

(19)



(11)

EP 1 739 362 A2

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:

03.01.2007 Bulletin 2007/01

(51) Int Cl.:

F24C 15/32 ^(2006.01)

(21) Application number: **06115754.1**

(22) Date of filing: **20.06.2006**

(84) Designated Contracting States:

**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI
SK TR**

Designated Extension States:

AL BA HR MK YU

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(30) Priority: **28.06.2005 IT VA20050044**

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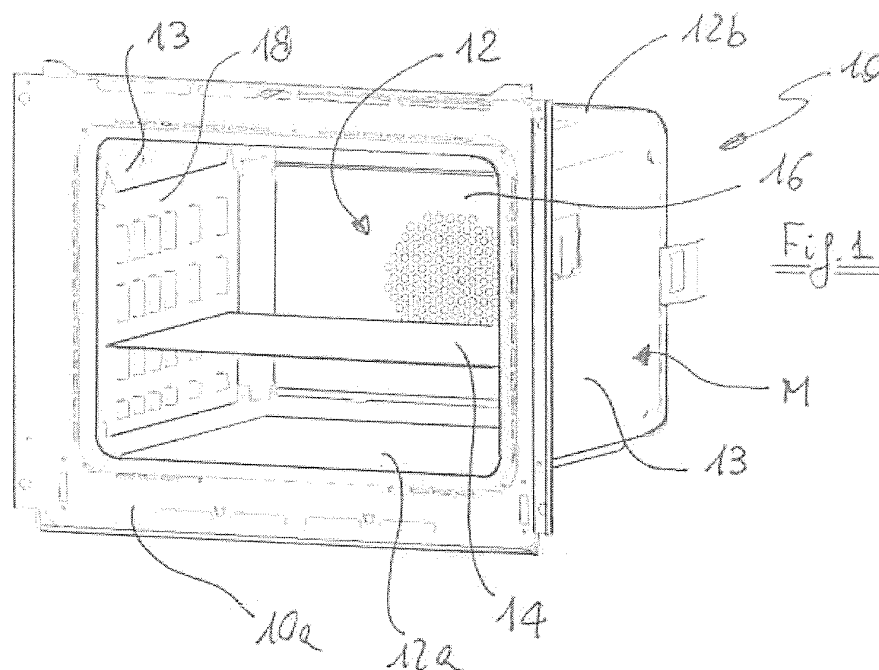
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(54) **Domestic oven with air circulation system**

(57) An oven for cooking or heating food of the type comprising a cavity (12) provided with a rear interspace within which is installed a fan. The front wall (16) of the interspace is provided with openings (20) for drawing in air and side openings (22) for recirculating the air in the

cavity (12). The interspace for distributing the air extends along the two sides of the cavity by means of auxiliary walls (18) which are likewise provided with openings (24) for circulating the air. The side interspaces are connected with the rear interspace.



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Description

[0001] The present invention relates to a domestic oven, of the type comprising a cavity provided with a rear interspace within which is installed a fan, the front wall of said interspace being provided with one or more substantially central openings for drawing in air from the cavity and being provided with side openings for circulating the air.

[0002] In such ovens of known type, the above-stated rear interspace for guiding the air within the cavity is delimited by an appropriately shaped and perforated metal bulkhead and by the back wall of the cavity to which said bulkhead is fixed.

[0003] The bulkhead not only has the function of holding the circular element for heating the air and the cavity fan, but also of guiding the air produced by the fan through the openings (usually holes arranged in a central circular zone) and through finned openings located at the sides. Although said solution permits sufficiently even heating of the cavity when the fan is on (when the oven is running in "fan-assisted" mode), the inflowing hot air from the rear bulkhead impinges first on the part of the product being cooked which is closest to the back wall, possibly resulting in uneven cooking.

[0004] The object of the present invention is to provide an oven of the type specified at the beginning of the description which permits the above-stated shortcoming to be overcome in a straightforward and economical manner.

[0005] According to the invention, said object is achieved thanks to the fact that the above-stated interspace also extends along the sides of the cavity and is provided with a plurality of openings for circulating the air.

[0006] Thanks to these features, it is possible to achieve even heating of the food placed in the cavity providing the advantage of better cooking.

[0007] According to a preferred embodiment of the invention, on the sides of the cavity, sides being taken to mean the side walls or the rear wall, there are installed auxiliary walls in such a manner as to create an interspace extending that created by the rear bulkhead, and which are capable of joining with the latter which, unlike known solutions, is entirely open at the sides.

[0008] In this manner, the air exiting from the sides of the bulkhead is driven by the fan into the two side interspaces located against the right hand wall and left hand wall of the cavity, and escapes through a plurality of openings equipped with guide fins. Because said openings are located over the entire surface of the channels, it is ensured that the hot air exits both in the rear zone of the oven (the zone close to the bulkhead) and at the front (close to the door), so allowing the food to be more evenly heated.

[0009] According to a preferred feature of the invention, the guide fins present on the auxiliary side walls which define the interspaces on the side walls of the cavity, apart from directing the air, also have the function of

supporting the baking trays or shelves given that they are positioned symmetrically on the two sides of the cavity.

[0010] Further advantages and features of the present invention will emerge from the following detailed description, which is provided purely by way of non-limiting example, with reference to the attached drawings, in which:

- Figure 1 is a perspective view of the cavity of an oven according to the invention, in which, for greater clarity, the thermal insulating material and the associated containment walls have been removed;
- Figure 2 is a perspective view of a rear bulkhead which defines the rear interspace of the oven of Figure 1;
- Figure 3 is a perspective view of an auxiliary side wall which defines one of the side interspaces of the cavity of the oven of Figure 1; and
- Figure 4 is a larger scale perspective view of a portion of the cavity of the oven of Figure 1.

[0011] With reference to the drawings, 10 denotes overall the structure of a built-in domestic oven in which can be seen a front edge 10a for fixing to a cabinet and a cavity 12 within which is located a baking tray 14. The cavity 12 is delimited by a lower wall 12a, by an upper wall 12b, by two side walls 13 and by a back wall of the oven (not shown) on which is affixed a bulkhead 16 which forms the front wall of the rear interspace. Similarly, on the two side walls 13, there are installed in spaced manner auxiliary walls 18 which define the side interspaces connected to the rear interspace. The side walls 13 of the cavity 12, joined to the upper wall 12b and lower wall 12a, form the shell M of the oven, entirely made from sheet metal. The bulkhead 16 is composed of a substantially C-shaped sheet of metal (Figure 2) in which are defined edges 16a for fixing to the back wall (not shown) of said shell M. In the central portion of the back bulkhead 16, there are a plurality of stamped holes 20 capable of defining a predetermined flow cross-section for drawing air in towards the fan (not shown). The bulkhead 16 is installed on the back wall of the cavity of the oven in such a manner as to define two side openings 22, connected by means of an angled portion 18a, to the auxiliary side walls 18. Alternatively, said connection may be effected by means of inclined portions of the bulkhead 16.

[0012] Each of said auxiliary side walls 18 (Figure 3) has folded-back edges 18b to define channels for passage of the air. Furthermore, on a level with each angled portion 18a, each auxiliary side wall 18 has, at the top and bottom, containment portions 18c capable of preventing air escape. The auxiliary side walls 18 are fixed to the shell M of the oven by means of portions 18d arranged substantially on a level with the corners of the rectangular wall. To permit escape of the circulating air,

each auxiliary side wall 18 has a plurality of openings 24, rectangular in shape, formed by stamping on three consecutive sides in such a manner as to define an inclined metal tab 24a capable of acting as a guide fin for the air towards the back bulkhead 16. The openings 24 are arranged in several equidistantly spaced horizontal rows in such a manner that the upper edges of the metal tabs 24a can act as supports for baking trays, shelves or the like as indicated in Figures 1 and 4. It is, of course, possible to use supports of conventional design, which are attached in this case to the auxiliary side walls 18 of the interspace, for baking trays or shelves.

[0013] According to another feature of the invention, the openings 24 are also aligned in columns whose spacing changes (decreases) starting from the rear of the cavity towards the opening where the door (not shown) is installed. Said variation in spacing between the columns of openings 24 makes it possible to obtain a substantially identical stream of hot air for each opening 24, so as further to increase the evenness of heating of the food. Alternatively, with the aim of achieving the same result, openings 24 which are equidistantly spaced but are of variable cross-section may be used, the cross-section being at its smallest in the vicinity of the back bulkhead 16 of the cavity and gradually increasing towards the front edge (10a). The use of tabs or fins 24a furthermore makes it possible to minimise any possible soiling of the side interspace defined by the auxiliary walls 18.

the openings (24) are arranged substantially as a matrix of rows and columns in such a manner that the inclined tabs (24a) of the openings (24) act as guides for sliding and/or supporting baking trays (14), shelves and the like.

6. An oven according to claim 5, **characterised in that** the spacing between the columns of the matrix of openings (24) decreases towards the front opening of the cavity (12).
7. An oven according to claim 5, **characterised in that** the size of the openings increases towards the opening of the cavity (12).
8. An oven according to claim 2, **characterised in that** the auxiliary walls (18) have an inclined portion (18a) capable of acting as a connection with the front wall (16) of the interspace.
9. An oven according to claim 2, **characterised in that** the front wall (16) of the interspace has inclined portions capable of acting as a connection with the auxiliary walls (18).

Claims

1. An oven for cooking or heating food, of the type comprising a cavity provided with a rear interspace within which is installed a fan, the front wall (16) of said interspace being provided with one or more openings (20) for drawing in air and being provided with side openings for circulating air in the cavity, **characterised in that** the above-stated interspace also extends along the sides of the cavity (12) and is provided with a plurality of openings (24) for circulating the air.
2. An oven according to claim 1, **characterised in that**, on the sides of the cavity (12), there are arranged auxiliary walls (18) connected to the above-stated front wall (16) of the interspace.
3. An oven according to claim 1, **characterised in that** each of said openings (24) is produced by stamping in such a manner as to define an inclined tab (24a) in the manner of a guide fin.
4. An oven according to claim 3, **characterised in that** said tab (24a) is inclined in such a manner as to guide the air towards the front wall (16) of the interspace.
5. An oven according to claim 3, **characterised in that**

