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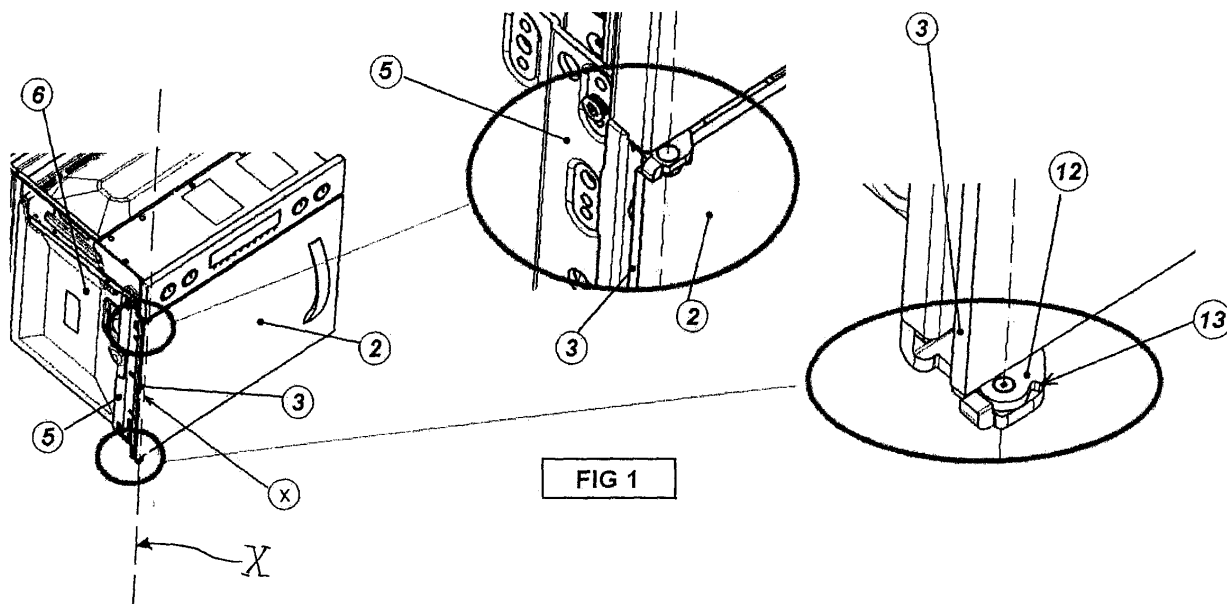
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(54) **Cooking oven with side opening door and stopper**

(57) Food cooking oven with a related door hinged on a vertical side edge thereof, a vertical plate attached on the front portion of the side outer wall of the cooking cavity, and close to said vertical edge, a vertical support, wherein said vertical plate comprises, on at least a top or bottom extremity, a first horizontal flat element to whose end a vertical prolongation is connected, and said vertical support comprises a respective second horizontal flat element apt to rotate around an vertical axis, and

arranged in a position close to said first flat element and provided with and horizontally extending appendix; said vertical prolongation and said appendix are so sized to interfere each other when said vertical support is being rotated from a first position, when the door is almost closed, to a second pre-defined position. Preferably said second pre-defined position corresponds to a door opening angle greater than 90° and around 120°.



Description

[0001] The present invention describes an improved kind of oven for cooking food, preferably intended for home use, comprising a laterally opening door for gaining access into and closing the cooking cavity of such oven.

[0002] While reference is specially made throughout the following description to a food cooking oven of the built-in type, it will nevertheless be appreciated that what is being explained, illustrated and generally set forth in the same specification shall be understood as equally applying to - and thus used in - food cooking oven that is integrated in a free-standing cooking appliance that includes both a cooking oven and a cooking surface, i.e. a cooktop.

[0003] The ovens, which the present invention refers to, are largely known as such in the art, as they are for instance described in the European Pat. Application n. 07107936.2.

[0004] The present invention solves the following two drawbacks generated by the laterally opening door in a cooking oven, i. e.:

- 1) when the door is being opened, it tends to rotate to almost 180°, until to go to bump into the front sides of the appliances or furniture placed close and next door of the oven itself,
- 2) if however its position swings around a rotation of about 90°, the user may accidentally go into contact with its inner surface; as it usually is very hot, it easily may burn or hurt the user's hand.

[0005] It would therefore be desirable, and it is actually a main purpose of the present invention, to provide an oven for food cooking applications, which is provided with a side-hinged door, in which the above drawbacks have been avoided, by automatically stopping the rotation of the side-hinged door when it reaches a pre-defined position.

[0006] According to the present invention, these aims, along with further ones that will become apparent from the following disclosure, are reached in a kind of cooking oven provided with a sidewise opening door that incorporates the features and characteristics as defined and recited in the appended claims.

[0007] Advantages and features of the present invention will anyway be more readily understood from the description that is given below by way of non-limiting example with reference to the accompanying drawings, in which:

- Figure 1 is an outer view of a closed and side opening door in a cooking oven according to the invention,
- Figure 2 is an outer and simplified perspective view of a device according to the present invention, in two mounting positions and with the respective enlargements,

- Figure 3 is a perspective view and a related enlargement of a first component of the invention,

- Figure 4 is a perspective view of the inner edge of a door in a cooking oven according to the present invention,

- Figure 4A shows a second component according to the present invention, in two enlarged view, and in reciprocal embodiments,

- Figure 5 and 5A illustrate a top view and a respective enlargement of a half-opened door in a cooking oven provided with the devices of this invention,

- Figure 6 is an outer perspective view of the devices of figures 5 and 5A, the door being half-opened, according to the present invention.

[0008] With reference to Figure 1 and 5, a food cooking oven according to the present invention comprises:

- a cooking cavity capable of being closed by a door 2 that is hinged on a vertical side edge 3 thereof, and
- a vertical plate 5 attached on the front portion of the side outer wall 6 of said cooking cavity, and which is close to said vertical edge 3.

[0009] In correspondence of said vertical edge, a vertical support 7, connected to said edge, is attached, which is also integer with the door; between said vertical support and said plate suitable hinges are engaged through known means, and which allow the door to laterally rotate, i. e. with respect to a vertical axis "X" passing both through said vertical support 7, and through said plate.

[0010] It comprises, on at least a top or bottom extreme, a first horizontal flat element 10 ending with a vertical prolongation 11; to its time said vertical support 7 comprises a respective second horizontal flat element 12, apt to rotate around said vertical axis "X".

[0011] Said horizontal elements 10 and 12 are so implemented to be adjacent, and almost into contact, to each other, as usual for the common hinges; moreover the element 12 is provided with an horizontally extending appendix 13.

[0012] According to the invention, said vertical prolongation 11 and said appendix 13 are sized and reciprocally placed so as to reciprocally interfere to each other when the vertical support 7 is being rotated from a first position to a second pre-defined position.

[0013] Basically, said vertical prolongation 11 realizes a "Stopper", which is firm with the oven frame, and which prevents the door, to which said appendix 13 is connected, from rotating from a first position, next to the closing position, to a second and pre-defined position closer to the opened position, so achieving the main scope of the invention.

It was also noted that an optimum compromise, between

the need of avoiding a too wide door opening and a too limited opening, which wouldn't avoid the risk of skin burning, consists in determining to around 120° the door rotation angle, to which the door itself is stopped by said prolongation 11, here acting as an interference stopper.

[0014] Of course, as shown in the figures, the implementation of the just described elements may be advantageously carried out not only on one extremity of said plate and on said support 7, but on both said extremities; however such information seems to be fully obvious to a man skilled in the art and therefore, being intended that what has been previously explained and what follows may be applied on both the upper and lower door edges, will not further discussed.

[0015] With regard to the door hinge, advantageously and for constructive, more than functional reasons, it is implemented by engaging said first flat horizontal element 10 with said second flat horizontal element 12; such engagement is implemented preferably by placing a vertical pivot 14 on one of said elements, and a corresponding vertical through-hole 15 on the other element.

[0016] Apparently the material implementation of such solution may be reversed, in the sense that, obviously, the vertical pivot 14 and the through-hole 15 may be changed in their position, differently from what shown in the figures; but such obvious possibility will not further considered.

[0017] Moreover, in order to simplify the implementation and the mounting of the involved components, and with ref. to the figures 2, 3 and 5A, said first horizontal flat element 10 is arranged leaning ahead with respect to the plane of the access mouth of the cooking cavity.

[0018] As especially shown in figures 2 and 3, an improved embodiment consists in placing said vertical prolongation 11 on a lateral side with respect to the direction leaning ahead of said horizontal flat element 10; such improvement indeed allows a simpler realization both of said prolongation 11 and of the corresponding appendix 13.

With ref. to the figures, and especially to the figures 4A and 5A, in said interference position, the two contact surfaces, respectively S1 and S2 of said vertical prolongation and of said appendix, reciprocally abutting, are flat and contact each other in a substantially front position.

Claims

1. Food cooking oven comprising:

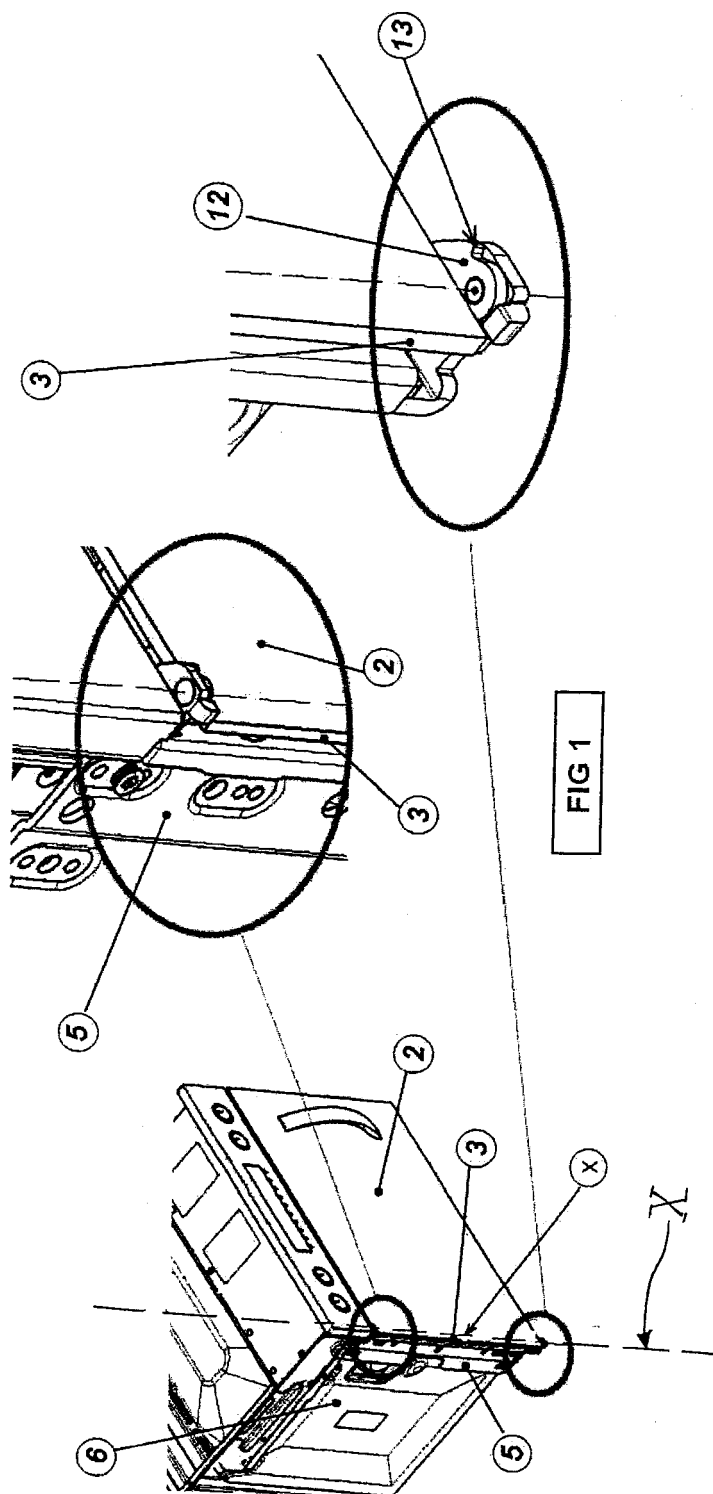
- a cooking cavity (1),
- a door (2) provided to close said cooking cavity and hinged on a vertical side edge (3) thereof,
- a vertical plate (5), attached on the front portion of the side outer wall (6) of said cooking cavity, and close to said vertical edge (3),
- vertical support (7) integer with said edge (3),
- rotating connecting means able to hinge with

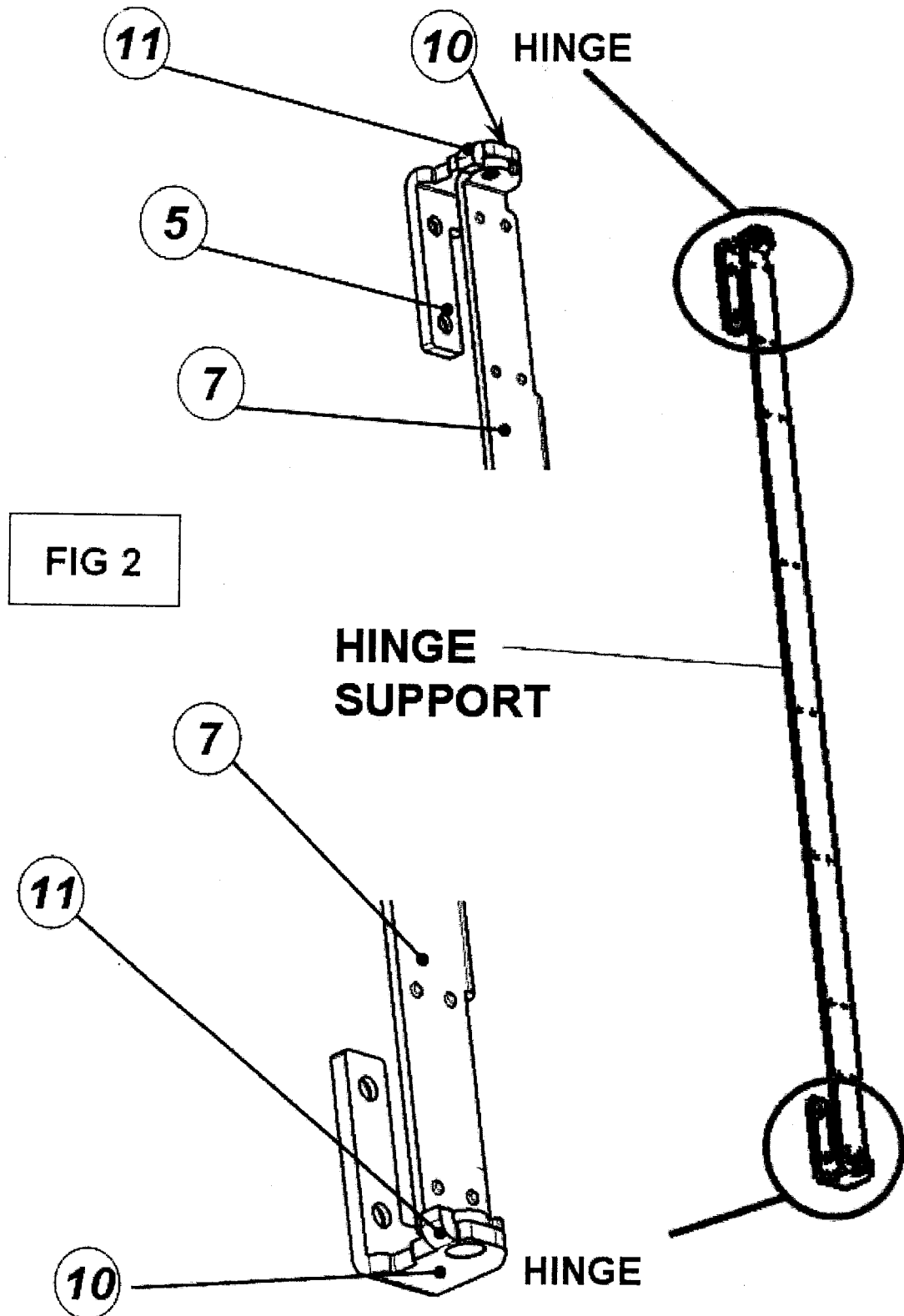
rotating movement said vertical support (7) with said plate (5),

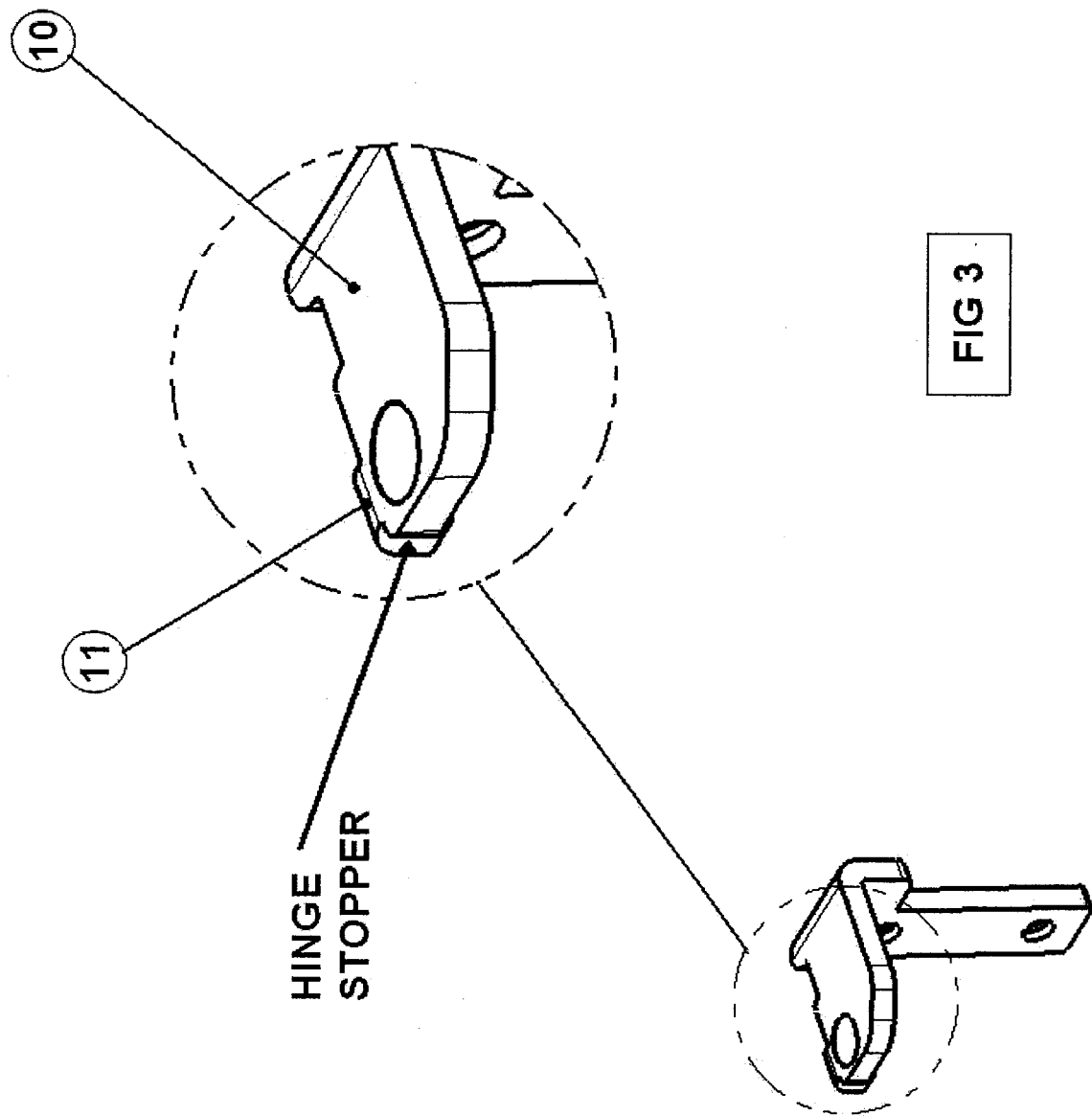
characterized in that said vertical plate (5) comprises, on at least a top or bottom extremity, a first horizontal flat element (10), to whose end a vertical prolongation (11) is connected,

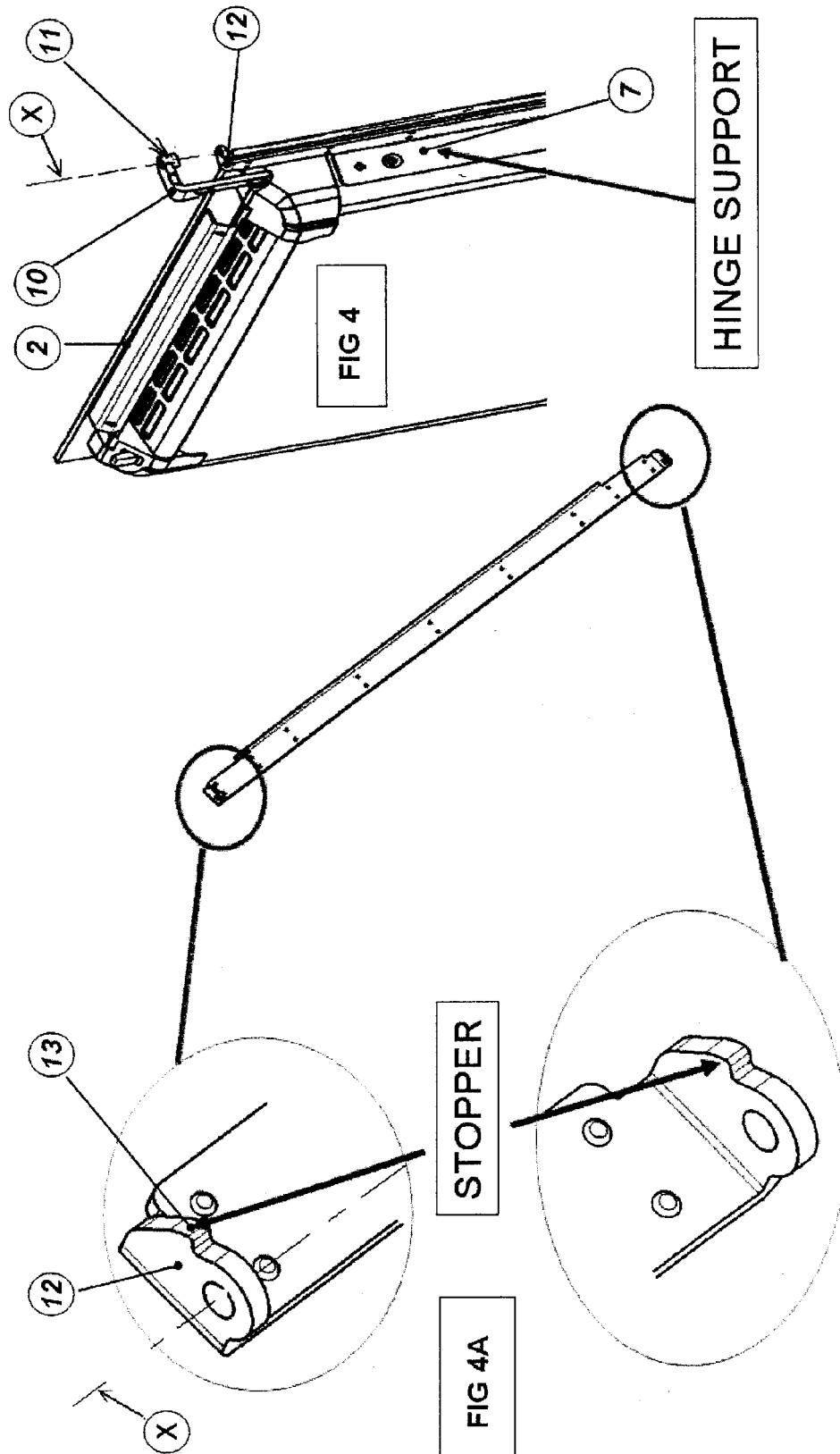
- said vertical support (7) comprises a respective second horizontal flat element (12) apt to rotate around an vertical "X" axis, and arranged in a position close to said first flat element (10), and provided with and horizontally extending appendix (13), wherein said vertical prolongation (11) and said appendix (13) are so sized to interfere each other when said vertical support (7) is being rotated from a first position, when the door is almost closed, to a second pre-defined position.

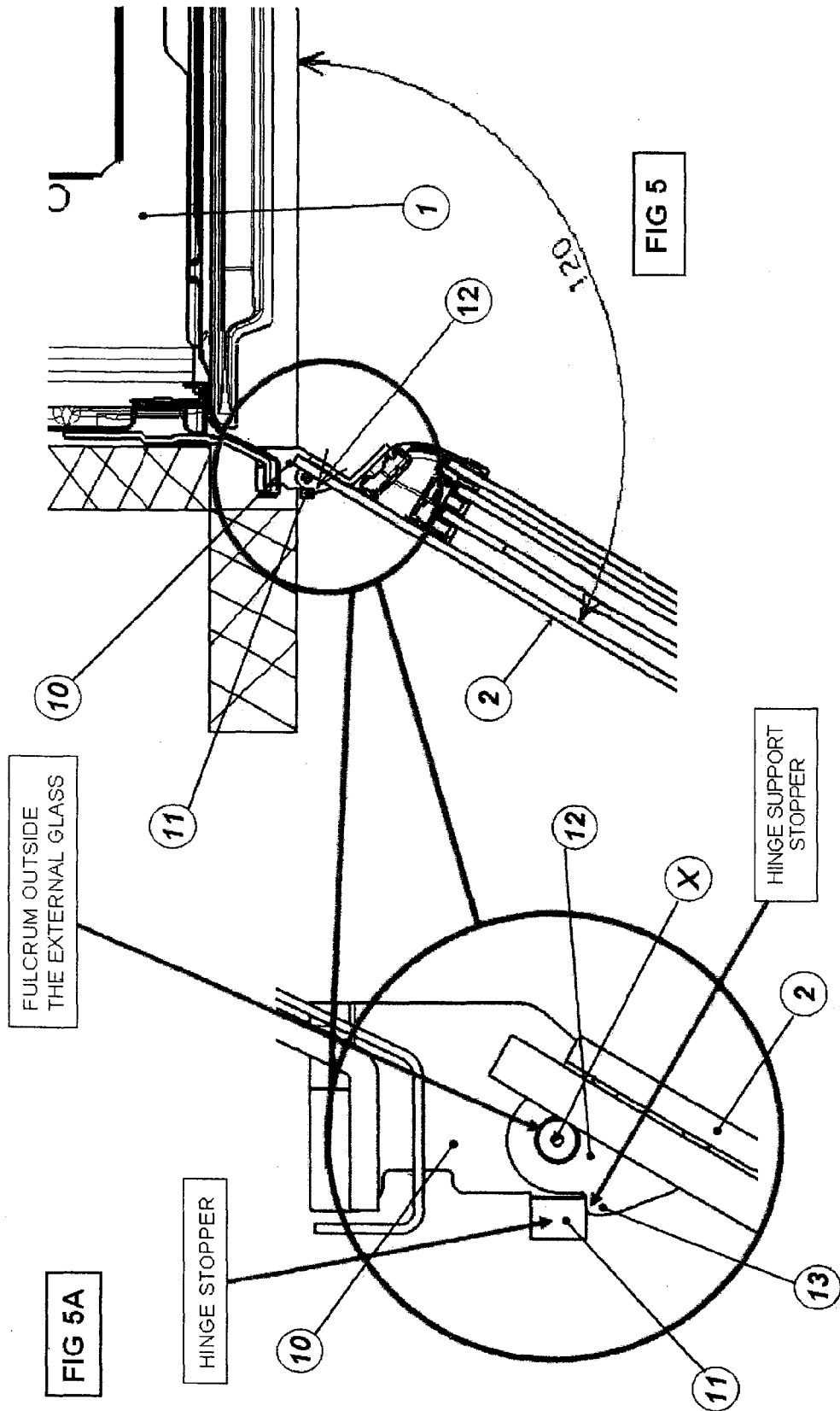
2. Cooking oven according to claim 1, **characterized in that** said second pre-defined position corresponds to a door opening angle greater than 90° and preferably of around 120°.
3. Cooking oven according to claim 1 or 2, **characterized in that** said first flat horizontal element (10) and said second horizontal flat element (12) are hinged each other, preferably by a vertical pivot (14) arranged on one of said elements, and a corresponding vertical hole (15) placed on the other element.
4. Cooking oven according to any one of the preceding claims, **characterized in that** said first horizontal flat element (10) is leaning out with respect to the opening mouth plane of the cooking cavity.
5. Cooking oven according to any of the preceding claims, **characterized in that** in the interference position the two surfaces (S1, S2) of said vertical prolongation (11) and of said appendix (13), which abut each other, are flat and contact on their respective front sides.
6. Cooking oven according to any of the preceding claims, **characterized in that** said vertical prolongation (11) is placed laterally with respect to the leaning out direction of said first horizontal flat element (10).

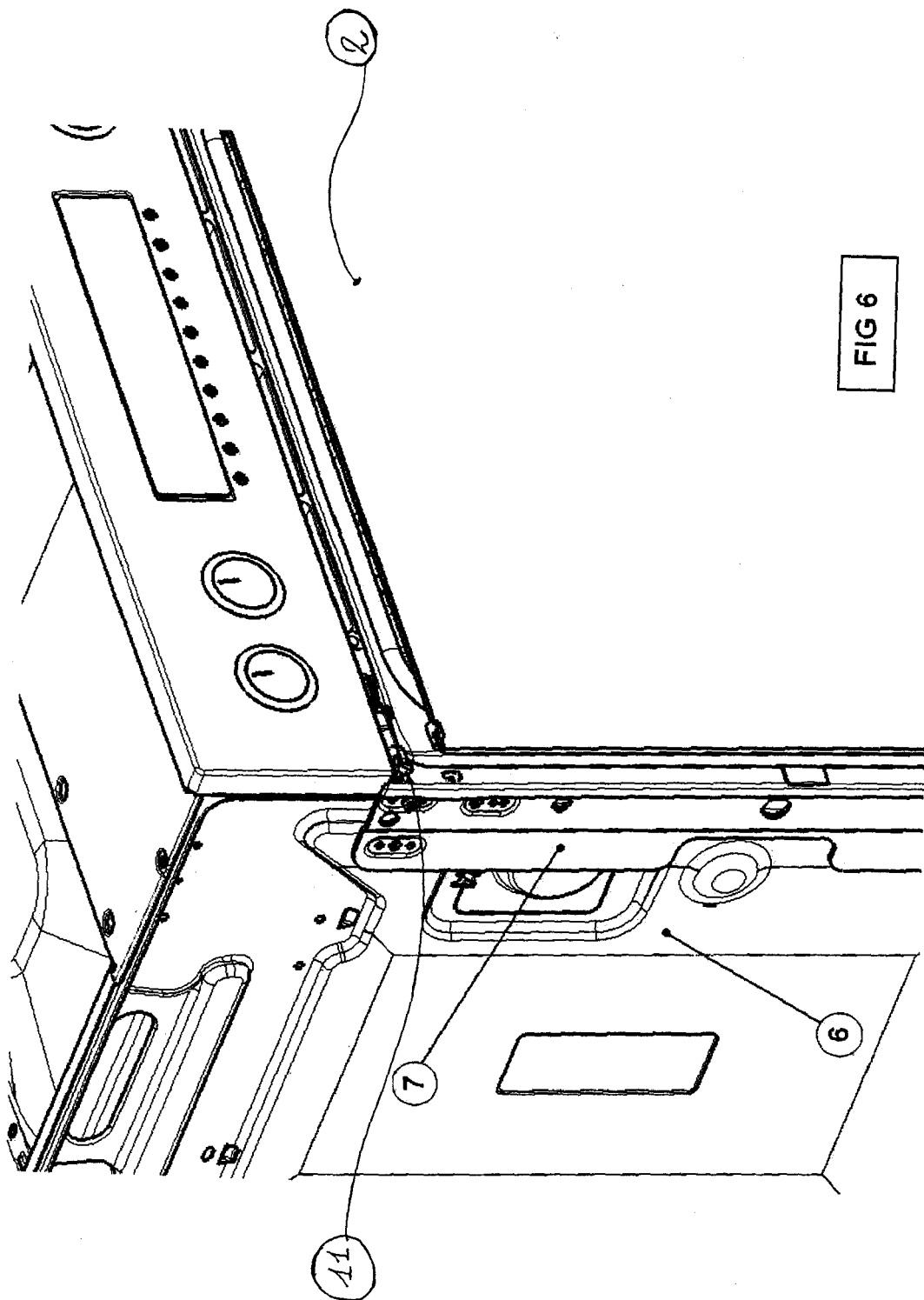














European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 07 10 9512

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Place of search		Date of completion of the search	Examiner
Munich		20 December 2007	Blot, Pierre-Edouard
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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