



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
02.11.2016 Bulletin 2016/44

(51) Int Cl.:
F24C 15/00 (2006.01) F24C 15/20 (2006.01)

(21) Application number: **16166984.1**

(22) Date of filing: **22.08.2011**

(84) Designated Contracting States:
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO
PL PT RO RS SE SI SK SM TR**

(30) Priority: **25.08.2010 IT TO20100712**

(62) Document number(s) of the earlier application(s) in
accordance with Art. 76 EPC:
11764297.5 / 2 627 951

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Remarks:

This application was filed on 26-04-2016 as a
divisional application to the application mentioned
under INID code 62.

(54) **IMPROVED COOKING OVEN, IN PARTICULAR FOR HOUSEHOLD USE**

(57) The present invention relates to a cooking oven
(1), in particular for household use, of the type compris-
ing:

- a cabinet (2) comprising a muffle (3) adapted to be
closed by a door (4),
- a first (5A) and a second (5B) panes adapted to create
at least an interspace (6A) in the door (4),
- a cooling system (10) comprising a fan (11) and a de-
livery duct (12) adapted to blow a forced air flow into the
interspace (6A).

According to the invention, the cooking oven (1) com-
prises fixing means (100) adapted to perform a snap-cou-
pling the delivery duct (12) to a plate (50) and the fixing
means (100) comprise at least one pair of elastic tabs
(101) associated with the delivery duct (12) and at least
one through hole (52) obtained in the plate (50).

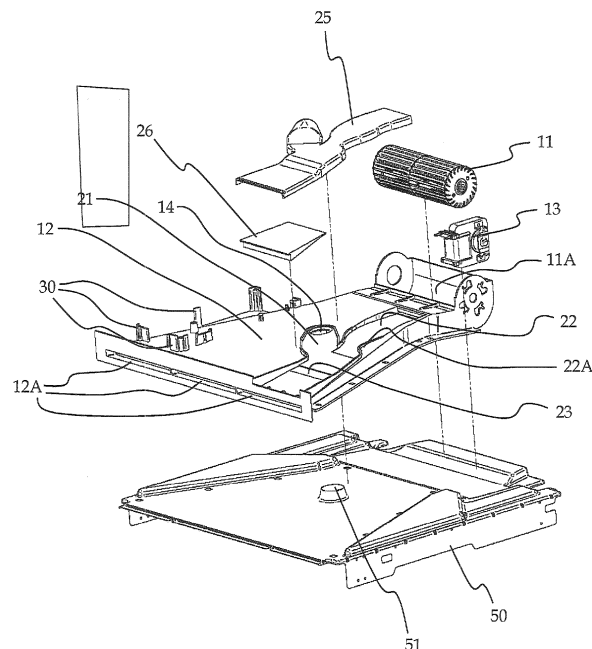


Fig. 5

Description

[0001] The present invention relates to a cooking oven, in particular for household use, according to the preamble of claim 1.

[0002] Modern household cooking ovens are usually fitted with doors comprising two or three parallel panes, in particular made of glass, to allow the user to monitor the cooking of the foods placed therein.

[0003] It is understood that, in the present description, the term "glass pane" will be used to indicate an element made of a substantially transparent material, regardless of the actual material said element is made of.

[0004] The cooking ovens known in the art are affected by the problem that the outermost pane may reach excessive temperatures, which might be dangerous in the event of accidental contact therewith, especially when the oven is a pyrolytic one.

[0005] In an attempt to find a remedy for this problem, it is known in the art to provide said door in a manner such that it comprises at least a first and a second panes adapted to define an interspace, so as to reduce the transfer of heat from the oven to the outermost pane. However, even with such an interspace, generally the temperature reached by the outermost pane still reaches excessively high values.

[0006] Consequently, it is known in the art to blow air into said interspace, by either natural or forced convection, in order to improve the cooling effect on the panes of cooking ovens' doors, in particular on the outermost one farthest from an oven muffle.

[0007] For example, one type of cooking oven, in particular for household use, is known in the art which comprises:

- a muffle adapted to be closed by a door,
- at least a first and a second panes adapted to define an interspace in said door,
- a cooling system comprising a fan and a delivery duct adapted to blow air into said interspace.

[0008] According to the above-described solution, said delivery duct is made of metallic material, in particular sheet metal, and is welded to the remaining components of the oven; usually the delivery duct is welded to a plate coupled to the bottom of the delivery duct. However, this solution has a few drawbacks, in that making a metallic delivery duct is a costly process that requires it to be manually welded to the remaining components of the oven, in particular to said plate coupled to the bottom of the delivery duct.

[0009] In addition, according to the above solution, at least some of the air blown by the cooling system into said interspace is taken from an inner portion of the oven muffle.

[0010] This solution suffers from some drawbacks as well, in that the air taken from the muffle is necessarily greasy and oily, and therefore it fouls the panes it comes

in contact with.

[0011] A further drawback of the above-described solution is that, since the panes are secured to the door, it is particularly difficult to remove the dirt created by the air taken from the oven muffle, which task requires complex operations for disassembling the various components of the oven door.

[0012] Moreover, the air taken from the muffle generally has a rather high temperature and cannot cool the panes properly.

[0013] Document DE102004008465A1 discloses a cooking oven including a muffle adapted to be closed by a door, a first pane and a second pane adapted to create an interspace in the door and a duct adapted to blow air into the interspace, this duct being mounted over the muffle.

[0014] Document DE4111245A1 discloses a connecting unit for connecting a first component to a second component by means of elastically movable snap hooks.

[0015] In this frame, it is the main object of the present invention to overcome the above-mentioned drawbacks by providing a cooling system for a cooking oven, in particular for household use, so designed as to be economical to produce and to not require any manual intervention for welding the delivery duct to the remaining components of the oven.

[0016] It is another object of the present invention to provide a cooling system for a cooking oven which is effective even though it is made up of low-cost parts, and which can be easily assembled when manufacturing the cooking oven as well as easily disassembled in order to, for example, gain access to internal components of said system during repair, replacement or maintenance operations.

[0017] It is a further object of the present invention to provide a cooling system for a cooking oven, in particular for household use, so designed as to allow the muffle door to be highly efficient in terms of thermal insulation and cooling of its outer surface.

[0018] It is another object of the present invention to provide a cooling system for a cooking oven, in particular for household use, so designed that the door allows good visibility of the oven muffle and of the foods contained therein.

[0019] It is yet another object of the present invention to provide a cooling system for a cooking oven, in particular for household use, so designed that the cooling air flow cannot foul the interspaces obtained between the panes, thus not requiring difficult cleaning operations.

[0020] Said objects are achieved by the present invention through a cooling system for a cooking oven, in particular for household use, incorporating the features set out in the appended claims, which are intended as an integral part of the present description.

[0021] Further objects, features and advantages of the present invention will become apparent from the following detailed description and from the annexed drawings, which are supplied by way of non-limiting example,

wherein:

- Fig. 1 is a side sectional view of a possible embodiment of a cooking oven, in particular for household use, according to the present invention;
- Fig. 2a is a top view of a first component of the cooking oven, in particular for household use, according to the present invention, and Fig. 2b shows a detail of a section A-A of Fig. 2a;
- Fig. 3a is a top view of a second component of the cooking oven, in particular for household use, according to the present invention, and Fig. 3b shows a detail of a section C-C of Fig. 3a;
- Fig. 4a is a top view of the assembly consisting of the first component of Fig. 2a and the second component of Fig. 3a, and Fig. 4b shows a detail of a section E-E of Fig. 4a;
- Fig. 5 is an exploded perspective view of the assembly of Fig. 4a;
- Fig. 6 is a perspective view of the assembly of the cooking oven of Figs. 4a and 5. Referring now to the annexed drawings, reference numeral 1 designates as a whole a cooking oven, in particular for household use, of the type comprising:
 - a cabinet 2 comprising a muffle 3 adapted to be closed by a door 4,
 - a first 5A and a second 5B panes adapted to create at least a first interspace 6A in said door 4,
 - a cooling system, designated as a whole by reference numeral 10, comprising a fan 11 and a delivery duct 12 adapted to blow a forced air flow into said first interspace 6A. In particular, said fan 11 is a tangential fan positioned within a housing 11A (visible in particular in Figs. 2a, 4a and 5) of the delivery duct 12, and is driven by a motor 13, which is advantageously of the controllable variable-speed type. Alternatively, said fan 11 may be a centrifugal or axial one.

[0022] Furthermore, the delivery duct 12 has such a shape as to ensure optimal air conveyance into the first interspace 6A of the door 4; in particular, said delivery duct 12 is substantially flat and has a flared shape, and comprises at least one slot 12A to blow a forced air flow into said first interspace 6A; Figs. 5 and 6 show a plurality of slots 12A. As can be seen in particular in Fig. 1, the door 4 of the cooking oven 1 may comprise a third pane 5C adapted to create a second interspace 6B with said second pane 5B. Preferably, the third pane 5C is associated with the door 4 in a manner such as to keep said second interspace 6B without forced ventilation; it is however also possible to associate the third pane 5C with the door 4 in a manner such as to allow the air coming from the cooling system 10 to flow into the second interspace 6B.

[0023] In a preferred embodiment, if the cooking oven 1 comprises a plurality of interspaces 6A, 6B, the first interspace 6A through which the forced air flow is blown

is the innermost one, i.e. the one closest to the muffle 3, so that the third pane 5C is the outermost pane also having an aesthetical function.

[0024] The door 4 preferably comprises a maximum number of three panes 5A, 5B, 5C, in that the cooling system 10 allows to obtain a good thermal insulation of the muffle 3 and an adequate temperature of the outermost pane 5A, 5B, 5C, i.e. the one farthest from the muffle 3; as a consequence, the cooling system 10 according to the present invention allows the door 4 to be designed with a number of panes 5A, 5B, 5C no higher than three. As known in the art, the walls of said muffle 3 are coated with a thermally insulating material, and define internally a cooking compartment wherein heating means are generally arranged (not shown in the drawings) which are adapted to raise the temperature inside said muffle 3 up to a desired food cooking temperature.

[0025] In addition, between the cabinet 2 and the muffle 3 there is a space 7 that embraces the walls of the muffle 3 so as to improve the thermal insulation between the inside of the muffle 3 and the outer surface of the cabinet 2, said space 7 at least partly containing an insulating material such as, for example, glass wool or cellular glass.

[0026] It must be noted that the air to be blown into said first interspace 6A may be drawn by the cooling system 10 indifferently from the space 7 and/or from the environment outside the cabinet 2, e.g. through a plurality of slots 2A provided in said cabinet 2.

[0027] The sealing between the door 4 and the muffle 3 is ensured by a gasket 8, generally made of rubber or fibreglass, arranged either on the edge of the muffle 3 or on the door 4; Fig. 1 only shows the upper and lower portions of the gasket 8.

[0028] In accordance with the present invention, the cooking oven 1 comprises fixing means (designated as a whole by reference numeral 100 in Figs. 4a, 4b and 6) for snap-coupling the delivery duct 12 to a plate 50, the latter being in particular adapted to be coupled to the bottom of said delivery duct 12.

[0029] As can be seen in particular in Figs. 2a to 4b, said fixing means 100 comprise at least one pair of elastic tabs 101 associated with said delivery duct 12 and at least one through hole 52 obtained in said plate 50. Each elastic tab 101 has one tooth 102 which allows the delivery duct 12 to be snap-coupled once there is no longer any interference between the tooth 102 and the through hole 52, in particular a wall 53 of the through hole 52.

[0030] In a preferred embodiment, the delivery duct 12 is made of plastic material, and said elastic tabs 101 are obtained when moulding the delivery duct 12. The delivery duct 12 may be made of a plastic material such as ABS or polyamide, in particular polyamide reinforced with glass fibres, preferably in a percentage of approximately 35% (this latter material is commercially known as PA 66 35% G F). Advantageously, the plastic material of the delivery duct 12 has adequate elastic properties and a low fibreglass charge.

[0031] The particular design of the delivery duct 12 and of the fixing means 100 according to the present invention allows to provide a cooling system for a cooking oven 1, in particular for household use, which is economical to produce and which requires no manual intervention for welding the delivery duct 12 to the remaining components of the cooking oven 1.

[0032] Furthermore, the delivery duct 12 and the fixing means 100 designed in accordance with the present invention ensure minimal plays between the delivery duct 12 and the plate 50 in both the vertical and longitudinal directions; as a consequence, in addition to making it easier to couple the delivery duct 12 to the plate 50, this design also allows to compensate for any construction tolerances of said delivery duct 12 and said plate 50.

[0033] In a preferred embodiment, said fixing means 100 are positioned at the sides of the delivery duct 12, so as to ensure adequate sealing of the delivery duct 12 and to prevent any significant leaks of cooling air, said fixing means 100 being preferably arranged symmetrically with respect to a longitudinal axis A (shown by means of a dashed-dotted line in Fig. 4a) of the cooking oven 1 and/or being in a number of at least three per side, more advantageously five per side.

[0034] Preferably, said plate 50 is made of sheet metal and said at least one through hole 52 is obtained when pressing the plate 50.

[0035] In addition, said plate 50 is secured to the sides of the cooking oven 1, an insulating material being interposed between said plate 50 and the muffle 3 to prevent the air that must be blown into said first interspace 6A from getting heated too much by the hot muffle 3.

[0036] According to a preferred embodiment, the region of the plate 50 where said at least one through hole 52 is obtained comprises an emboss. This allows to reinforce the plate 50, in particular made of sheet metal, in the region where it couples to the delivery duct 12, as well as to design each elastic tab 101 in a manner such that its length is sufficient to ensure adequate elasticity of said elastic tab 101. Said emboss is then sheared in a manner such that support surfaces are generated for the elastic tabs 101 and/or for the teeth 102.

[0037] Also, Fig. 2b shows that the tooth 102 preferably comprises a striker surface 103 which is substantially parallel to the plate 50 when the elastic tab 101 is inserted in the through hole 52; this ensures adequate grip of the tooth 102 and provides an optimal coupling between the delivery duct 12 and the plate 50.

[0038] Still in Fig. 2b, it can be seen that each elastic tab 101 is so designed as to form an angle β with the delivery duct 12, said angle β being between 45° and 80° , preferably between 72° and 77° , more preferably of approximately 76° ; the particular size of the angle β according to the present invention allows the elastic tab 101 both to become elastically deformed in an optimal manner and to be easily inserted into the through hole 52.

[0039] In Figs. 3a and 5 it is possible to see that the plate 50 comprises an opening 51 which is associated

with a hole 14 in the delivery duct 12 to allow for the passage of a tubular element 27 associated with an aperture 3A in the muffle 3.

[0040] Still in accordance with the present invention, the cooking oven 1 comprises exhaust means (designated as a whole by reference numeral 20 in Fig. 1), associated with an aperture 3A in the muffle 3, for drawing air from within said muffle 3 and exhausting it outside the oven 1, said exhaust means 20 comprising a first channel 21 obtained on an upper portion of said delivery duct 12 for carrying the air coming from said aperture 3A, said first channel 21 being associated with a second channel 22 obtained on an upper portion of said delivery duct 12 and adapted to draw at least one portion of the air processed by said fan 11.

[0041] Preferably, said at least one portion of air drawn by the second channel 22 amounts to 10% to 20%, more preferably 13% to 15%, of the air flow processed by the fan 11. This facilitates the outflow of the cooking fumes present inside the muffle 3 without requiring the use of a dedicated fan.

[0042] The exhaust means 20 according to the present invention allow the air flow drawn from within said muffle 3 to be kept separate from the air flow blown into said first interspace 6A by the cooling system 10.

[0043] The fact that the two air flows are kept separate from each other allows the door 4 to be designed in a manner such that it offers adequate visibility of the muffle 3 and of the foods contained therein, in particular because such a design prevents said first interspace 6A from getting fouled, thus avoiding the need to carry out difficult cleaning operations.

[0044] The exhaust means 20 are so conceived as to release the air taken from within said muffle 3 above an upper edge 4A of the door 4, preferably in a space S obtained between the upper edge 4A of the door 4 and a lower region 41 of a front panel 40.

[0045] The distance between the lower region 41 of the front panel 40 and the upper edge 4A of the door 4 may be very small, indicatively comprised between approx. 2 mm and approx. 6 mm, so as to create a nearly continuous surface between the front panel 40 and the door 4, leading to advantages in terms of exterior appearance and ease of cleaning of the cooking oven 1.

[0046] Preferably said second channel 22 has a restriction 22A upstream of an intersection with said first channel 21, so as to cause a depression through the Venturi effect near said intersection and enhance the drawing of air from within said muffle 3; this advantageously facilitates the discharge of the air taken from within the muffle 3 and present in the first channel 21. Furthermore, the air taken from within the muffle 3 is dragged by the air flow tapped by the fan 11 into a third channel 23 obtained on an upper portion of said delivery duct 12 and located downstream of the intersection between the first 21 and second 22 channels.

[0047] The air present in said third channel 23 then flows through at least one outlet 24 (shown in particular

in Figs. 1 and 6) and is released into said space S.

[0048] As can be observed in particular in Figs. 1, 4a, 5 and 6, said exhaust means 20 comprise a cover 25 adapted to be associated with said upper portion of the delivery duct 12 in a manner such as to enclose said first 21, second 22 and third 23 channels. Figs. 1 and 5 also show that the exhaust means 20 according to the present invention further comprise:

- a diverter element 26, in particular wedge-shaped, positioned in said third channel 23 to divert the air flow towards said at least one outlet 24. The diverter element 26 is preferably fitted in by laying it onto the delivery duct 12 and by securing the cover 25 to said upper portion of the delivery duct 12, said cover 25 being secured by vibration or ultrasonic welding. The diverter element 26 thus gets trapped and remains permanently positioned in its seat. Alternatively, the diverter element 26 may be obtained in one piece with the delivery duct 12 or the cover 25;
- a tubular element 27 associated with the aperture 3A in the muffle 3 and adapted to pass through a hole 14 (visible in Figs. 1, 2a and 5) in the delivery duct 12 for allowing the air drawn from within the muffle 3 to reach said first channel 21.

[0049] Between the tubular element 27 and the first channel 21 an actuator may be interposed (not shown in the drawings), such as a butterfly valve, for regulating, in particular during a cooking cycle, the time periods in which the cooking fumes are evacuated outside the cooking oven 1 and those in which the muffle 3 is kept airtight.

[0050] In addition, the upper portion of the delivery duct 12 comprises a plurality of coupling means 30 for securing some functional elements of the cooking oven 1 to said delivery duct 12. Said functional elements are shown schematically in Fig. 6 and may comprise one or more of the following elements: an electronic board 31, an interface board 32, a door lock device 33 for locking the door 4, and so on.

[0051] Preferably, said coupling means 30 are obtained during the same moulding operation carried out for manufacturing the delivery duct 12, which is made of plastic material.

[0052] If the cooking oven 1 must include a microwave generator for at least one microwave-based or microwave-aided cooking cycle, the door 4 may internally comprise at least one protective shield to prevent it from being crossed by microwaves, and the cooking oven 1 comprises a safety switch (not shown in the drawings) adapted to automatically turn off the microwave generator when the door 4 is opened. The safety switch is advantageously secured to the cooking oven 1 by constraining it to the delivery duct 12 through coupling means 30.

[0053] It must be stressed that the provision of the coupling means 30 (such as turrets or seats) obtained in one piece with the plastic delivery duct 12 is per se to be considered as an invention, regardless of any additional

features of the delivery duct 12 and of the cooking oven 1. This provision makes assembling the cooking oven 1 considerably simpler, while reducing the number of components and hence the costs thereof. Moreover, the functional components are positioned more accurately and are secured in a safer and more reliable manner compared to the prior art.

[0054] As far as the cooling system 10 is concerned, it is so designed as to generate a downward-directed forced air flow within said first interspace 6A; in fact, said forced air flow passes through said at least one slot 12A and is then directed from the upper edge 4A to a lower edge 4B of the door 4.

[0055] The fact that the air flow within said first interspace 6A has a downward direction is particularly advantageous because said air flow can adequately cool the upper edge 4A of the door 4, which is the one with which the user is more likely to come accidentally in contact, since it is near the front panel 40 where the interface devices of the cooking oven 1 are located (not shown in the drawings).

[0056] Preferably said upper edge 4A is associated with a conveying element 9A adapted to convey the air flow coming from the cooling system 10 into the first interspace 6A and/or the second interspace 6B.

[0057] Said conveying element 9A has a profile so shaped as to change the direction of the air flow coming from the cooling system 10 by about 90°. The conveying element 9A may be associated with the door 4 at the inlet section of the first interspace 6A, or it may be associated with any other component of the cooking oven 1 at the outlet section of the delivery duct 12.

[0058] Moreover, the lower edge 4B comprises deflector means 9B associated with said first 5A and second 5B panes, said deflector means 9B being bent in a direction opposite to the muffle 3; the provision of the deflector means 9B allows the air flow coming from said first interspace 6A and/or said second interspace 6B to be directed towards an external portion of the oven 1, in particular a portion thereof being external to said door 4. Advantageously, the flow is diverted in a manner such that it has at least one horizontal motion component.

[0059] Said deflector means 9B comprise a pair of deflectors, each of which may consist of a specific element applied to the structure of the door 4 or obtained by appropriately shaping a structural element of the door 4. As an alternative, the deflector means 9B may be provided by means of a single element having contemporarily the functions of securing the first pane 5A, diverting the flow coming from the first interspace 6A, and also, advantageously, collecting any condensate forming on the first pane 5A.

[0060] The advantages of a cooking oven, in particular for household use, according to the present invention are apparent from the above description.

[0061] In particular, the special design of the delivery duct 12 and of the fixing means 100 according to the present invention allows to provide a cooling system for

a cooking oven 1, in particular for household use, which is economical to produce and which requires no manual intervention for welding the delivery duct 12 to the remaining components of the cooking oven 1.

[0062] The special design of the delivery duct 12 and of the fixing means 100 according to the present invention also provides a cooling system for a cooking oven which is effective even though it is made up of low-cost parts, and which can be easily assembled when manufacturing the cooking oven as well as easily disassembled in order to, for example, gain access to internal components of said system during repair, replacement or maintenance operations.

[0063] Furthermore, the delivery duct 12 and the fixing means 100 designed in accordance with the present invention ensure minimal plays between the delivery duct 12 and the plate 50 in both the vertical and longitudinal directions; as a consequence, in addition to making it easier to couple the delivery duct 12 to the plate 50, this design also allows to compensate for any construction tolerances of said delivery duct 12 and said plate 50.

[0064] Also, the fact that the fixing means 100 are distributed sideways relative to a longitudinal axis A of the cooking oven 1 ensures adequate sealing of the delivery duct 12.

[0065] The fact that the region of the plate 50 where said at least one through hole 52 is obtained is so designed as to comprise an emboss allows both reinforcing the plate 50 in the region where it couples to the delivery duct 12 and making each elastic tab 101 sufficiently long to ensure adequate elasticity.

[0066] Another advantage of the cooking oven according to the present invention is that the particular design of the tooth 102, which comprises a striker surface 103, ensures adequate grip of the tooth 102 and an optimal coupling between the delivery duct 12 and the plate 50. In addition, the particular size of the angle β formed between each elastic tab 101 and the delivery duct 12 allows the elastic tab 101 to become elastically deformed in an optimal manner and to be easily inserted into the through hole 52.

[0067] The fact that the air flow taken from within said muffle 3 is kept separate from the air flow blown into said first interspace 6A allows to make a door 4 which ensures adequate visibility of the muffle 3 and of the foods contained therein, and wherein said first interspace 6A will not get fouled. As a consequence, such a design avoids having to carry out difficult cleaning operations.

[0068] A further advantage offered by the cooking oven according to the present invention is that the particular design of the second channel 22 as previously described, i.e. featuring a restriction 22A in the proximity of an intersection with said first channel 21, generates a Venturi effect that facilitates the drawing of air from within said muffle 3; consequently, this significantly improves the discharge of the air taken from within the muffle 3 and present in the first channel 21.

[0069] The discharge of the air taken from within the

muffle 3 is then further facilitated by the fact that it is dragged by the air flow tapped by the fan 11, i.e. along with at least some of the air coming from said fan 11.

[0070] Another advantage of the cooking oven 1 according to the present invention is given by the provision of a plurality of coupling means 30 on the upper portion of the delivery duct 12; in fact, said coupling means 30 allow a number of functional elements of the cooking oven 1 to be optimally secured to said delivery duct 12.

[0071] A further advantage is that said cooling system 10 allows to generate a downward-directed air flow within said first interspace 6A, i.e. an air flow directed from the upper edge 4A to the lower edge 4B of the door 4; advantageously, such a design ensures proper cooling of the upper edge 4A of the door 4, which is the most dangerous one because it is the one with which the user is more likely to come accidentally in contact.

[0072] As a result, the special design of the cooking oven 1 according to the present invention allows the door 4 to be very efficient in terms of thermal insulation and cooling of its outer surface.

[0073] Moreover, the particular design of the cooking oven 1 according to the invention offers the additional advantage that it only uses one fan 11 for drawing air from the muffle 3 and exhausting it above the upper edge 4A of the door 4 as well as for blowing a forced air flow into the first interspace 6A.

[0074] The cooking oven described herein by way of example may be subject to many possible variations without departing from the novelty spirit of the inventive idea; it is also clear that in the practical implementation of the invention the illustrated details may have different shapes or be replaced with other technically equivalent elements.

[0075] It can therefore be easily understood that the present invention is not limited to the above-described cooking oven, in particular for household use, but may be subject to many modifications, improvements or replacements of equivalent parts and elements without departing from the inventive idea, as clearly specified in the following claims.

Claims

1. A cooking oven (1), in particular for household use, of the type comprising:
 - a cabinet (2) comprising a muffle (3) adapted to be closed by a door (4),
 - a first (5A) and a second (5B) panes adapted to create at least a first interspace (6A) in said door (4),
 - a cooling system (10) comprising a fan (11) and a delivery duct (12) adapted to blow air into said first interspace (6A),

characterized in that said cooking oven (1) comprises fixing means (100) for snap-coupling the de-

livery duct (12) to a plate (50), the latter being in particular adapted to be coupled to the bottom of said delivery duct (12),
and **in that** said fixing means (100) comprise at least one pair of elastic tabs (101) associated with said delivery duct (12) and at least one through hole (52) obtained in said plate (50).

advantageously five per side.

2. A cooking oven (1) according to one or more of the preceding claims, **characterized in that** each elastic tab (101) has one tooth (102) which allows the delivery duct (12) to be snap-coupled once there is no longer any interference between the tooth (102) and the through hole (52), in particular a wall (53) of the through hole (52).
3. A cooking oven (1) according to claim 2, **characterized in that** said tooth (102) comprises a striker surface (103) which is substantially parallel to the plate (50) when the elastic tab (101) is inserted in the through hole (52).
4. A cooking oven (1) according to one or more of the preceding claims, **characterized in that** said delivery duct (12) is made of plastic material and said elastic tabs (101) are obtained when moulding the delivery duct (12).
5. A cooking oven (1) according to claim 4, **characterized in that** said delivery duct (12) is made of polyamide, said polyamide being in particular reinforced with glass fibres.
6. A cooking oven (1) according to one or more of the preceding claims, **characterized in that** said plate (50) is made of sheet metal and said at least one through hole (52) is obtained when pressing the plate (50).
7. A cooking oven (1) according to one or more of the preceding claims, **characterized in that** the region of said plate (50) where said at least one through hole (52) is obtained comprises an emboss, said emboss being in particular sheared in a manner such that support surfaces are generated for the elastic tabs (101) and/or for the teeth (102).
8. A cooking oven (1) according to one or more of the preceding claims, **characterized in that** each elastic tab (101) is made in a manner such that it forms an angle (β) with the delivery duct (12), said angle (β) being between 45° and 80°, preferably between 72° and 77°, more preferably of approximately 76°.
9. A cooking oven (1) according to claim 1, **characterized in that** said fixing means (100) are arranged symmetrically relative to a longitudinal axis (A) of the cooking oven (1) and/or are at least three per side,

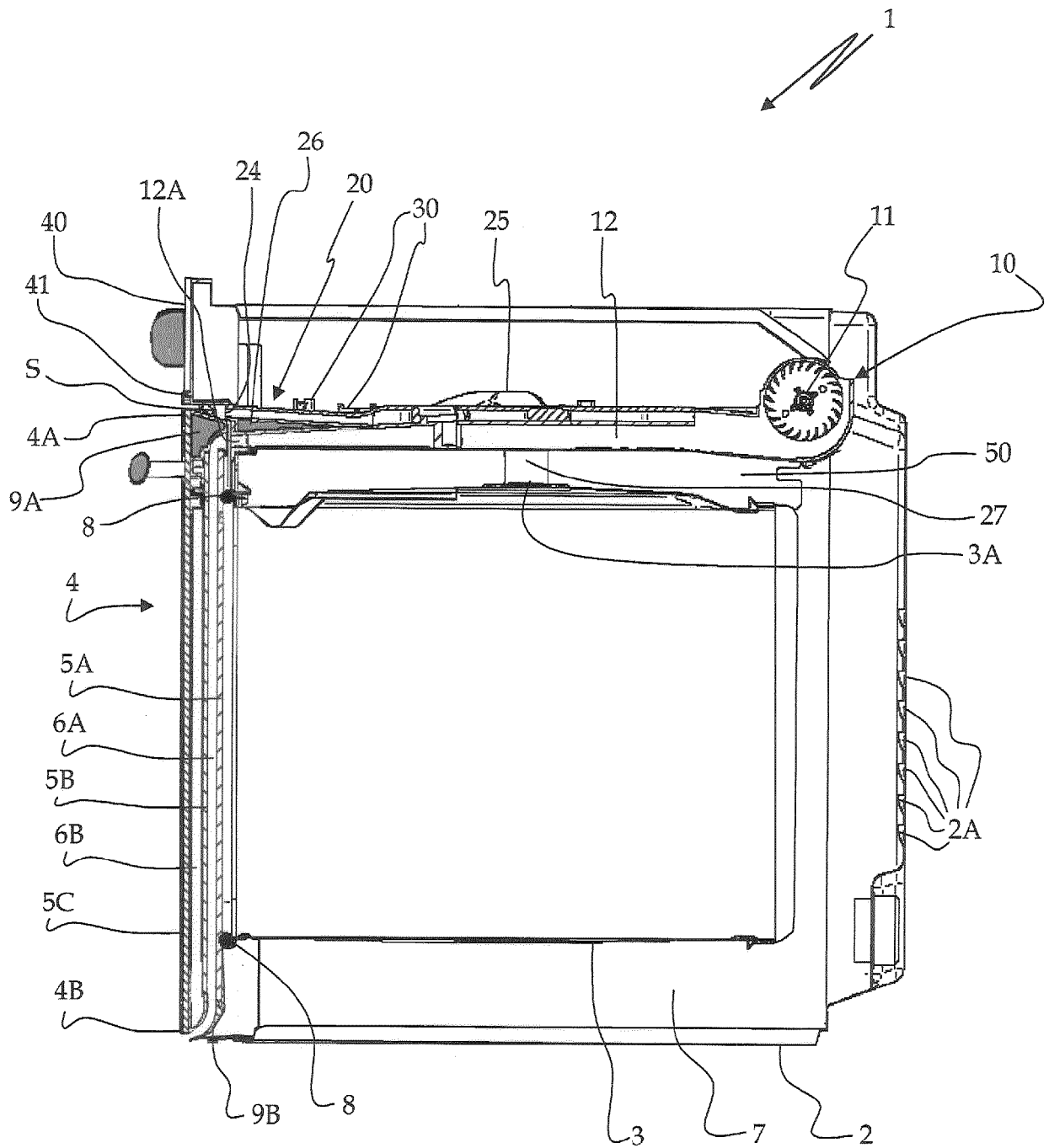


Fig. 1

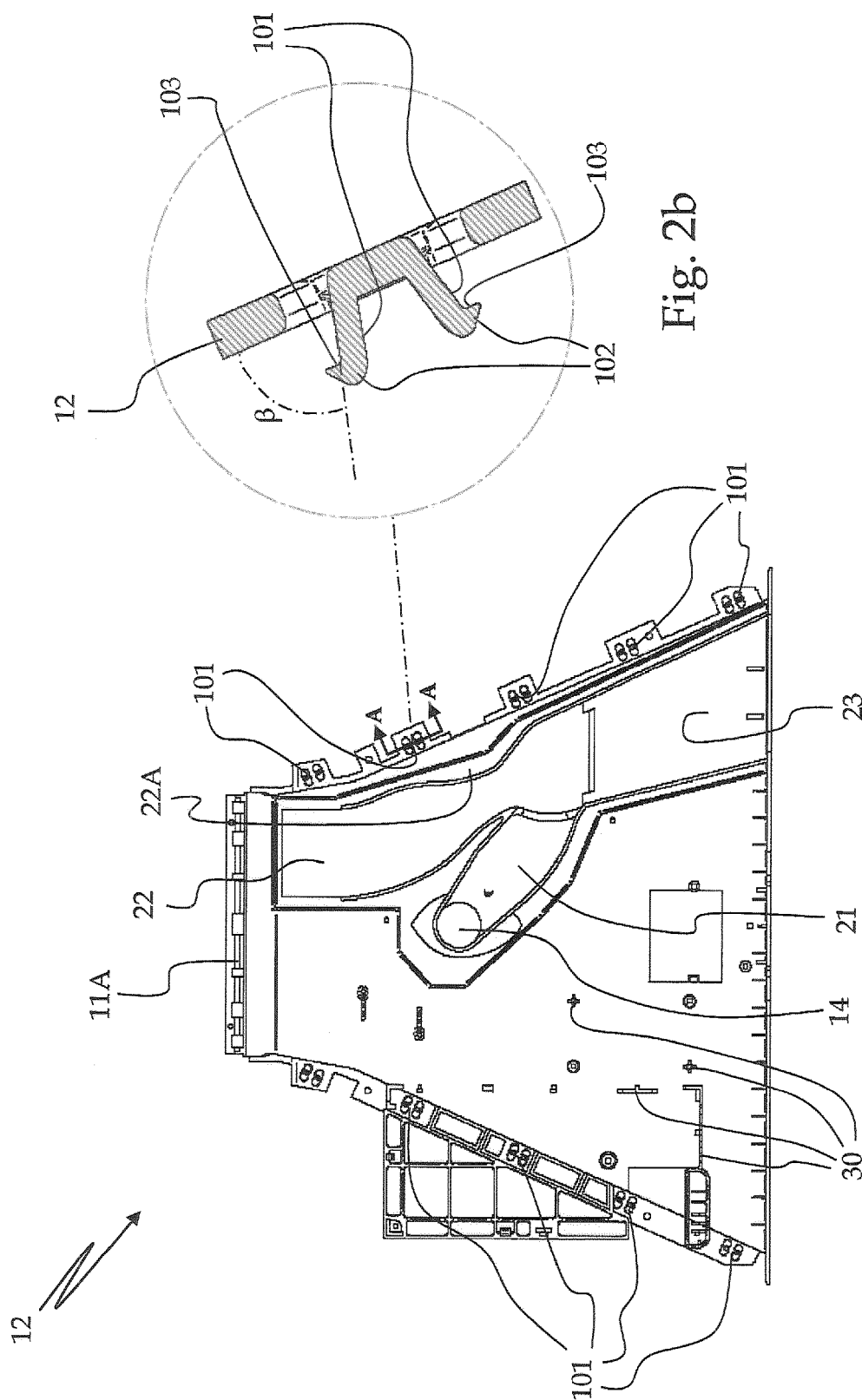
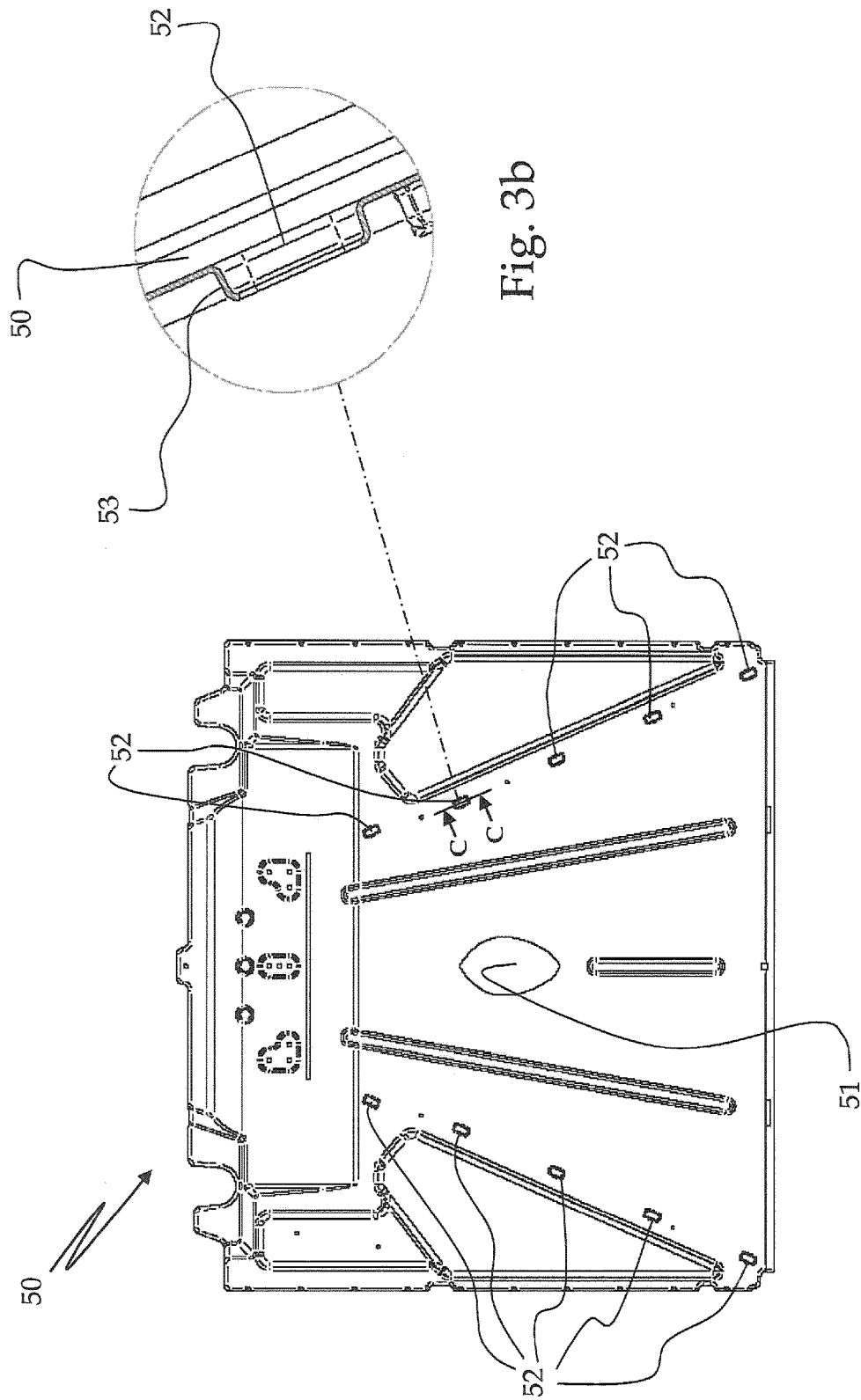


Fig. 2a

Fig. 2b



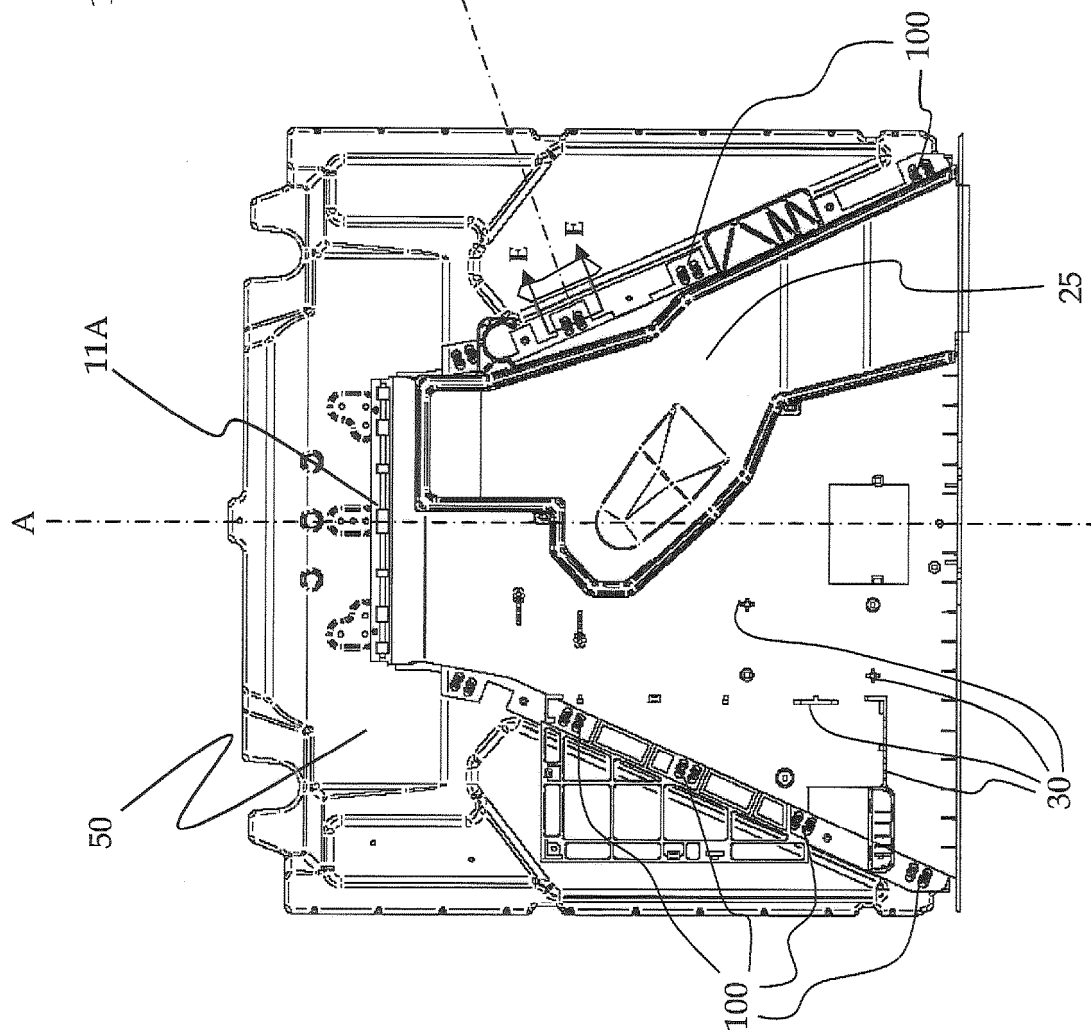


Fig. 4a

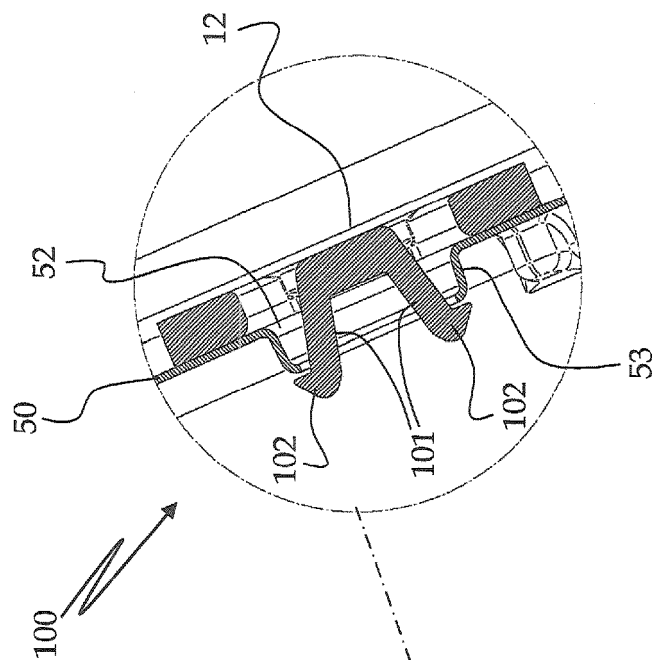


Fig. 4b

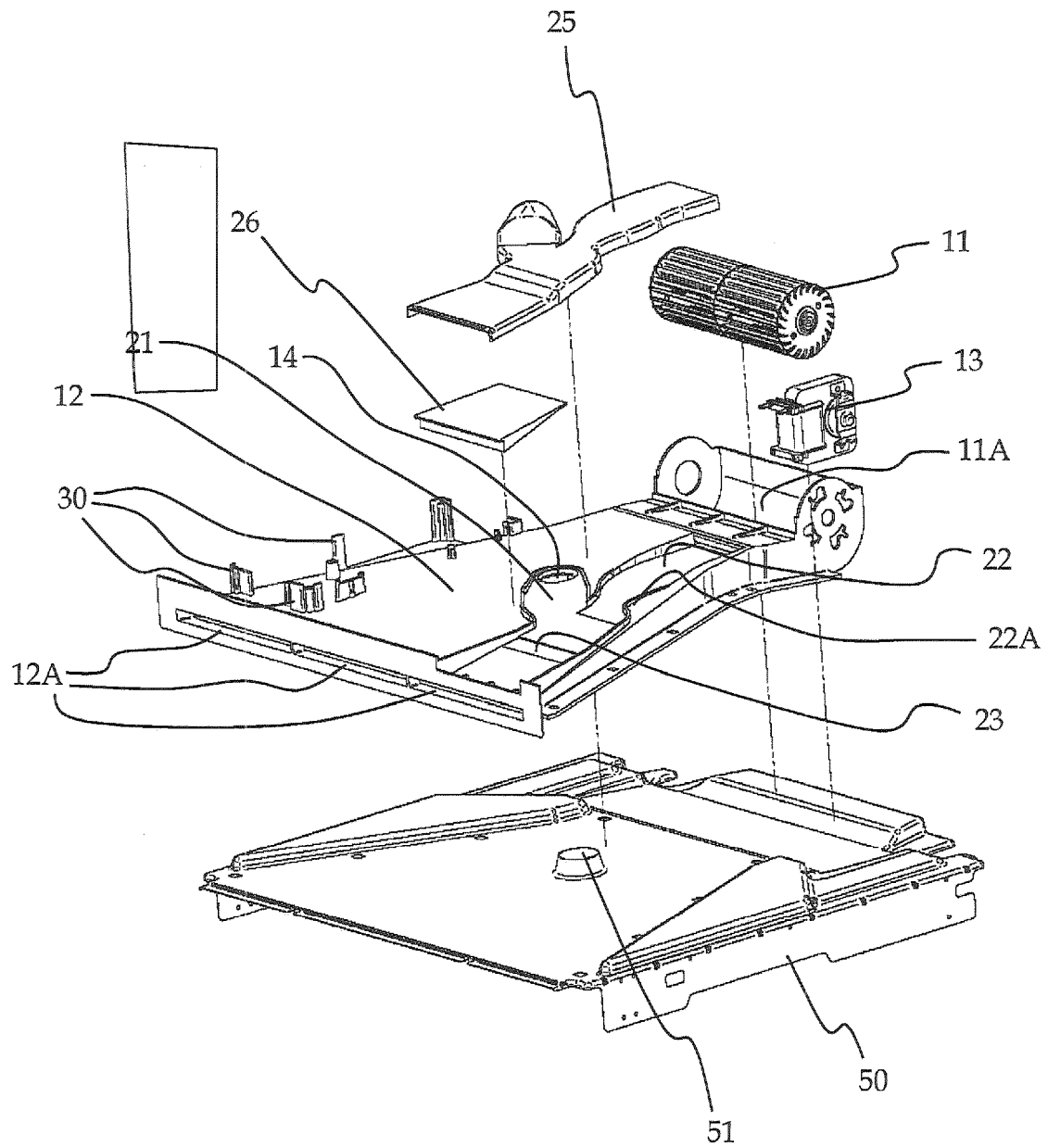


Fig. 5

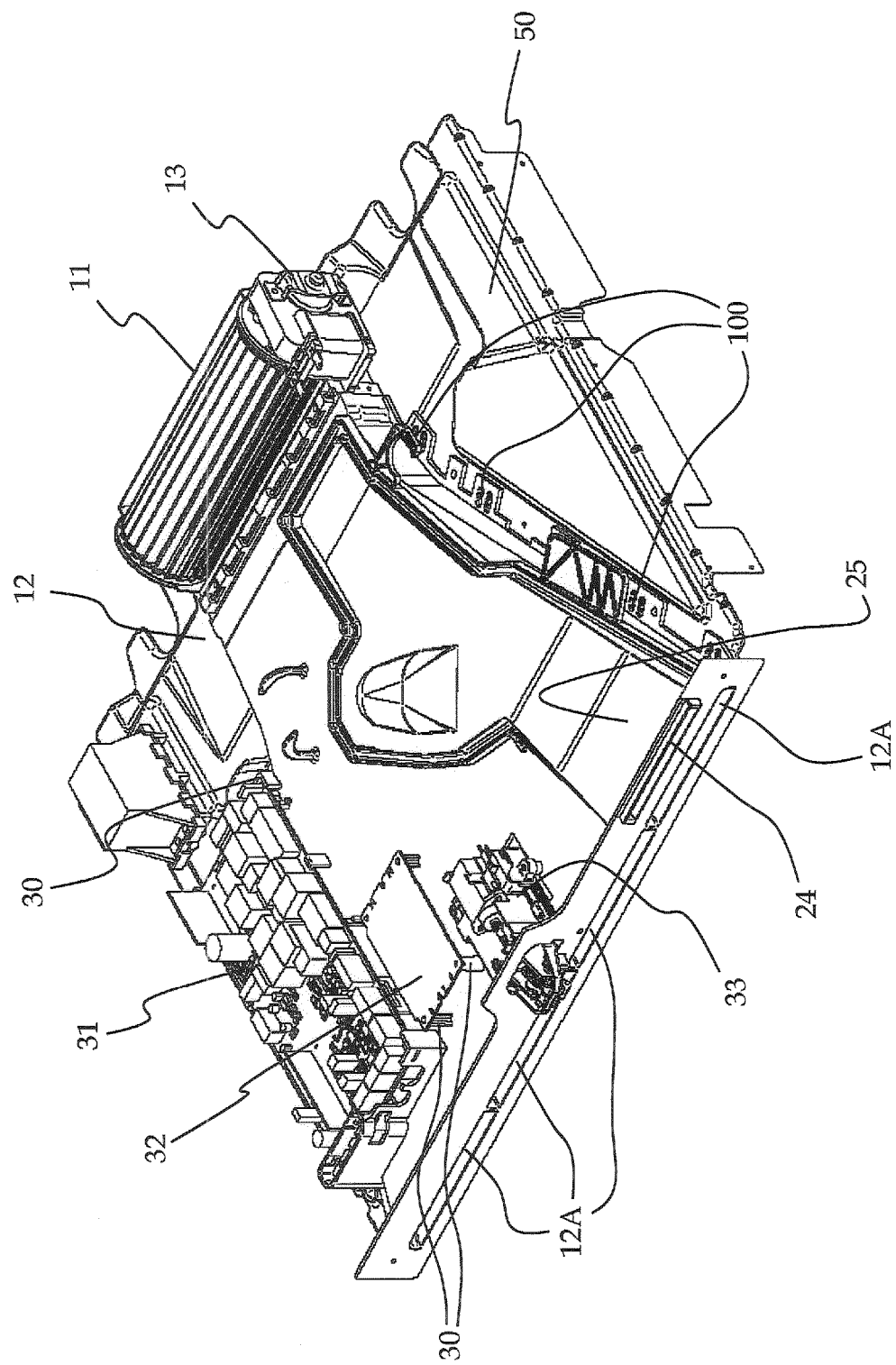


Fig. 6



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Place of search The Hague		Date of completion of the search 13 September 2016	Examiner Adant, Vincent
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