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(54) Oven, preferably a domestic oven

(57) The initial deformation of the lateral surfaces towards the outside of the cooking chamber results in the thermal stresses to which said lateral surfaces are subjected during the cooking phase and, preferbaly, during the pyrolysis phase, giving rise to deformations in the direction of the initial deformation. As a result, the deformations are forced to occur in the same direction as the initial deformation, thereby providing greater control of the deformations that may be generated inside the cooking chamber.

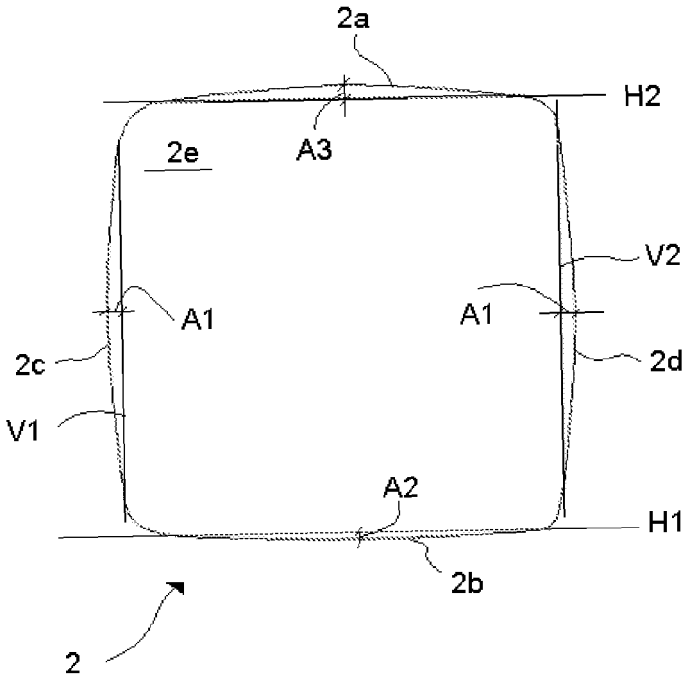

FIG. 2

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Description

TECHNICAL FIELD

[0001] This invention relates to an oven, preferably a domestic oven, in particular a pyrolytic oven.

PRIOR ART

[0002] There are known self-cleaning domestic ovens in which the cleaning of the inside of the cooking chamber is performed by means of a pyrolysis process. The pyrolytic self-cleaning ovens described in DE 10349312 A1, FR 2801095 A1 and EP 2212765 B1 comprise cooking heating means arranged in the top part of the cooking chamber, and pyrolysis heating means connected to the bottom part of the cooking chamber, the heat radiated by the pyrolysis heating means being greater than that radiated by the cooking heating means. The pyrolytic oven may operate in cooking mode to cook the food deposited inside the cooking chamber, or in pyrolysis mode to clean the fat and/or dirt that is deposited and accumulated inside the cooking chamber during the different cooking processes.

[0003] In order to eliminate this type of dirt, the pyrolysis heating means are activated along with the cooking heating means, a temperature inside the cooking chamber of between approximately 400ºC and approximately 500ºC being reached. As a result, the accumulated dirt decomposes into smaller molecules, part of which are removed through a waste pipe towards the exterior, the rest being converted into ash that is deposited inside the cooking chamber.

[0004] During the pyrolysis process, the cooking chamber is subjected to significant thermal stresses due to the high temperatures recorded inside said cooking chamber. As a result of this, and to prevent the thermal stresses from resulting in unwanted deformations in the surfaces of the cooking chamber, said cooking chamber must have a sufficiently robust shape to withstand said stresses, thicknesses no less than 0.8 mm being used.

BRIEF DISCLOSURE OF THE INVENTION

[0005] The object of this invention is to provide an oven, preferably a domestic oven, according to the claims.

[0006] The oven, preferably a domestic oven, of the invention comprises a cooking chamber open at the front and delimited at least by one bottom surface, one top surface, lateral surfaces, and one back surface. In the cooking chamber at least the lateral surfaces are deformed towards the outside of the cooking chamber in relation to vertical geometric planes.

[0007] The initial deformation of the lateral surfaces towards the outside of the cooking chamber results in the thermal stresses to which said lateral surfaces are subjected during the cooking phase and, preferably, during the pyrolysis phase, giving rise to deformations in the direction of the initial deformation. As a result, the deformations are forced to occur in the same direction as the initial deformation, thereby providing greater control of the deformations that may be generated inside the cooking chamber.

[0008] Furthermore, the fact that the direction of the deformations on the lateral surfaces is controlled prevents the tray supports, which are generally arranged fixed respectively on each lateral surface, from becoming unusable as a result of the variation of the distance between the tray supports caused by the deformation of the lateral surfaces making it impossible to remove or insert the trays.

[0009] In addition, the fact that there is greater control of the deformations caused in particular on the lateral surfaces means that sheet metal of smaller thicknesses may be used for the cooking chamber, which thus allows the design of the cooking chamber to be optimised, leading to significant savings in terms of material.

[0010] Finally, with this initial deformation of at least the lateral surfaces, the final deformation of said lateral surfaces, following different pyrolysis processes, is not evidently visible to the user. If this were not the case, a lack of control of the possible deformations of the lateral surfaces would result in final deformations in the cooking chamber that would be clearly visible to the user, who would rapidly associate said deformations to a lack of safety in the pyrolytic oven.

[0011] These and other advantages and characteristics of the invention will be made evident in the light of the drawings and the detailed description thereof.

DESCRIPTION OF THE DRAWINGS

[0012]

Figure 1 shows a sectional view of a pyrolytic oven that comprises a cooking chamber according to the invention.

Figure 2 shows a schematic view of a cross-section of the cooking chamber shown in Figure 1.

Figure 3 shows a view in perspective of the cooking chamber and means for fixing the cooking chamber to a support structure of the pyrolytic oven shown in Figure 1.

DETAILED DISCLOSURE OF THE INVENTION

[0013] Figure 1 shows a pyrolytic oven 1, preferably domestic, according to the invention, which comprises a cooking chamber 2 open at the front, and inside which is deposited the food to be cooked, a door 7 adapted to close the cooking chamber 2, tray supports 3 arranged inside the cooking chamber 2, cooking heating means 4 arranged inside the cooking chamber 2, in particular in a top part of said cooking chamber 2, and pyrolysis heat-

ing means 5 arranged external to the cooking chamber 2 and housed inside a heater support 6 that is also arranged fixed to the outside of the cooking chamber 2. Both the cooking heating means 4 and the pyrolysis heating means 5 comprise radiant heating members, the heat radiated by the pyrolysis heating means 5 being greater than that radiated by the cooking heating means 4, given that when the pyrolytic oven 1 operates in cooking mode the temperature reached inside the cooking chamber 2 does not exceed 300ºC, whereas when it operates in pyrolysis mode, the cooking chamber 2 reaches temperatures approximately between approximately 400ºC and approximately 500ºC.

[0014] In addition, the cooking chamber 2, is delimited by a bottom surface 2b, a top surface 2a close to which are arranged the cooking heating means 4, lateral surfaces 2c,2d, and a back surface 2e. The lateral surfaces 2c,2d are deformed towards the outside of the cooking chamber 2 in relation to respective vertical geometric planes V1,V2, as shown in Figure 2. Said lateral surfaces 2c,2d are bulged and symmetrical surfaces, the bulging degree being defined by a maximum deflection A1. The maximum deflection A1 of the lateral surfaces 2c,2d is at least approximately 4 mm, it being preferably approximately 8 mm.

[0015] Additionally, the bottom surface 2b is deformed towards the outside of the cooking chamber 2 in relation to a geometric horizontal plane H1, said bottom surface 2b being a bulged and symmetrical surface. The degree of bulging of said bottom surface 2b is defined by means of a maximum deflection A2, said degree of bulging being limited by the distance to the pyrolysis heating means 5, given that a high maximum deflection A2 would result in the bottom surface 2b coming into contact with the pyrolysis heating means 5, which is not desirable. To prevent this problem, the maximum deflection A2 is approximately 4 mm.

[0016] In addition, the top surface 2a is deformed towards the outside of the cooking chamber 2, in relation to a geometric horizontal plane H2, said top surface 2a being a bulged and symmetrical surface. The degree of camber of the top surface 2a is defined by means of a maximum deflection A3 of at least approximately 4 mm, it being preferably approximately 8 mm.

[0017] Finally, the back surface 2e is deformed towards the outside of the cooking chamber 2 in relation to a geometric vertical plane V3, said back surface 2e being a bulged and symmetrical surface. The degree of camber of the back surface 2e is defined by means of a maximum deflection A4 of at least approximately 4 mm, it being preferably approximately 8 mm.

[0018] The initial bulging of the top surface 2a, the bottom surface 2b, the lateral surfaces 2c,2d and the back surface 2e, which delimit the cooking chamber 2, forces the subsequent deformations to which said surfaces are subjected as a result of the thermal stresses to which they are subjected during the cooking or pyrolytic process to occur in the same direction as the initial bulging. The controlling of these deformations results in a minimization in the thickness of the surfaces 2a,2b,2c,2d,2e that delimit the cooking chamber 2, the thickness being at least 0.40 mm and preferably 0.50 mm.

[0019] In addition, the cooking chamber 2 is housed inside a support structure 8 of the pyrolytic oven 1, the front part of the cooking chamber 2 being fixed to the support structure 8 by means of a front support 9, and the rear part of the cooking chamber 2 to a motor cover 10 that is in turn fixed to the support structure 8 of the pyrolytic oven 1. The front support 9 includes hooks 9b through which the cooking chamber 2 is fixed to the support structure 8. The connections 9b between the cooking chamber 2 and the support structure 8 are minimal in order to prevent heat loss through said connections. In other examples another type of fixing means may be used to fix the cooking chamber to the support structure of the oven, preferably a domestic oven, reducing the points of contact between both.

[0020] Finally, although the description focuses in particular on domestic pyrolytic ovens, it is evident that it may be applied to any other type of oven, preferably to domestic ovens.

Claims

1. Oven, preferably a domestic oven, that comprises a cooking chamber (2) open at the front and delimited at least by one bottom surface (2b), one top surface (2a), respective lateral surfaces (2c,2d) and one back surface (2e), **characterised in that** at least the lateral surfaces (2c,2d) are deformed towards the outside of the cooking chamber (2) in relation to geometric vertical planes (V1,V2).

2. Oven according to the preceding claim, wherein the lateral surfaces (2c,2d) are substantially bulged surfaces.

3. Oven according to any of the preceding claims, wherein the lateral surfaces (2c,2d) are symmetrically bulged surfaces.

4. Oven according to either of claims 2 or 3, wherein the bulging of the lateral surfaces (2c,2d) is defined by a maximum deflection (A1) of at least, approximately, 4 mm.

5. Oven according to the preceding claim, wherein the maximum deflection (A1) of the lateral surfaces (2c, 2d) is preferably approximately 8 mm.

6. Oven according to any of the preceding claims, wherein the top surface (2a) and/or the bottom surface (2b) are deformed towards the outside of the cooking chamber (2) in relation to respective geometric horizontal planes (H1,H2), and/or the back

surface (2e) is deformed towards the outside of the cooking chamber (2) in relation to a geometric vertical plane (V3).

7. Oven according to any of the preceding claims, wherein the top surface (2a) and/or the bottom surface (2b) and/or the back surface (2e) are substantially bulged surfaces.

8. Oven according to claim 7, wherein the camber of the bottom surface (2b) is defined by a maximum deflection (A2) of approximately 4 mm.

9. Oven according to either of claims 7 or 8, wherein the bulging of the top surface (2a) and the back surface (2e) are defined by respective maximum deflections (A3, A4) of at least approximately 4 mm.

10. Oven according to claim 9, wherein the respective maximum deflections (A3,A4) of the top surface (2a) and the back surface (2e) are preferably, approximately, 8 mm.

11. Oven according to any of the preceding claims, wherein the thickness of the cooking chamber (2) is at least approximately 0.40 mm.

12. Oven according to claim 11, wherein the thickness of the cooking chamber (2) is preferably approximately 0.50 mm.

13. Oven according to any of the preceding claims, wherein it comprises a front support (9) fixed perimetrally to the cooking chamber (2) and fixed to a support structure (11) of the pyrolytic oven (1) at a minimal number of points of contact.

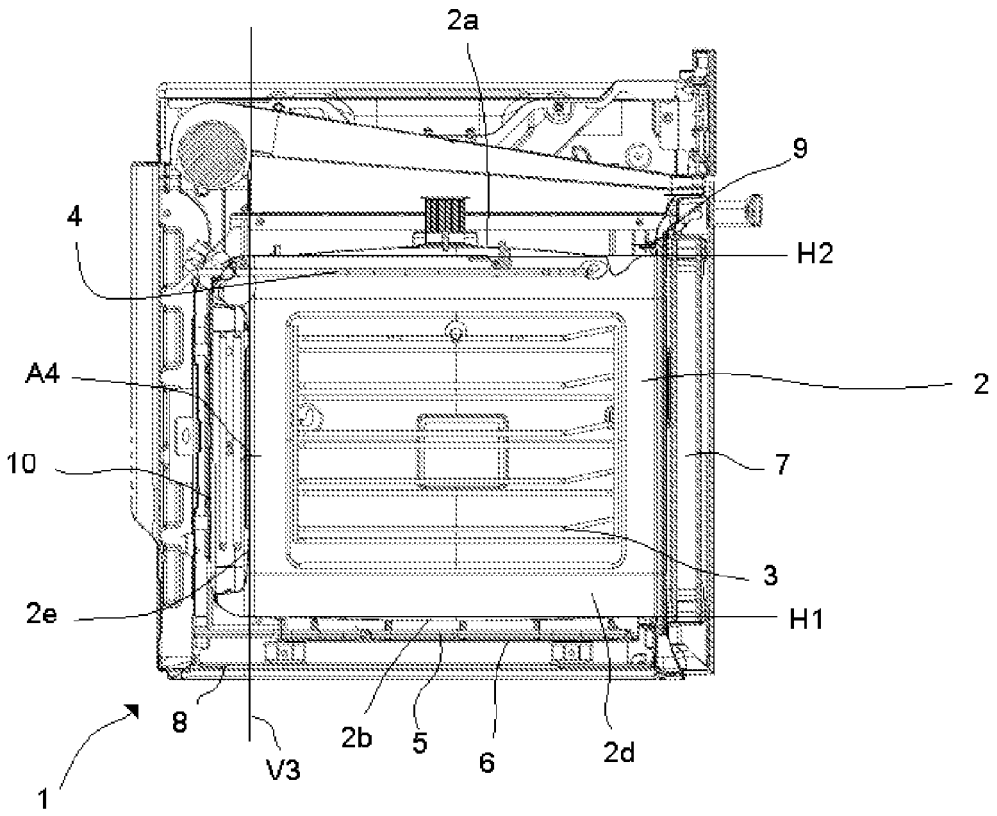

FIG. 1

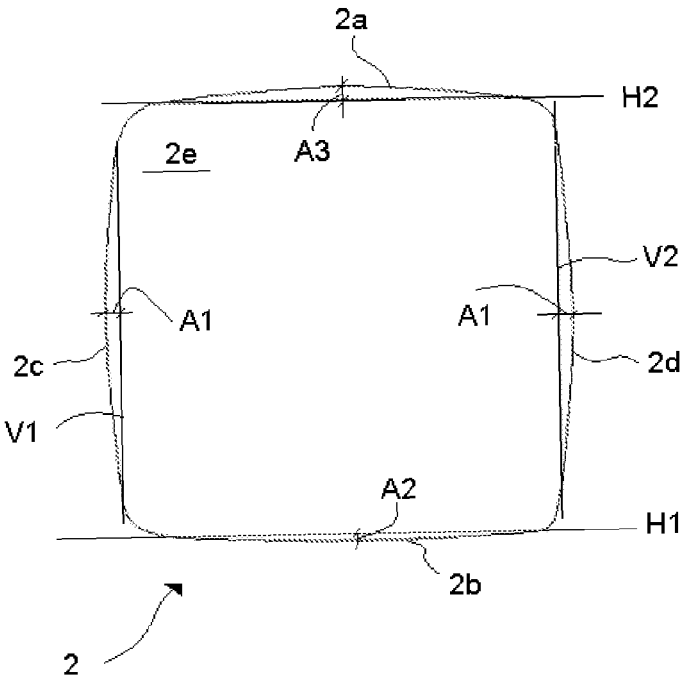

FIG. 2

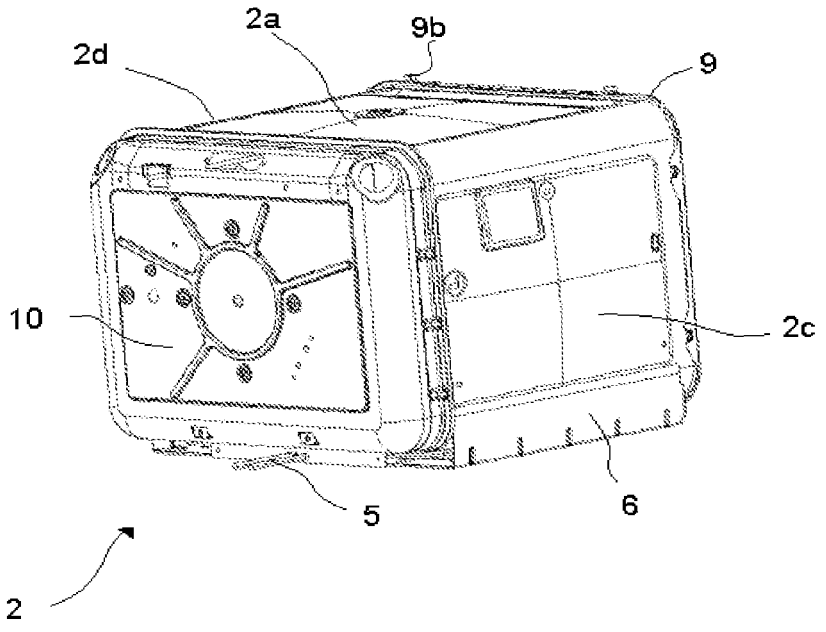

FIG. 3

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EUROPEAN SEARCH REPORT

Application Number
EP 11 38 2015

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	EP 1 464 896 A1 (BSH BOSCH SIEMENS HAUSGERAETE [DE]) 6 October 2004 (2004-10-06) * paragraphs [0001], [0005], [0014], [0018]; figure 3 *	1-13	INV. F24C15/08
X	DE 21 06 773 A1 (SIEMENS ELEKTROGERAETE GMBH) 31 August 1972 (1972-08-31) * the whole document *	1-13	
X	EP 1 186 835 A1 (ELOMA GMBH GROSSKUECHENTECHNIK [DE]) 13 March 2002 (2002-03-13) * abstract; figures *	1-10	
A	DE 34 17 147 A1 (BOSCH SIEMENS HAUSGERAETE [DE]) 14 November 1985 (1985-11-14)	1	

TECHNICAL FIELDS SEARCHED (IPC)

F24C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	17 March 2011	Verdoodt, Luk

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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- FR 2801095 A1 **[0002]**
- EP 2212765 B1 **[0002]**