wherein the manifold (5) comprises a bottom (50) delimiting the suction chamber (A) below, said bottom (50) having a further connection opening (51) which can be associated with the connection opening (31) of the box-like body (30) for fluidic connection of the suction chamber (A) and the internal volume (V).

8. The household appliance (1) according to claim 7, wherein the further connection opening (51) extends along the width direction (X-X) for the entire extension in the width direction (X-X) of the suction chamber (A).

9. The household appliance (1) according to claim 6 and claim 7 or 8, wherein the further connection opening (51) is arranged in the rear portion (1b) of the household appliance (1).

10. The household appliance (1) according to any of the preceding claims, wherein the filter unit (4) comprises a first and a second odour filter (41, 42) arranged on opposite sides of the grease filter (40) along the width direction (X-X) or the depth direction (Y-Y), said fluid-dynamic path (P) having a bifurcation downstream of the suction opening (20) and defining a first path (F1) through the first odour filter (41) and a second path (F2) through the second odour filter (42).

11. The household appliance (1) according to any of the preceding claims, wherein the filter unit (4) is arranged in a central region of the manifold (5) along the length direction (X-X) and/or the width direction (Y-Y).

12. The household appliance (1) according to any of the preceding claims, wherein:

- the stovetop (2) comprises at least one heating element (21), a supply unit (22) of said heating element (21), and a cover element (23) defining a seat (24) adapted to receive the heating element (21) and the supply unit (22),
- the heating element (21), the supply unit (22), the covering element (23) are arranged above the manifold (5) along the height direction (Z-Z),
- the manifold (5) is configured to slide the suction flow in the vicinity of the cover element (23) so as to remove part of the heat generated by the heating element (21) and the supply unit (22) in the seat (24).

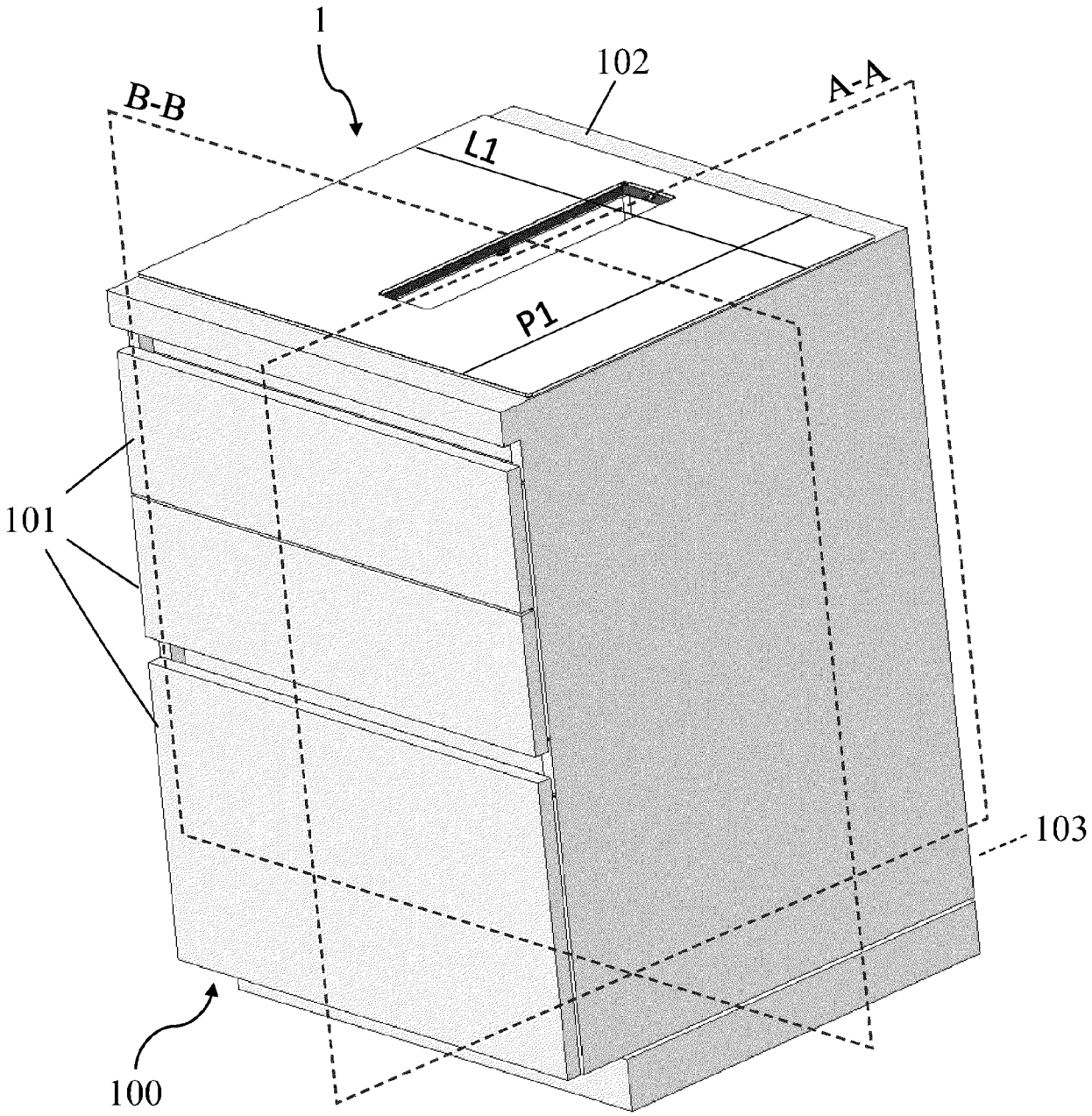


Fig. 1

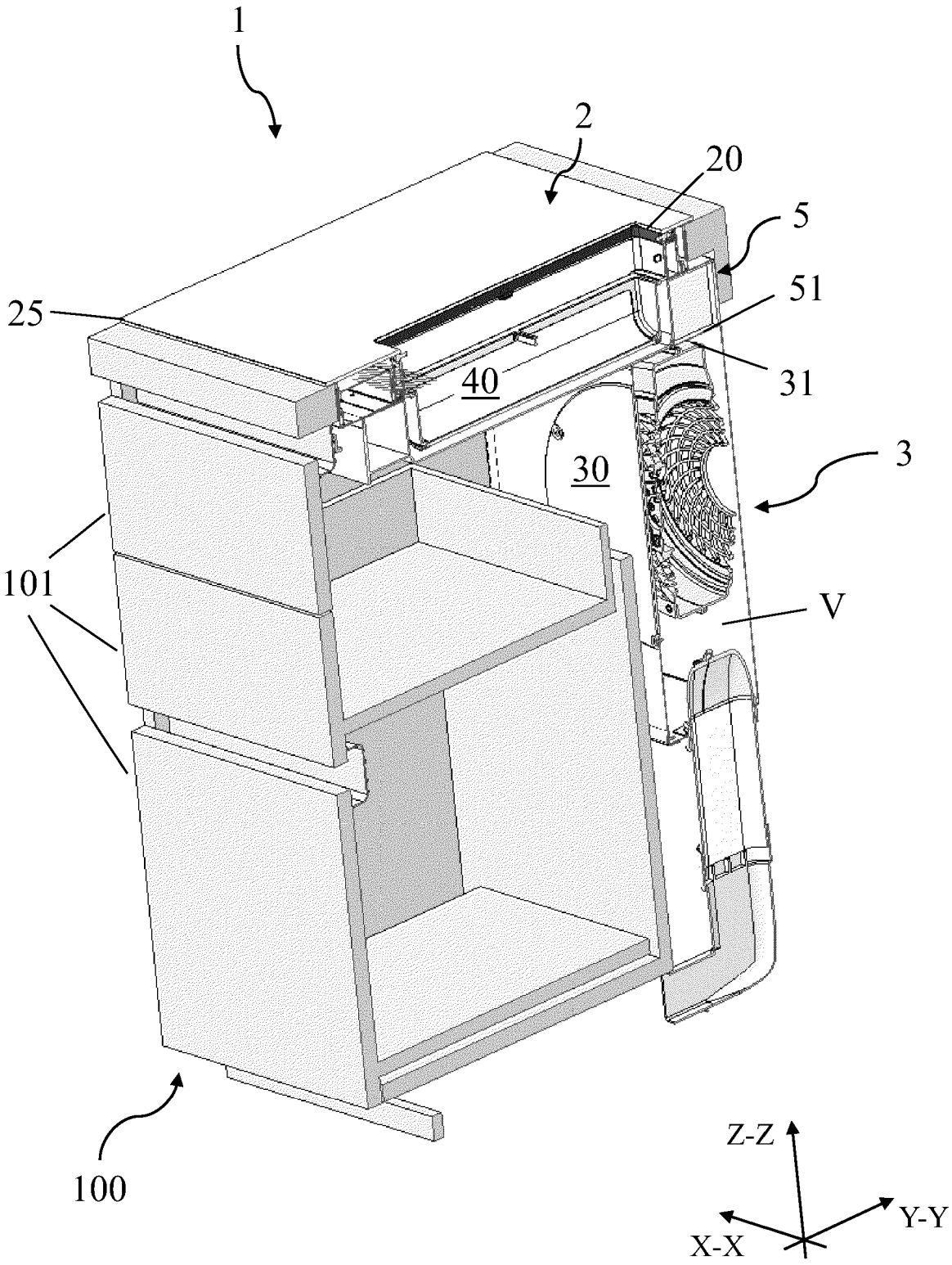


Fig. 2

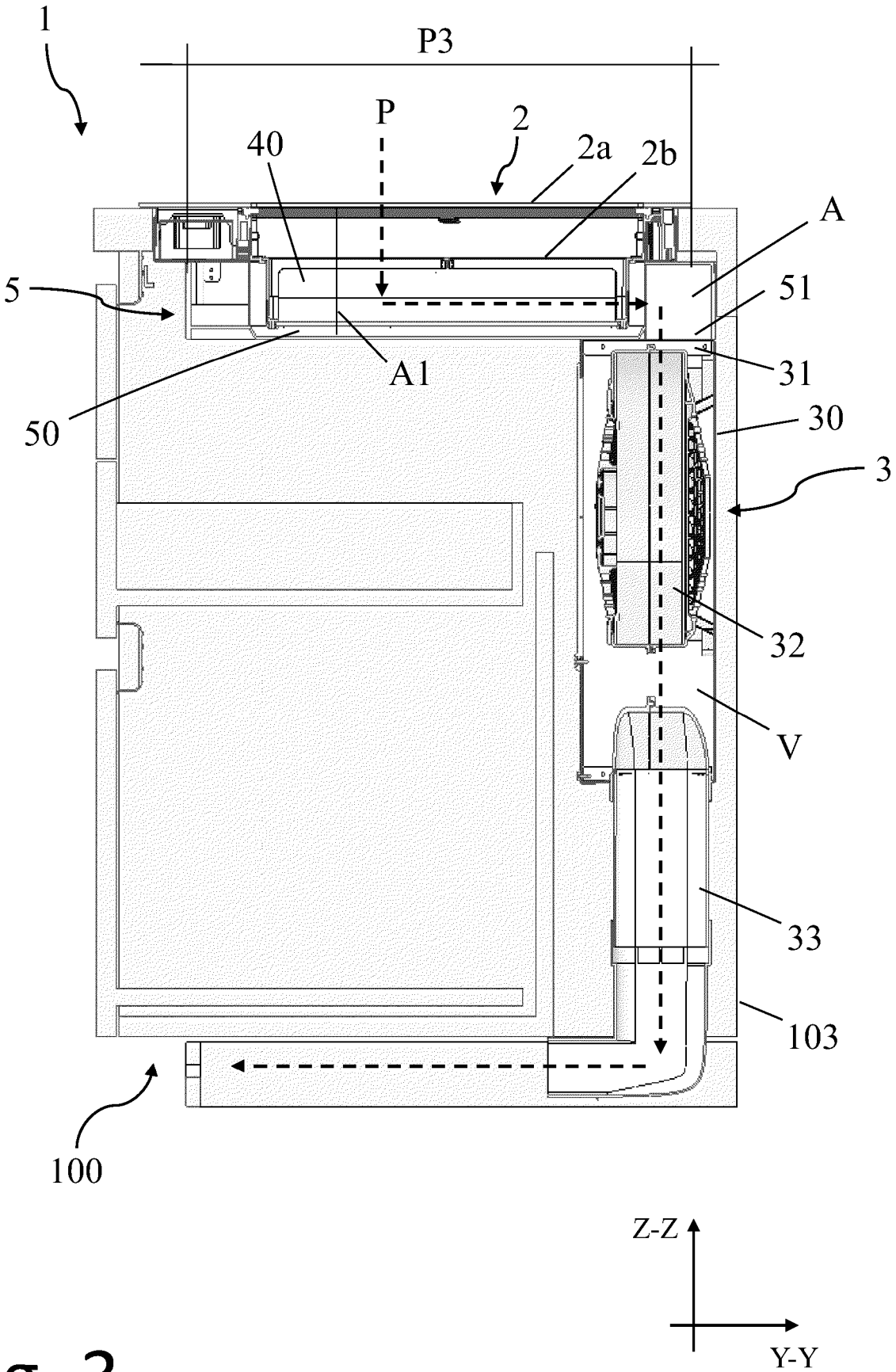
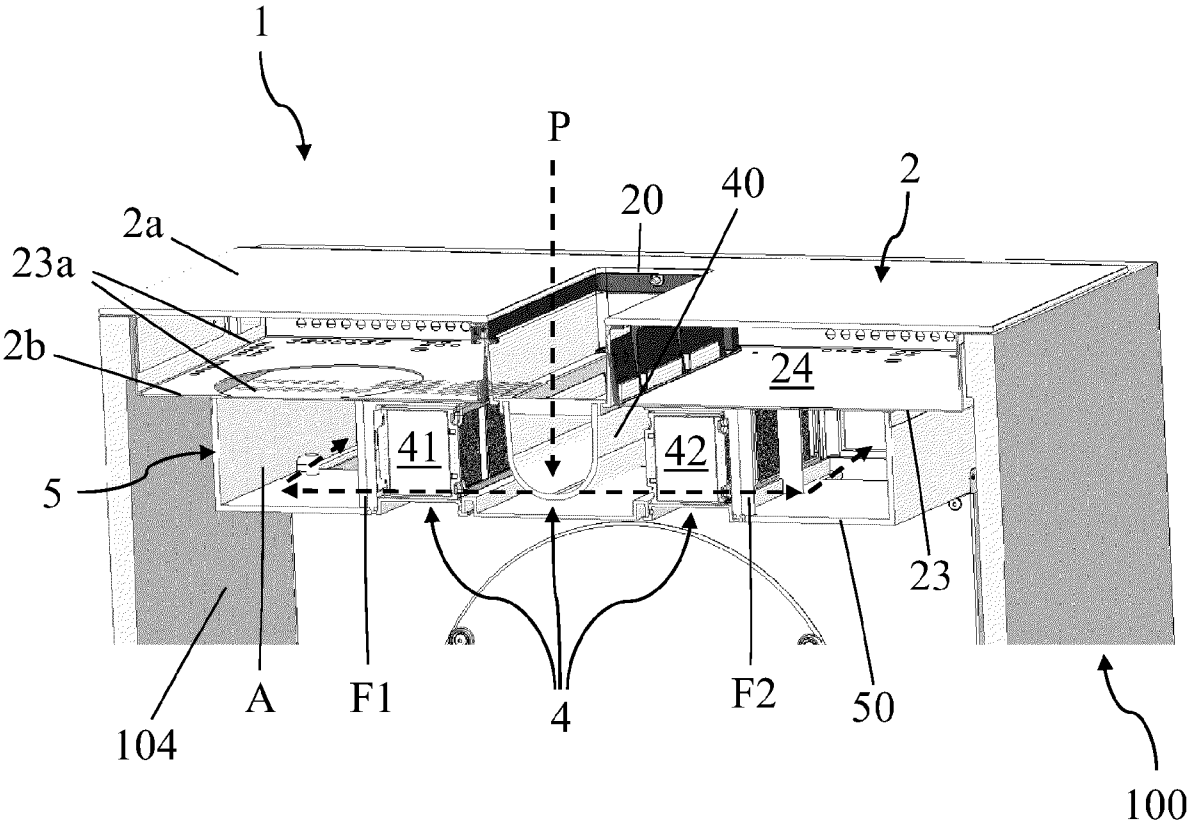


Fig. 3



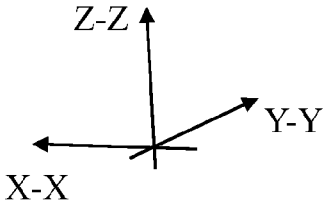
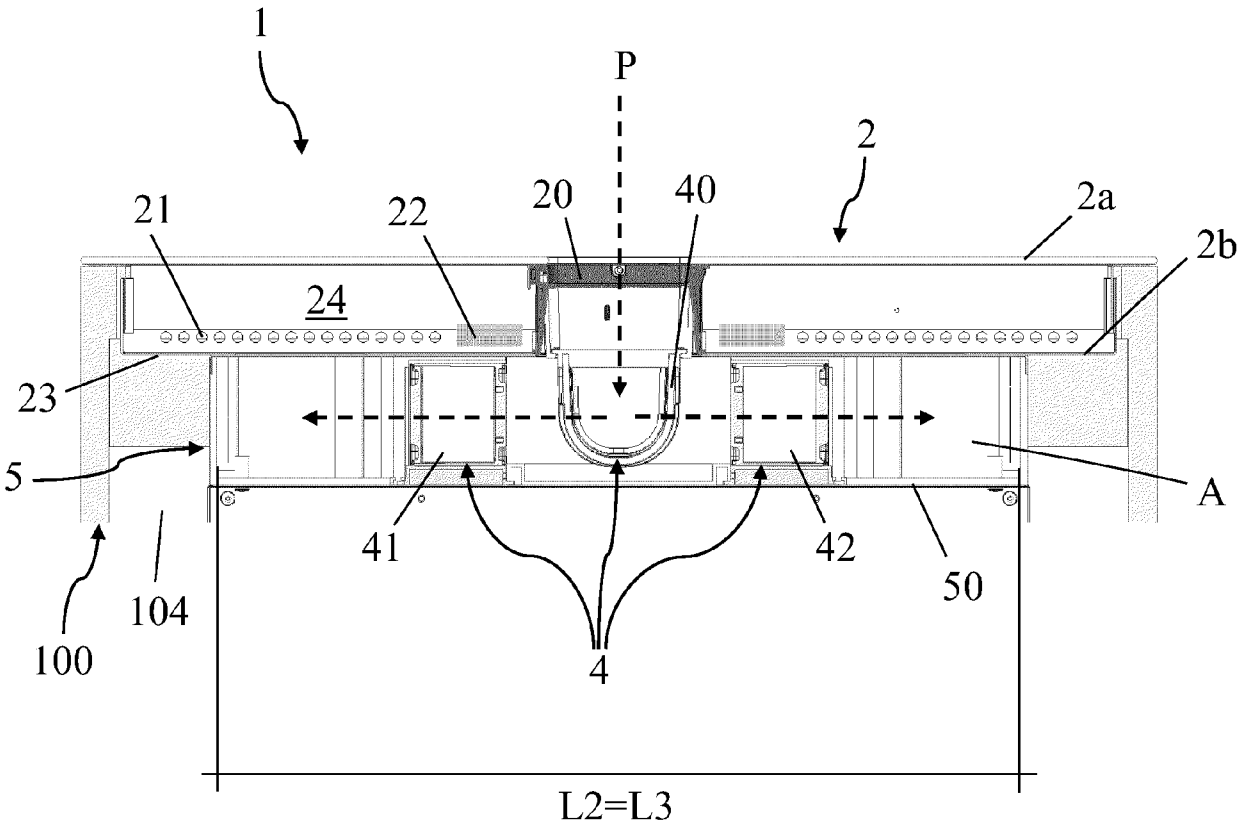


Fig. 4



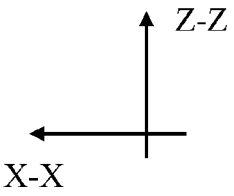


Fig. 5

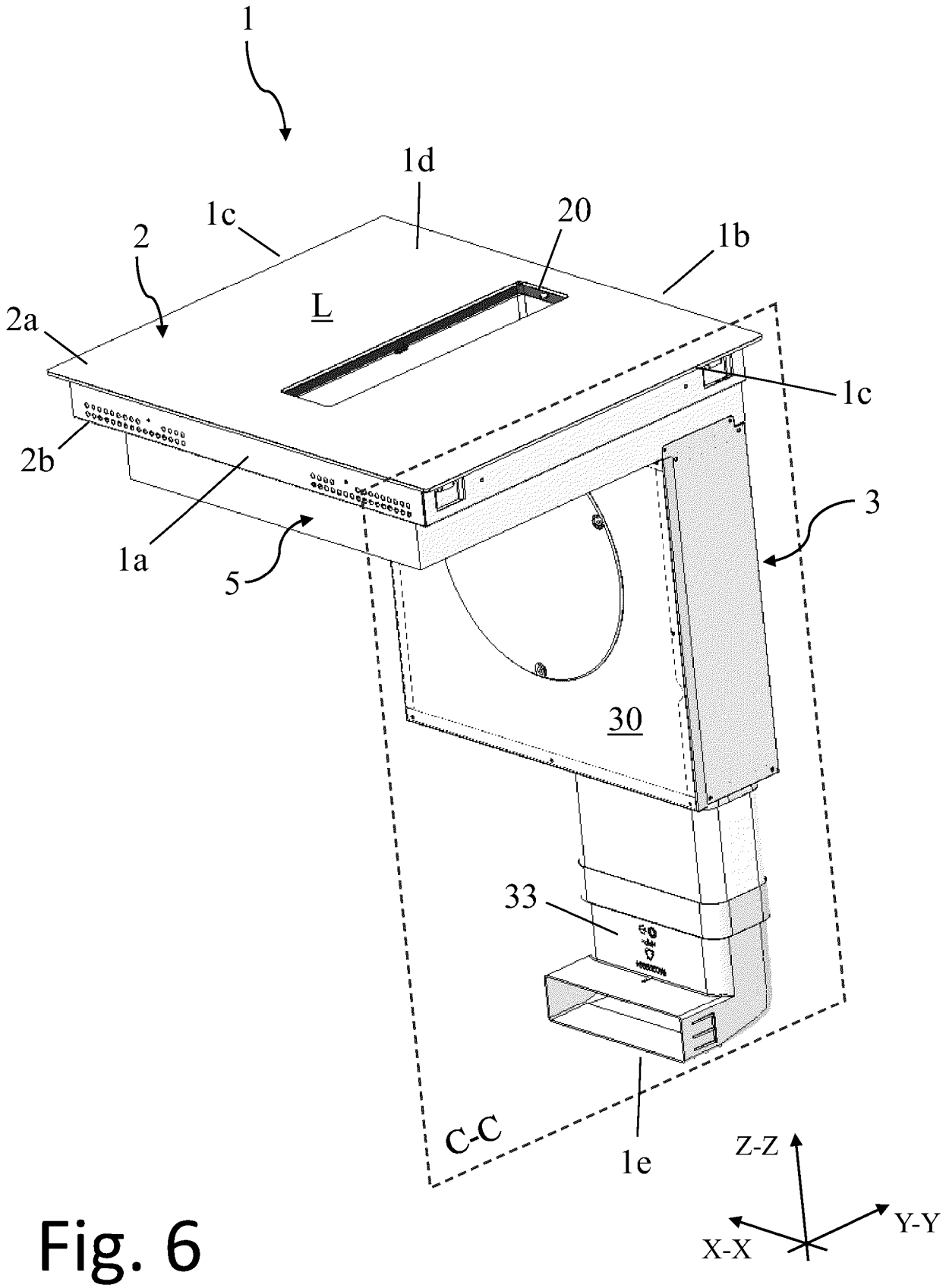


Fig. 6

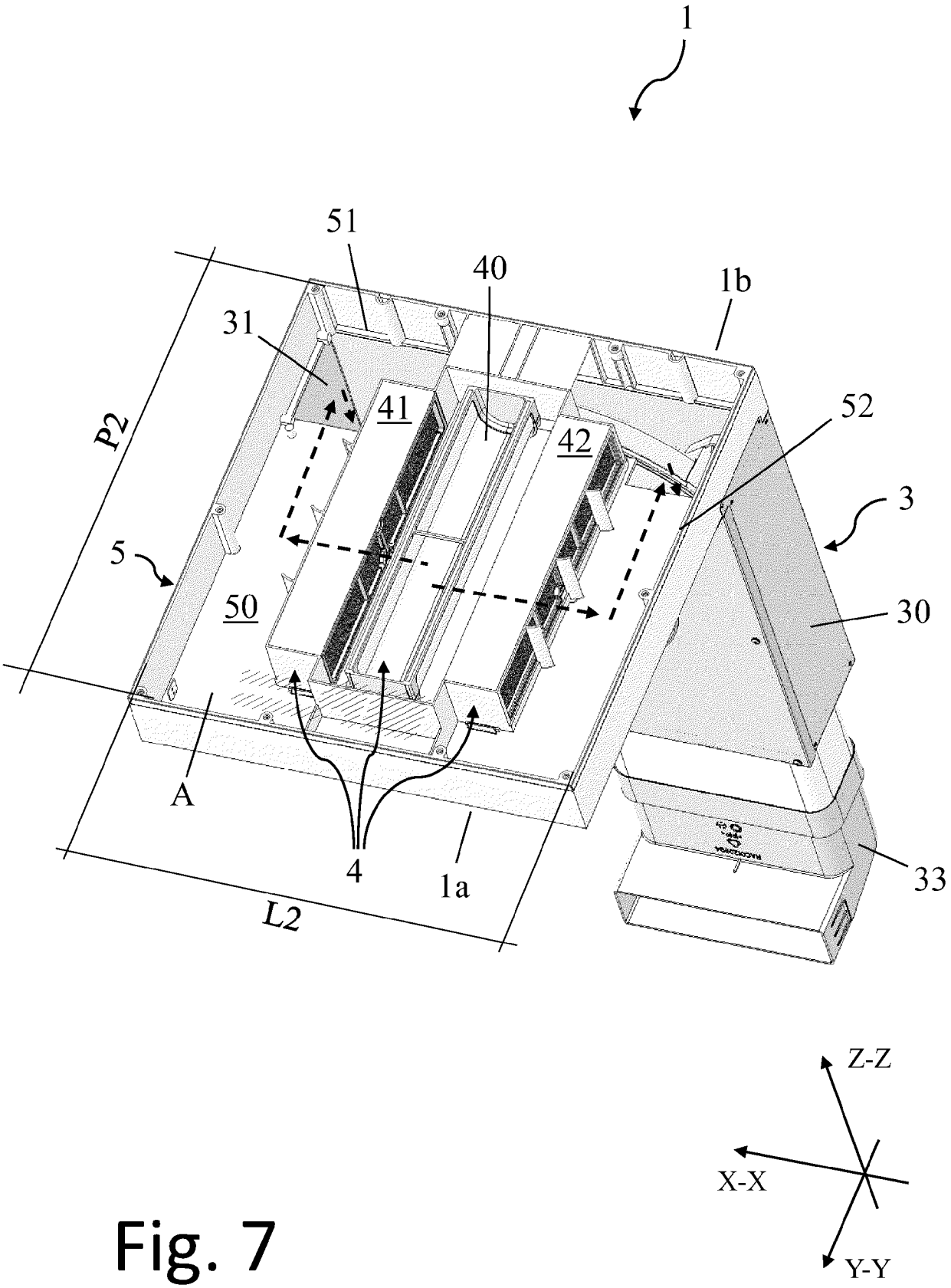


Fig. 7

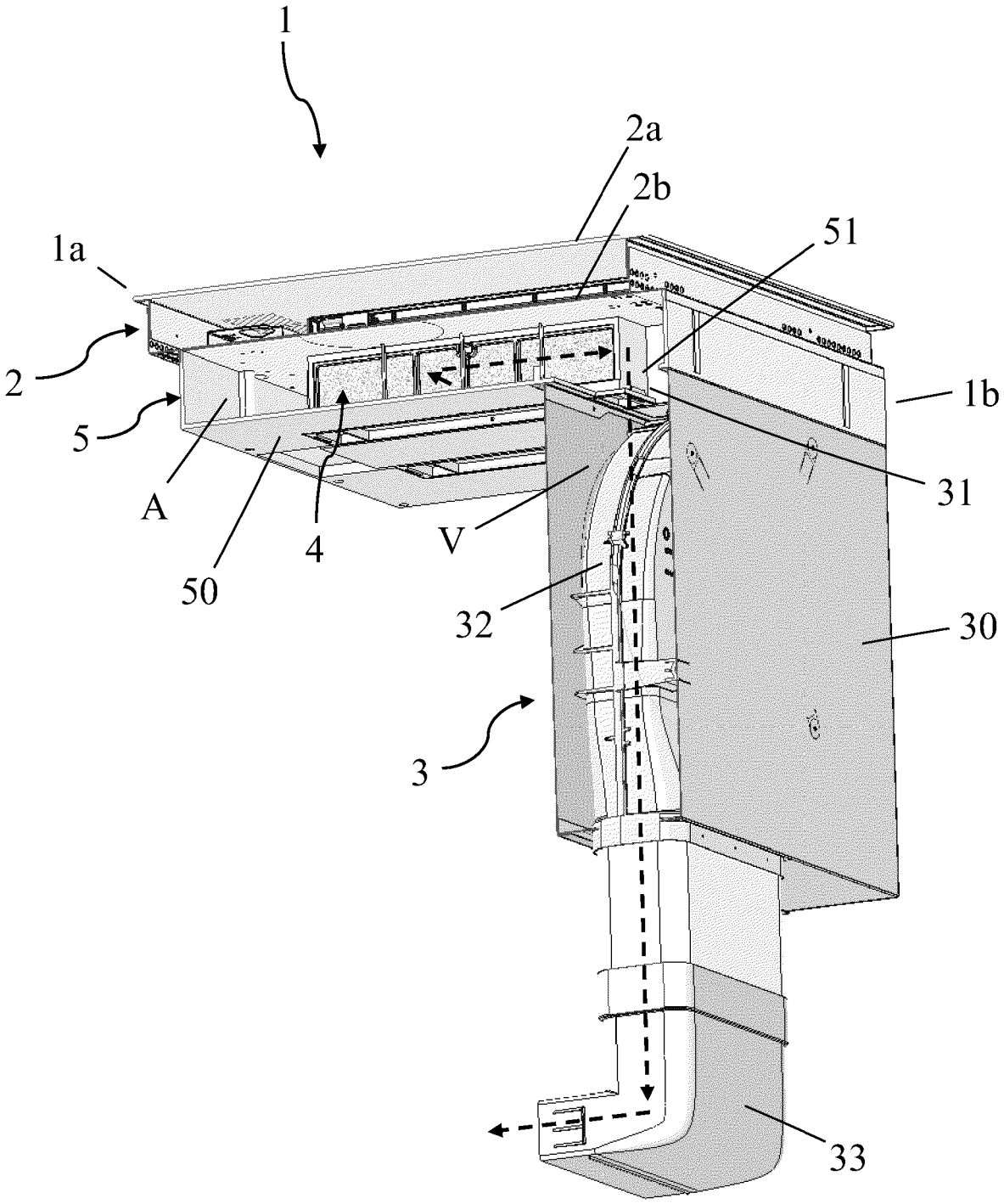


Fig. 8

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Application Number
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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	23 October 2024	Rodriguez, Alexander

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