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(54) **Fan oven, in particular for domestic use**

(57) The present invention relates to an oven (1) of the ventilated type, in particular for domestic use, comprising:

- a muffle (10) defining a cooking compartment (10V) where food to be cooked is placed, said muffle (10) comprising a bottom wall (11), a top wall (12), a back wall (13), a front wall (14) opposite to said back wall (13), and two mutually opposite side walls (15);
- heating means (20) associated with the muffle (10) for heating air in said muffle (10) and causing said food to be cooked;
- a fan (30) for circulating air in said muffle (10), the fan (30) being located in a cavity (40) associated with the back wall (13) of the muffle (10) via a bulkhead (41);
- inlet means (50) allowing said cavity (40) to be in fluidic communication with the compartment (10V) of the muffle (10), so as to allow the air contained in said cavity (40) and moved by the fan (30) to flow into the compartment (10V) of the muffle (10), said inlet means (50) comprising at least one opening (51) in said bulkhead (41);
- return means (60) allowing the compartment (10V) of the muffle (10) to be in fluidic communication with the cavity (40), so as to allow the air contained in said compartment (10V) to be sucked in by the fan (30) and return into the cavity (40), said return means (60) comprising at least one passage (61) in said bulkhead (41).

The invention is characterized in that said return means (60) comprise a channel (62) comprising a first end (62A) associated with said at least one passage (61) and a second end (62B) situated in the proximity of the front wall (14), so as to draw air near the front wall (14) of the muffle (10) and convey it towards the fan (30) through said at least one passage (61).

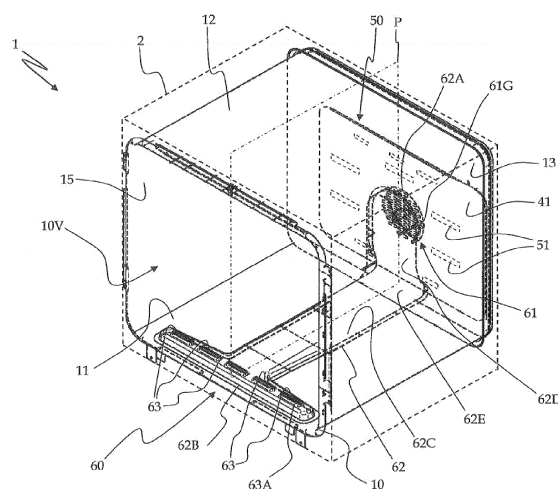


Fig. 2

Description

[0001] The present invention relates to an oven of the ventilated type, in particular for domestic use, according to the preamble of claim 1.

[0002] The present invention is typically applicable to ventilated ovens, in particular for domestic use, of the type comprising a compartment for cooking food.

[0003] As is known, different types of ovens are currently available on the market; the most widespread ones include ovens of the static type and ovens of the ventilated type.

[0004] An oven of the static type known in the art comprises:

- a muffle defining a cooking compartment where food to be cooked is placed, said muffle comprising a bottom base, a top wall or "ceiling", a back wall, a front wall opposite to said back wall, and two mutually opposite side walls;
- heating means associated with the muffle for heating air in said muffle and causing said food to be cooked.

[0005] Usually the front wall of an oven of the static type comprises a door which can be opened in order to place food to be cooked into the cooking compartment.

[0006] Compared to the above-described oven of the static type, an oven of the ventilated type additionally includes a fan associated with said heating means, the fan and the heating means being typically situated in a cavity associated with the back wall of the muffle.

[0007] The ovens of the ventilated type known in the art suffer from the drawback that the air circulated by the fan and conveyed towards the cooking compartment of the muffle stagnates within said cavity; as a consequence, this inevitably leads to a reduced fluid-dynamic efficiency of the oven, and hence to a reduced efficiency of the food cooking process taking place in said cooking compartment.

[0008] In addition, an oven of the ventilated type known in the art usually comprises:

- inlet means allowing said cavity to be in fluidic communication with the compartment of the muffle, so as to allow the air contained in said cavity and moved by the fan to flow into the compartment of the muffle, said inlet means comprising at least one opening in said bulkhead, in particular in a perimetric position thereof;
- return means allowing the cooking compartment to be in fluidic communication with the cavity, so as to allow the air contained in said compartment to be sucked in by the fan and return into the cavity, said return means comprising at least one passage in said bulkhead, in particular in a central position thereof.

[0009] In such a prior-art oven of the ventilated type,

the fan sucks air into said cavity from the cooking compartment, in particular through said at least one passage obtained in the bulkhead that separates the cooking compartment from the cavity; in said cavity, the air gets heated through contact with the heating means; the air flow generated by the fan and heated is then reintroduced into the cooking compartment through said at least one opening obtained in the bulkhead.

[0010] Ventilated ovens are somewhat advantageous over static ovens, the advantage mainly consisting of the fact that the air circulation caused by the fan's action ensures a better distribution of the hot air in the cooking compartment. However, although ventilated ovens actually improve the distribution of the hot air flow, it has been observed in practice that said air distribution is often not uniform enough to ensure proper cooking of foods arranged together at different levels in the cooking compartment. As a matter of fact, it has been observed that, when several shelves or dripping pans are placed at different levels in the cooking compartment, the foods contained therein get cooked differently.

[0011] Furthermore, such dishomogeneousness of air distribution in the cooking compartment is also observed at the same level, since foods get cooked differently even when they are put on a single shelf.

[0012] It is clear that this inevitably poses significant difficulties to the user, who will find it impossible to attain a homogeneous cooking of foods placed in the cooking compartment.

[0013] Moreover, the generic configurations according to the prior art seem to not take properly into account the fluid dynamics in the cooking compartment, also as concerns the effects exerted thereon by the direction of rotation of the fan, which generates the air flow in the chamber and in the cavity; therefore, the state of the art still suffers from the aforementioned drawbacks caused by uneven hot air distribution in the cooking compartment.

[0014] In addition, the presence of at least one passage (for sucking air into said cavity from the cooking compartment) and at least one opening (for reintroducing into the cooking compartment the hot air flow generated by the fan) obtained in the bulkhead that separates the cavity from the cooking compartment does not allow for optimally feeding and distributing the hot air in the cooking compartment or adequately sucking in the air from said cooking compartment.

[0015] In fact, it may happen that the air flow drawn from the cooking compartment will interfere with the air flow fed into the cooking compartment, and vice versa; such interference between the different air flows will inevitably impair the hot air distribution in the cooking compartment.

[0016] Furthermore, the foods being cooked are mostly lapped by the return air flow, resulting in a loss of cooking efficiency due to the fact that the return flow has a lower energy content than the delivery flow.

[0017] The present invention aims at solving these and other problems suffered by the ventilated ovens known

in the art.

[0018] In this frame, it is the main object of the present invention to provide an oven of the ventilated type, in particular for domestic use, which is so realized as to ensure optimal uniformity of distribution of the hot air flow in the cooking compartment.

[0019] It is another object of the present invention to provide an fan oven of the ventilated type, in particular for domestic use, which is so realized as to ensure sufficient and adequate uniformity of distribution of the hot air flow for cooking foods simultaneously placed at different levels in the cooking compartment, as well as for cooking foods placed at the same level in the cooking compartment.

[0020] It is a further object of the present invention to provide an oven of the ventilated type, in particular for domestic use, which is so realized as to properly take into account the fluid dynamics existing in the cooking compartment, especially as concerns the effects exerted thereon by the direction of rotation of the fan.

[0021] It is another object of the present invention to provide an oven of the ventilated type, in particular for domestic use, wherein hot air is optimally fed and distributed into the cooking compartment, and wherein air is adequately drawn from said cooking compartment.

[0022] It is a further object of the present invention to provide an oven of the ventilated type, in particular for domestic use, which is so realized as to limit as much as possible said loss of fluid-dynamic efficiency of the oven, thus increasing the efficiency of the food cooking process taking place in said cooking compartment.

[0023] It is yet another object of the present invention to reduce the noisiness of the oven, in particular the noise due to circulation of air delivered by the fan.

[0024] Said objects are achieved by the present invention through an oven of the ventilated type, in particular for domestic use, incorporating the features set out in the appended claims, which are intended to be an integral part of the present description.

[0025] 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 first perspective view of an oven of the ventilated type, in particular for domestic use, according to the present invention;
- Fig. 2 is a second perspective view of the oven of Fig. 1;
- Fig. 3 is a sectional side view of the oven according to the present invention;
- Fig. 4 is an exploded perspective view of some elements of the cooking oven according to the present invention.

[0026] Referring now to the drawings, reference numeral 1 designates as a whole an oven of the ventilated

type, in particular for domestic use, according to the present invention.

[0027] The oven 1 comprises a muffle 10 defining a cooking compartment 10V where food to be cooked is placed, said muffle 10 comprising a bottom wall or base 11, a top wall or ceiling 12, a back wall 13, a front wall 14 opposite to said back wall 13, and two mutually opposite side walls 15.

[0028] In the present description, expressions such as "top", "bottom", "front", "side" and the like are to be understood with reference to a preferred orientation of the oven 1 in an operating condition, i.e. a condition in which it is normally used for cooking food placed in the compartment 10V.

[0029] The muffle 10 is preferably housed in a cabinet 2 of the oven 1, said cabinet 2 being represented by a dashed line in Figures 1 and 2; the space between the cabinet 2 and the muffle 10 may be at least partially filled with insulating material (not shown in the drawings).

[0030] Inside the muffle 10 there may be a plurality of shelves 10R (comprising, for example, extractable dripping pans or wire-racks, visible in simplified form in Fig. 3 and partially shown in Fig. 4), by means of which foods to be cooked can be arranged at different levels in the compartment 10V.

[0031] As can be seen in the side section shown in Fig. 3 (said side section lying in a plane P, represented by a dashed-dotted line in Figs. 1 and 2), the front wall 14 comprises a door 14S; as known in the art, the door 14S is hinged to the cabinet 2 and/or to the muffle 10, so as to switch the muffle 10 from a closed configuration (which configuration is typically used when cooking foods in the cooking compartment 10V) to an open configuration (which configuration is typically used when placing food to be cooked into the cooking compartment 10V), and vice versa.

[0032] Preferably, said door 14S comprises at least one transparent pane 14T, in particular made of glass; said at least one transparent pane 14T allows a user to look into the compartment 10V, in particular for the purpose of visually checking the cooking of the food in the compartment 10V.

[0033] The oven 1 comprises heating means 20 (shown in Fig. 3) associated with the muffle 10 for heating air in said muffle 10 and causing said food to be cooked. The oven 1 also comprises a fan 30 for circulating air in said muffle 10, the fan 30 being situated in a cavity 40 associated with the back wall 13 of the muffle 10 via a bulkhead 41.

[0034] In a preferred embodiment, the heating means 20 are associated with the fan 30 and are situated in said cavity 40; furthermore, said heating means 20 are preferably of the resistive type and comprise at least one electric resistor, in particular a circular one and/or such as to surround said fan 30.

[0035] In a further preferred embodiment, the fan 30 is of the type that sucks in air axially and circulates it radially (in Fig. 3 the paths followed by the air in the com-

partment 10V of the muffle 10 are shown by means of dashed lines), and said heating means 20 (in particular consisting of an electric resistor) are substantially so realized as to surround the fan 30, so that they are lapped by all the air circulated by said fan 30, thus optimizing the heating thereof within said muffle 10.

[0036] It is however clear that the heating means 20 may be realized in a different manner and be placed in other positions in the muffle 10.

[0037] Advantageously, the oven 1 also comprises auxiliary heating means (not shown in the drawings) associated with the ceiling 12 for irradiation cooking. The oven 1 according to the present invention further comprises:

- inlet means (generically indicated by reference numeral 50 in Figs. 1 and 2) allowing said cavity 40 to be in fluidic communication with the compartment 10V of the muffle 10, so as to allow the air contained in said cavity 40 and moved by the fan 30 to flow into the compartment 10V of the muffle 10, said inlet means 50 comprising at least one opening 51 in said bulkhead 41;
- return means (generically indicated by reference numeral 60 in Figs. 1 and 2) allowing the compartment 10V of the muffle 10 to be in fluidic communication with the cavity 40, so as to allow the air contained in said compartment 10V to be sucked in by the fan 30 and return into the cavity 40, said return means 60 comprising at least one passage 61 in said bulkhead 41.

[0038] Preferably, said at least one opening 51 comprises a plurality of openings 51 obtained at different levels in said bulkhead 41, so that an adequate air flow can reach every shelf 10R.

[0039] It can be observed in Figs. 2 and 4 that said at least one passage 61 comprises a grid 61G adapted to divide the passage 61 into a plurality of holes; it is however clear that said at least one passage 61 may be so realized as to include no additional elements, thus having a single hole corresponding to said passage 61. In fact, thanks to the provisions of the present invention, the presence of the grid 61G is not necessary, since the fan 30 is not accessible to the user while the oven 1 is in operation.

[0040] In accordance with the present invention, said return means 60 comprise a channel 62 having a first end 62A associated with said at least one passage 61 and a second end 62B situated in the proximity of the front wall 14, so as to draw air near the front wall 14 of the muffle 10 and convey it towards the fan 30 through said at least one passage 61.

[0041] As a consequence, the channel 62 extends from the back wall 13 to proximate the front wall 14.

[0042] The special provision of the channel 62 allows to properly take into account the fluid dynamics existing in the cooking compartment 10V and to ensure uniformity

of air distribution in the compartment 10V in order to obtain a homogeneous cooking of the foods placed therein.

[0043] In fact, the presence of the channel 62 allows to optimally feed and distribute hot air into the cooking compartment 10V, as well as to adequately draw air from said cooking compartment 10V, while also distributing the air flow delivered through said at least one opening 51 throughout the volume of the cooking compartment 10V.

[0044] This happens mainly because the channel 62 allows to prevent the air flow drawn from the cooking compartment 10V from interfering with the air flow delivered into said cooking compartment 10V, and vice versa; as a result, the absence of any interference between the different air flows considerably improves the distribution of the hot air in the cooking compartment 10V.

[0045] Said channel 62 is associated with at least one of said bottom wall 11, top wall 12 and two side walls 15; in particular, said channel 62 is associated with the bottom wall 11 of the muffle 10, in particular in such a way that said bottom wall 11 can also form the base of said channel 62. Preferably, said channel 62 is at least partly secured to the bottom wall 11 through fastening means (not shown, since they are of a known type). Screws are advantageously used as fastening means in order to ensure internal access to said channel 62 for maintenance and/or service.

[0046] In a preferred embodiment, said second end 62B of the channel 62 comprises at least one port 63 for sucking in air near the front wall 14.

[0047] Preferably, said at least one port 63 is placed on a ridge 63A of the second end 62B, said ridge 63A being raised relative to the second end 62B and to the bottom wall 11. This allows said at least one port 63 to suck in the air near the front wall 14 without being clogged by food residues or overflows (especially liquid ones) which may accumulate on said bottom wall 11; as a result, such a provision ensures the proper operation of the port 63 and of the entire channel 62.

[0048] As can be seen in the annexed drawings, the channel 62 comprises:

- an intermediate body 62C connecting the first end 62A and the second end 62B, in particular said intermediate body 62C being so realized as to extend along a substantially central portion of the bottom wall 11;
- said second end 62B being so realized as to longitudinally extend in the proximity of the front wall 14, said second end 62B comprising a plurality of ports 63.

[0049] As a consequence, the channel 62 substantially has a "T" shape when viewed from above, in particular when viewed from above starting from the back wall 13 towards the front wall 14.

[0050] The particular shape of the channel 62, in particular of the second end 62B, allows the air contained

in the cooking compartment 10V to be adequately sucked in; in particular, the shape of the second end 62B and the positioning of the plurality of ports 63 in the proximity of the front wall 14 allows to draw the air farthest from the fan 30, while at the same time scrubbing the entire transparent pane 14T to eliminate any condensate possibly formed thereon and to keep the temperature of said transparent pane 14T as even as possible, so as to reduce any tensions that might be generated on the transparent pane 14T, in particular when pyrolysis is taking place.

[0051] In a preferred embodiment, the channel 62 comprises a section 62D that connects the first end 62A to the intermediate body 62C, in particular said section 62D being associated with the bulkhead 41 and extending substantially in a vertical direction in said compartment 10V. Preferably, the section 62D is at least partially secured to the bulkhead 41 through fastening means (not shown, since they are of a known type, e.g. screws), so that said bulkhead 41 can constitute at least a part of the section 62D of the channel 62.

[0052] As a consequence, the channel 62 substantially has a "laid-down L" shape, when viewed from the side (e.g. in the sectional view of Fig. 3). Preferably, the channel 62 is made as two pieces connected together in the proximity of a curved section 62E, the first piece comprising the first end 62A and the section 62D, and the second piece comprising the second end 62B and the intermediate body 62C.

[0053] As aforementioned in the present description, the cavity 40 is obtained by associating the bulkhead 41 with the back wall 13.

[0054] In accordance with the present invention, the oven 1 comprises portions of the bulkhead 41 and of the back wall 13 cooperating to form the cavity 40 and having smooth corners 13A, 41A and/or rounded edges to prevent the air circulated by the fan 30 and conveyed towards said at least one opening 51 from stagnating within the cavity 40, resulting in a loss of fluid-dynamic efficiency of the oven 1 and leading to a less efficient cooking process.

[0055] With reference to this aspect, Figures 1 and 4 show that the back wall 13 comprises first smooth corners 13A (visible in Fig. 4), and that the bulkhead 41 comprises respective second smooth corners 41A, said first corners 13A being coupled to the second corners 41A to form respective corners (not shown) of the cavity 40.

[0056] Such a provision proves to be particularly advantageous because, by preventing air from stagnating within the cavity 40, it is possible to obtain an adequate air circulation in the cavity 40 and an optimal change of air in the cooking compartment 10V; as a consequence, the maximum air flow circulated by the fan 30 can be exploited for cooking food in the compartment 10V.

[0057] The openings 51 are distributed over the bulkhead 41 as a function of the direction of rotation of the fan 30 and/or of the position of the shelves 10R in the compartment 10V of the muffle 10, particularly in such a

way as to ensure that there is at least one opening 51 for each cooking level.

[0058] The openings 51 are preferably rectangular in shape, and are obtained by means of shearing and bending operations.

[0059] Preferably, said openings 51 comprise:

- at least one upper opening 51A feeding the portion of the compartment 10V above the uppermost shelf 10R, which can preferably be combined with an accessory such as a separator (not shown in the drawings) of the oven 1;
- front openings 51B feeding a cooking zone comprised between two successive shelves 10R;
- side openings 51C adapted to heat the side walls 15 of the oven 1 to the cooking or pyrolysis temperature, in particular said side openings 51C being preferably symmetrical relative to the plane P;
- lower openings 51D adapted to feed that portion of the compartment 10V of the muffle 10 which is under the level of the lowermost shelf 10R, in particular said lower openings 51D being preferably symmetrical relative to the plane P.

[0060] Said front openings 51B may be symmetrical relative to the plane P, or else such symmetry may be advantageously altered in a manner such that the front openings 51B on either side of the bulkhead 41 are closer to the centre of the bulkhead 41, depending on the direction of rotation of the fan 30. For example, if the fan 30 rotates clockwise when viewed from the door 14S, then said front openings 51B will be closer to the centre on the left side of the bulkhead 41; if the fan 30 rotates counterclockwise when viewed from the door 14S, then said front openings 51B will be closer to the centre on the right side of the bulkhead 41.

[0061] The heating means 20 preferably comprise a circular electric resistor having a pitch comprised between 1.5 and 2 times its diameter. Advantageously, metal fins are fitted to the electric resistor to convey the air flow exiting the fan 30 and to distribute the heat generated by the resistor.

[0062] The advantages of an oven 1 of the ventilated type, in particular for domestic use, according to the present invention are apparent from the above description.

[0063] In particular, such advantages derive from the fact that the special provision of the channel 62 allows to properly take into account the fluid dynamics existing in the cooking compartment 10V and to ensure uniformity of air distribution in said compartment 10V, in particular for the purpose of obtaining a homogeneous cooking of the foods placed therein.

[0064] In fact, the presence of the channel 62 allows to optimally feed and distribute the hot air into the cooking compartment 10V, as well as to adequately draw air from said cooking compartment 10V.

[0065] This occurs mainly because the channel 62 pre-

vents the air flow drawn into the cavity 40 from the cooking compartment 10V from interfering with the air flow fed into said cooking compartment 10V from the cavity 40, and vice versa; consequently, the absence of any interference between the air flow drawn from the compartment 10V and the air flow fed into said compartment 10V significantly improves the distribution of the hot air inside the muffle 10. A further advantage is that the particular realization of the channel 62 according to the present invention, i.e. the fact that it comprises a second end 62B situated in the proximity of the front wall 14 of the muffle 10, allows to draw air near said front wall 14 and to create a sort of a vacuum which can then be gradually filled with new heated air, fed into the compartment 10V by the fan 30.

[0066] Such a realization of the channel 62 and the positioning of the plurality of ports 63 in the proximity of the front wall 14 allows to suck in the air farthest from the fan 30, while at the same time scrubbing the entire transparent pane 14T in order to eliminate any condensate possibly formed thereon. Furthermore, the fact that the ports 63 are situated on a ridge 63A of the second end 62B allows to suck in the air near the front wall 14 without running the risk that said ports 63 might get clogged by residues possibly accumulated in the cooking compartment 10V.

[0067] A further advantage of the present invention is that the provision of smooth corners 13A, 41A and/or rounded edges on those portions of the bulkhead 41 and of the back wall 13 which cooperate to form the cavity 40 allows to prevent air from stagnating within the cavity 40; this is advantageous because it ensures adequate air recirculation in the cavity 40 and an optimal change of air inside the cooking compartment 10V, so that it can be exploited at best for food cooking.

[0068] In addition, the air processed by the fan 30 is less noisy thanks to the provision of smooth corners 13A, 41A and/or rounded edges.

[0069] The oven of the ventilated type, in particular for domestic use, 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.

[0070] It can therefore be easily understood that the present invention is not limited to the above-described oven of the ventilated type, in particular for domestic 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. An oven (1) of the ventilated type, in particular for domestic use, comprising:

- a muffle (10) defining a cooking compartment (10V) where food to be cooked is placed, said muffle (10) comprising a bottom wall (11), a top wall (12), a back wall (13), a front wall (14) opposite to said back wall (13), and two mutually opposite side walls (15);
- heating means (20) associated with the muffle (10) for heating air in said muffle (10) and causing said food to be cooked;
- a fan (30) for circulating air in said muffle (10), the fan (30) being located in a cavity (40) associated with the back wall (13) of the muffle (10) via a bulkhead (41);
- inlet means (50) allowing said cavity (40) to be in fluidic communication with the compartment (10V) of the muffle (10), so as to allow the air contained in said cavity (40) and moved by the fan (30) to flow into the compartment (10V) of the muffle (10), said inlet means (50) comprising at least one opening (51) in said bulkhead (41);
- return means (60) allowing the compartment (10V) of the muffle (10) to be in fluidic communication with the cavity (40), so as to allow the air contained in said compartment (10V) to be sucked in by the fan (30) and return into the cavity (40), said return means (60) comprising at least one passage (61) in said bulkhead (41), **characterized in that** said return means (60) comprise a channel (62) comprising a first end (62A) associated with said at least one passage (61) and a second end (62B) situated in the proximity of the front wall (14), so as to draw air near the front wall (14) of the muffle (10) and convey it towards the fan (30) through said at least one passage (61).

2. An oven (1) according to claim 1, **characterized in that** said channel (62) extends from the back wall (13) to proximate the front wall (14).
3. An oven (1) according to one or more of the preceding claims, **characterized in that** said channel (62) is associated with the bottom wall (11) of the muffle (10), in particular such that said bottom wall (11) can also form the base of said channel (62).
4. An oven (1) according to one or more of the preceding claims, **characterized in that** said second end (62B) of the channel (62) comprises at least one port (63) for sucking in air near the front wall (14), said at least one port (63) being placed on a ridge (63A) of the second end (62B), said ridge (63A) being raised relative to the second end (62B) and to the bottom wall (11).
5. An oven (1) according to one or more of the preceding claims, **characterized in that** said channel (62) comprises:

- an intermediate body (62C) connecting the first end (62A) and the second end (62B), in particular said intermediate body (62C) being so realized as to extend along a substantially central portion of the bottom wall (11);
- said second end (62B) being so realized as to longitudinally extend in the proximity of the front wall (14), said second end (62B) comprising a plurality of ports (63).
6. An oven (1) according to claim 5, **characterized in that** said channel (62) comprises a section (62D) that connects the first end (62A) to the intermediate body (62C), in particular said section (62D) being associated with the bulkhead (41) and extending substantially in a vertical direction in said compartment (10V).
7. An oven (1) according to one or more of the preceding claims, **characterized in that** it comprises portions of the bulkhead (41) and of the back wall (13) cooperating to form the cavity (13), said portions of the bulkhead (41) and of the back wall (13) having smooth corners (13A, 41A) and/or rounded edges to prevent the air being circulated by the fan (30) and conveyed towards said at least one opening (51) from stagnating within the cavity (40).
8. An oven (1) according to claim 7, **characterized in that** the back wall (13) comprises first smooth corners (13A) and the bulkhead (41) comprises respective second smooth corners (41A), said first corners (13A) mating with the second corners (41A) to form respective corners of the cavity (40).
9. An oven (1) according to one or more of the preceding claims, **characterized in that** said heating means (20) are associated with the fan (30) and are located in said cavity (40), in particular said heating means (20) being of the resistive type and comprising at least one electric resistor, in particular a circular one and/or such as to surround said fan (30).
10. An oven (1) according to claim 9, **characterized in that** said fan (30) is of the type that sucks in air axially and circulates it radially, and said heating means (20) are so realized as to substantially surround the fan (30).
11. An oven (1) according to one or more of the preceding claims, **characterized in that** said at least one opening (51) comprises a plurality of openings (51) distributed over the bulkhead (51) according to the direction of rotation of the fan (30) and to the position of shelves (10R) in the compartment (10V) of the muffle (10), in particular to ensure that at least one opening (51) is provided for each cooking level.
12. An oven (1) of the ventilated type, in particular for domestic use, comprising:
- a muffle (10) defining a cooking compartment (10V) where food to be cooked is placed, said muffle (10) comprising a bottom wall (11), a top wall (12), a back wall (13), a front wall (14) opposite to said back wall (13), and two mutually opposite side walls (15);
 - heating means (20) associated with the muffle (10) for heating air in said muffle (10) and causing said food to be cooked;
 - a fan (30) for circulating air in said muffle (10), the fan (30) being located in a cavity (40) associated with the back wall (13) of the muffle (10) via a bulkhead (41);
 - inlet means (50) allowing said cavity (40) to be in fluidic communication with the compartment (10V) of the muffle (10), so as to allow the air contained in said cavity (40) and moved by the fan (30) to flow into the compartment (10V) of the muffle (10), said inlet means (50) comprising at least one opening (51) in said bulkhead (41), **characterized in that** said oven (1) comprises portions of the bulkhead (41) and of the back wall (13) cooperating to form the cavity (13), said portions of the bulkhead (41) and of the back wall (13) having smooth corners (13A, 41A) and/or rounded edges to prevent the air being circulated by the fan (30) and conveyed towards said at least one opening (51) from stagnating within the cavity (40).
13. An oven (1) according to claim 12, **characterized in that** the back wall (13) comprises first smooth corners (13A) and the bulkhead (41) comprises respective second smooth corners (41A), said first corners (13A) mating with the second corners (41A) to form respective corners of the cavity (40).
14. An oven (1) according to one or more of the preceding claims 12 and 13, **characterized in that** it comprises return means (60) allowing the compartment (10V) of the muffle (10) to be in fluidic communication with the cavity (40), so as to allow the air contained in said compartment (10V) to be sucked in by the fan (30) and return into the cavity (40), said return means (60) comprising:
- at least one passage (61) in said bulkhead (41);
 - a channel (62) having a first end (62A) associated with said at least one passage (61) and a second end (62B) situated in the proximity of the front wall (14), so as to draw air near the front wall (14) of the muffle (10) and convey it towards the fan (30) through said at least one passage (61).

15. An oven (1) according to claim 14, **characterized in that** said channel (62) extends from the back wall (13) to proximate the front wall (14), said channel being associated with the bottom wall (11) of the muffle (10), in particular such that said bottom wall (11) can also form the base of said channel (62). 5

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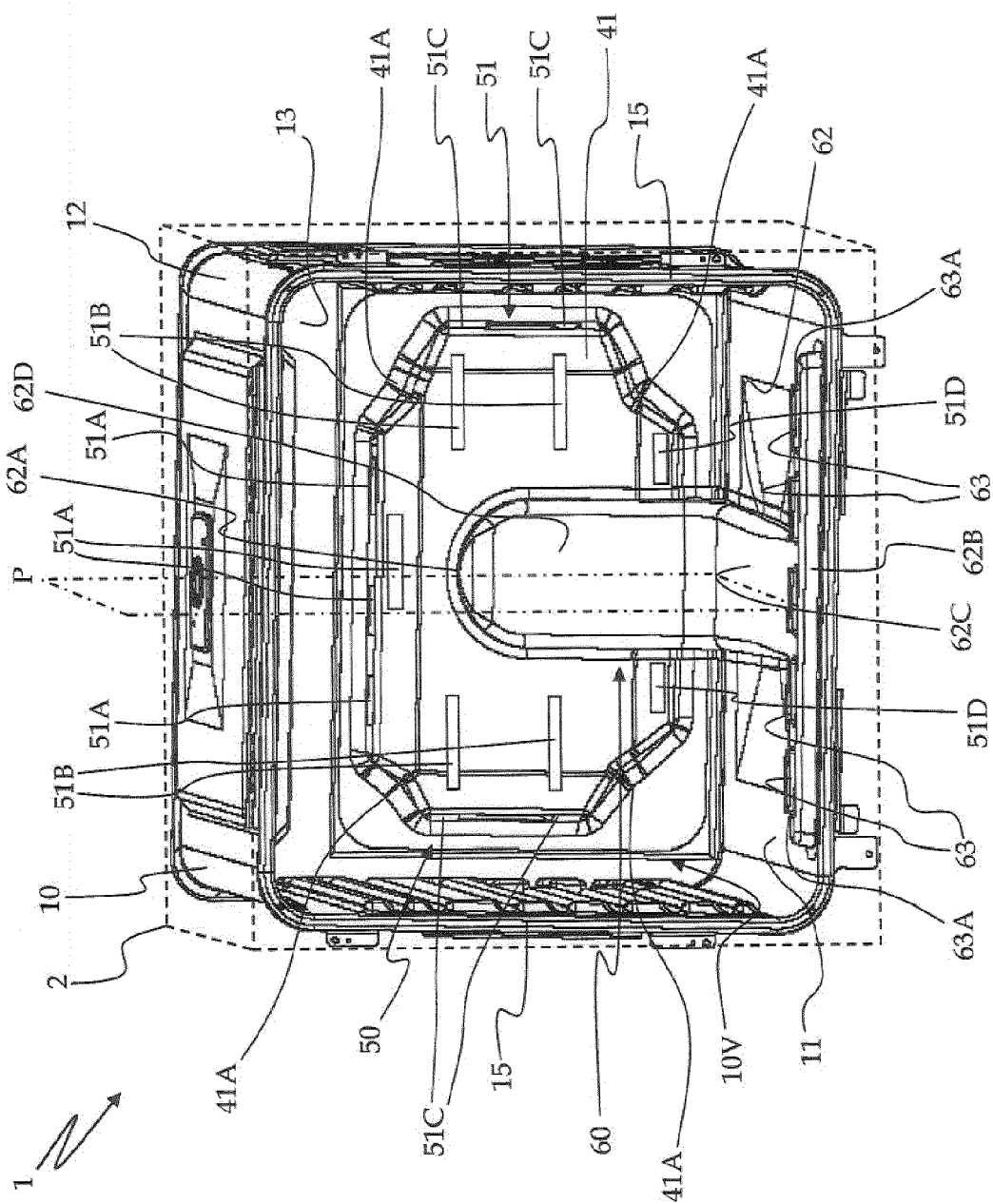


Fig. 1

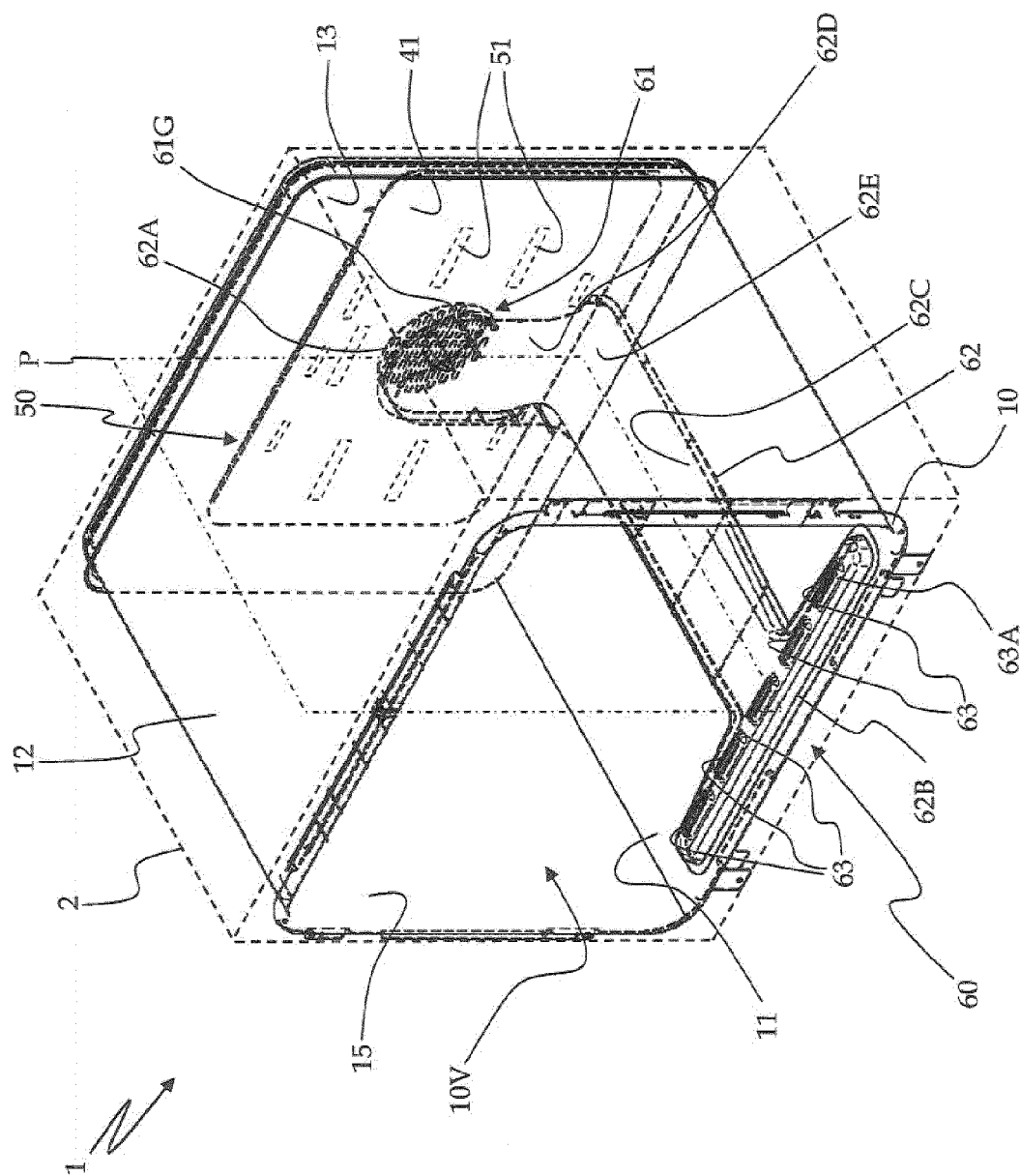


Fig. 2

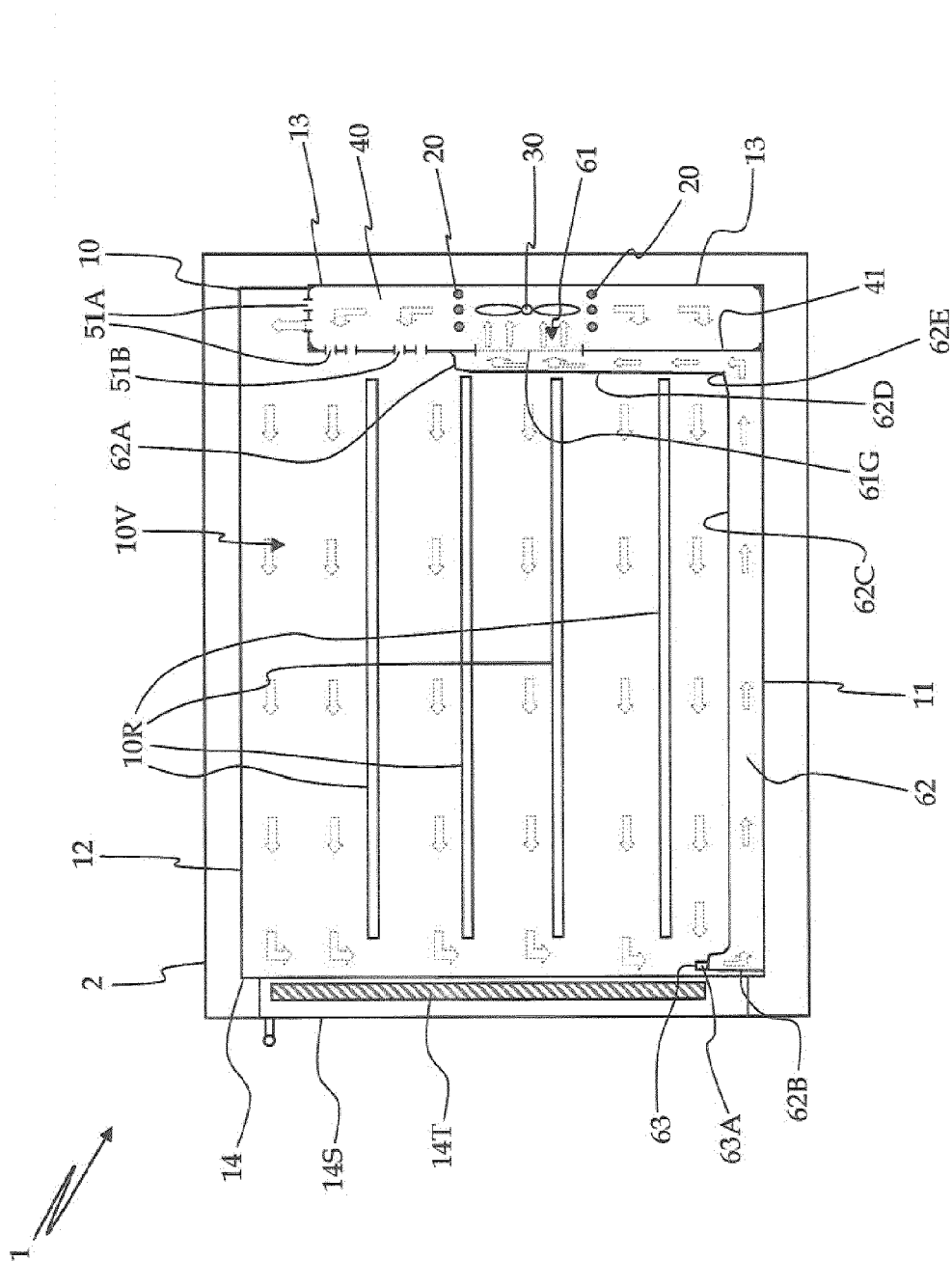


Fig. 3

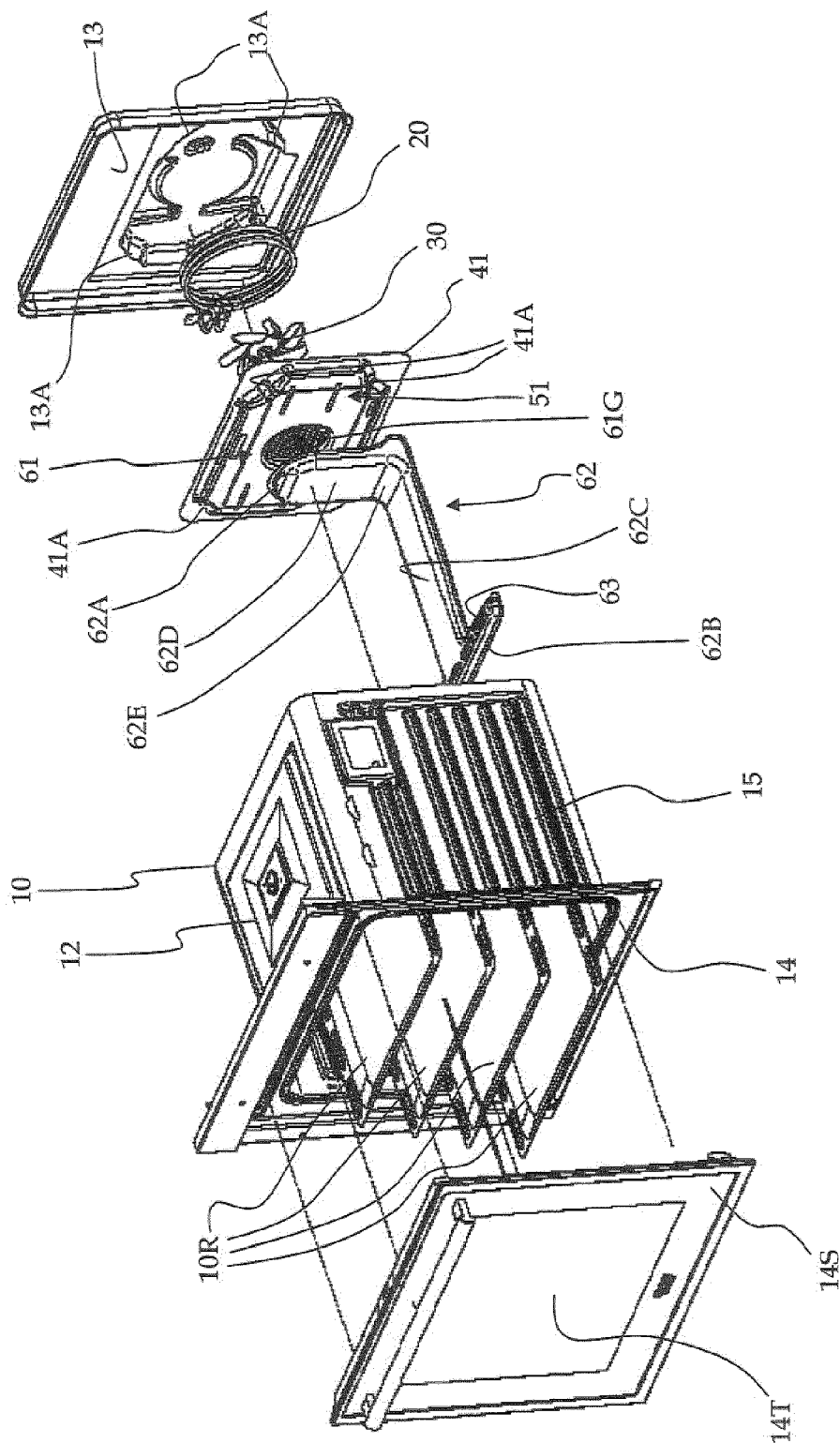


Fig. 4