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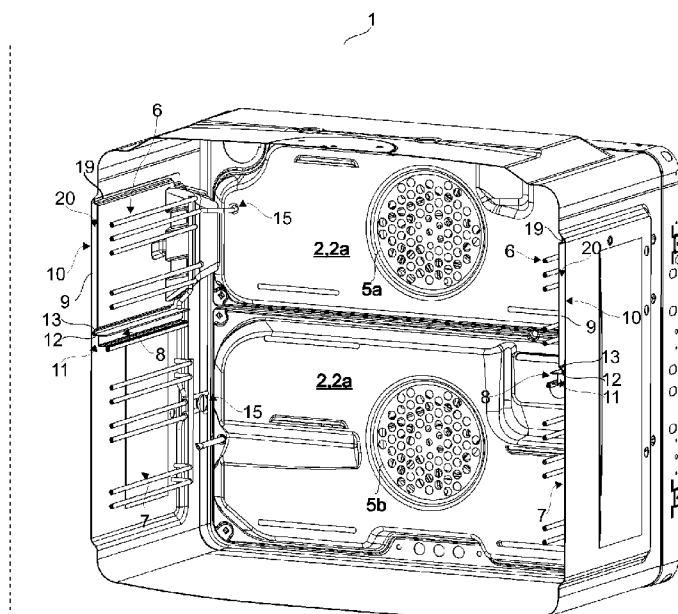
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(54) **Title:** COOKING OVEN HAVING A PARTITIONING ASSEMBLY WITH IMPROVED THERMAL INSULATION

Fig. 3



(57) **Abstract:** The present invention relates to an oven (1) comprising a chamber (2), a partitioning assembly (3) including a partition (4) for partitioning the chamber (2) into an upper sub-chamber (2a) and a lower sub-chamber (2b). In the oven (1) of the present invention the partitioning assembly (3) further includes support racks (6) detachably fixed onto the side walls (7) of the chamber (2) respectively, each support racks (6) having a guide (8) for slidably mounting the partition (4)..

Description**COOKING OVEN HAVING A PARTITIONING ASSEMBLY WITH IMPROVED THERMAL INSULATION**

- [0001] The present invention relates to a cooking oven, in particular a domestic cooking oven with the dual cook feature.
- [0002] Prior art cooking ovens with the dual cook feature are generally known. In such cooking ovens, the user can separate the cooking chamber by means of a partitioning assembly into two sub-chambers one above the other. The partitioning assembly has a partition which is generally slidably mountable into the cooking chamber. Such cooking oven generally has two heaters which can be separately controlled in order to heat the upper sub-chamber and the lower sub-chamber respectively to desired target temperatures. Thereby, the user is enabled to set the sub-chambers to different target temperatures and cook different food.
- [0003] US 7,087,863 B1 discloses a prior art cooking oven which has the above-mentioned dual cook feature.
- [0004] A problem with such prior art cooking oven is that due to the leakage of the thermal energy from the hotter sub-chamber to the colder sub-chamber, it becomes difficult to attain largely different target temperatures in the sub-chambers. Thus, the thermal insulation between the sub-chambers is of utmost importance. However, the task of thermally insulating the sub-chambers from one another generally complicates the manufacturing process of the cooking chamber and also increases the overall cost of the cooking oven.
- [0005] An objective of the present invention is to provide a cooking oven having a partitioning assembly which overcomes the aforementioned drawbacks of the prior art in a cost-effective way and which enables an improved thermal insulation between the sub-chambers and which is easy to disassemble and reassemble by the user in order to use the cooking oven in a normal mode or in a partitioned mode respectively.
- [0006] This objective has been achieved by the oven as defined in claim 1. Further achievements have been attained by the subject-matters respectively defined in the dependent claims.

- [0007] In the oven of the present invention, the partitioning assembly includes a pair of support racks which are detachably fixed onto the opposing side walls of the chamber respectively. Each support rack has a guide for slidably mounting the corresponding lateral side of the partition. The partitioning assembly also includes a pair of heat protective lining walls which are detachably fixed to the back sides of the support racks which face the side walls respectively. The lining walls have a size and shape configured to shield only the upper sections of the side walls which latterly enclose the upper sub-chamber. The guides are configured to gaplessly fit into the spaces between the lateral sides of the partition and the side walls respectively so as to obstruct together with the partition the exchange of air between the upper sub-chamber and the lower sub-chamber.
- [0008] In an embodiment, the lining walls are deattachably retained on the guides of the support racks respectively.
- [0009] In a version of this embodiment, the guides have flanges which retain the lining walls particularly from below respectively.
- [0010] In another embodiment, the guides are welded to the support racks respectively.
- [0011] In another embodiment, the support racks have projections which can be manually fitted into corresponding recesses on the side walls respectively.
- [0012] In a version of this embodiment, the lining walls have through-holes. The projections are penetrated through these through-holes and subsequently fitted into the recesses when attaching the support racks onto the side walls of the chamber respectively.
- [0013] In another embodiment, the support racks have rails for carrying baking trays.
- [0014] In another embodiment, the support rack is partly formed by utilizing wires. Due to the comparatively small cross sections of the wires, the exchange of thermal energy between the sub-chambers via the support rack can be reduced.
- [0015] In another embodiment, lining walls are curved into the upper sub-chamber such that an air gap behind the lining walls provides an additional thermal insulation between the side walls and the lining walls.

The lining walls also have a heat protective function and reflect the radiant heat back into the upper sub-chamber. The lining walls also redirect the hot air flow impinging from the upper heater unit back into the upper sub-chamber.

- [0016] With the present invention, particularly by virtue of the partitioning assembly the thermal insulation between the sub-chambers has been improved while ensuring a comparatively easy manufacturability of the oven and an easy installation of the partitioning assembly. With the present invention, particularly by virtue of the partitioning assembly the usability of the oven has also been improved. Thus, the heat protective lining walls can be manually disassembled from the cooking chamber when the user intends to cook food using the entire chamber at a uniform temperature. Alternatively the heat protective lining walls can be manually reassembled with the cooking chamber when the user intends to cook different foods using the two sub-chambers at different temperatures.
- [0017] Additional advantages of the oven of the present invention will become apparent with the detailed description of an embodiment with reference to the accompanying drawings in which:
- [0018] Figure 1 – is a schematic partial perspective view of an oven having a partitioning assembly according to an embodiment of the present invention;
- [0019] Figure 2 – is a schematic partial perspective view of the oven of Fig. 1 prior to slidably mounting the partition into the chamber;
- [0020] Figure 3 – is a schematic vertical sectional view of the oven of Fig. 2;
- [0021] Figure 4 – is a schematic perspective view of the support rack of the partitioning assembly according to an embodiment of the present invention;
- [0022] Figure 5 – is a schematic perspective view of the guide of the partitioning assembly according to an embodiment of the present invention;
- [0023] Figure 6 – is a schematic vertical sectional view of the partition of Fig. 5.
- [0024] The reference signs appearing on the drawings relate to the following technical features.

1. Cooking oven

- 2. Chamber
- [0025] 2a. Upper sub-chamber
- [0026] 2b. Lower sub-chamber
- 3. Partitioning assembly
- 4. Partition
- [0027] 5a. Upper heater unit
- [0028] 5b. Lower heater unit
- [0029] 6. Support rack
- 7. Side wall
- 8. Guide
- 9. Lining wall
- 10. Upper section
- 11. Retainer
- [0030] 12. Flange
- [0031] 13. Lower edge
- [0032] 14. Projection
- [0033] 15. Recess
- [0034] 16. Through hole
- [0035] 17. Rail
- [0036] 18. Wire frame
- [0037] 19. Rim
- [0038] 20. Gap
- [0039] The cooking oven (1) comprises a chamber (2) for cooking food, a partitioning assembly (3) which includes a partition (4) for partitioning the chamber (2) into an upper sub-chamber (2a) and a lower sub-chamber (2b), wherein the partition (4) is slidably mountable into the chamber (2) and an upper heater unit (5a) and a lower heater unit (5b) for separately heating the upper sub-chamber (2a) and the lower sub-chamber (2b) respectively (Fig. 1 to 6).
- [0040] In the cooking oven (1) of the present invention, the partitioning assembly (3) further comprises a pair of support racks (6) which are detachably fixed onto the side walls (7) of the chamber (2) respectively, wherein each support rack (6) has a guide (8) for slidably mounting the corresponding

lateral side of the partition (4) and a pair of heat protective lining walls (9) which are detachably fixed to the back sides of the support racks (6) which face the side walls (7) respectively, wherein the lining walls (9) have a size and shape configured to shield only the upper sections (10) of the side walls (7) which latterly enclose the upper sub-chamber (2a) and wherein the guides (8) gaplessly fit into the spaces between the lateral sides of the partition (4) and the side walls (7) respectively so as to obstruct together with the partition (4) the exchange of air between the upper sub-chamber (2a) and the lower sub-chamber (2b) (Fig. 1 to 6).

- [0041] In an embodiment, each guide (8) comprises a retainer (11) for removably supporting the corresponding lining wall (9).
- [0042] In a version of this embodiment, each retainer (9) comprises a flange (12) which secures the lower edge (13) of the corresponding lining wall (9).
- [0043] In another embodiment, each guide (8) is attached to corresponding support rack (6) by a welding joint.
- [0044] In another embodiment, the support rack (6) has one or more than one projection (14) which respectively engage with one or more than one recess (15) formed on the side walls (7) respectively.
- [0045] In a version of this embodiment, the lining wall (9) has a through hole (16) aligned with one projection (14) and the corresponding recess (15).
- [0046] In another embodiment, the support rack (6) has a plurality of rails (17) for selectively mounting a baking tray (not shown) or the like into the upper sub-chamber (2a) or the lower sub-chamber (2b) respectively.
- [0047] In another embodiment, the support rack (6) comprises a wire frame (18).
- [0048] In another embodiment, each lining wall (9) has a rim (19) which abuts against the side walls (7) so as to secure an air gap (20) between itself and the corresponding side wall (7).
- [0049] With the present invention, particularly by virtue of the partitioning assembly (3), the thermal insulation between the sub-chambers (2a, 2b) has been improved while also ensuring a comparatively easy manufacturability of the cooking oven (1) and an easy installation of the partitioning assembly (3). Thus, the overall cost of the cooking oven (1) has been comparatively reduced and the usability has been improved.

With the present invention, the user can divide the chamber (2) and cook different foods even at largely different temperatures. Thereby a consumer satisfaction can be increased.

Claims

1. A cooking oven (1) comprising
 - a chamber (2) for cooking food,
 - a partitioning assembly (3) which includes a partition (4) for partitioning the chamber (2) into an upper sub-chamber (2a) and a lower sub-chamber (2b), wherein the partition (4) is slidably mountable into the chamber (2),
 - an upper heater unit (5a) and a lower heater unit (5b) for separately heating the upper sub-chamber (2a) and the lower sub-chamber (2b) respectively,**characterized in that**
the partitioning assembly (3) further comprising
 - a pair of support racks (6) which are detachably fixed onto the side walls (7) of the chamber (2) respectively, wherein each support rack (6) has a guide (8) for slidably mounting the corresponding lateral side of the partition (4) and
 - a pair of heat protective lining walls (9) which are detachably fixed to the back sides of the support racks (6) which face the side walls (7) respectively, wherein the lining walls (9) have a size and shape configured to shield only the upper sections (10) of the side walls (7) which latterly enclose the upper sub-chamber (2a) and wherein the guides (8) gaplessly fit into the spaces between the lateral sides of the partition (4) and the side walls (7) respectively so as to obstruct together with the partition (4) the exchange of air between the upper sub-chamber (2a) and the lower sub-chamber (2b).
2. The cooking oven (1) according to claim 1, **characterized in that** each guide (8) comprises a retainer (11) for removably supporting the corresponding lining wall (9).
3. The cooking oven (1) according to claim 2, **characterized in that** each retainer (9) comprising a flange (12) which secures the lower edge (13) of the corresponding lining wall (9).
4. The cooking oven (1) according to any one of claims 1 to 3, **characterized in that** each guide (8) is attached to corresponding support rack (6) by a welding joint.
5. The cooking oven (1) according to any one of claims 1 to 4, **characterized in that** the support rack (6) has one or more than one projection (14) which respectively engage with one or more than one recess (15) formed on the side

walls (7) respectively.

6. The cooking oven (1) according to claim 5, **characterized in that** the lining wall (9) has a through hole (16) aligned with one projection (14) and the corresponding recess (15).
7. The cooking oven (1) according to any one of claims 1 to 6, **characterized in that** the support rack (6) has a plurality of rails (17) for selectively mounting a baking tray or the like into the upper sub-chamber (2a) or the lower sub-chamber (2b) respectively.
8. The cooking oven (1) according to any one of claims 1 to 7, **characterized in that** the support rack (6) comprises a wire frame (18).
9. The cooking oven (1) according to any one of claims 1 to 8, **characterized in that** each lining wall (9) has a rim (19) which abuts against the side walls (7) so as to secure an air gap (20) between itself and the corresponding side wall (7).

Fig. 1

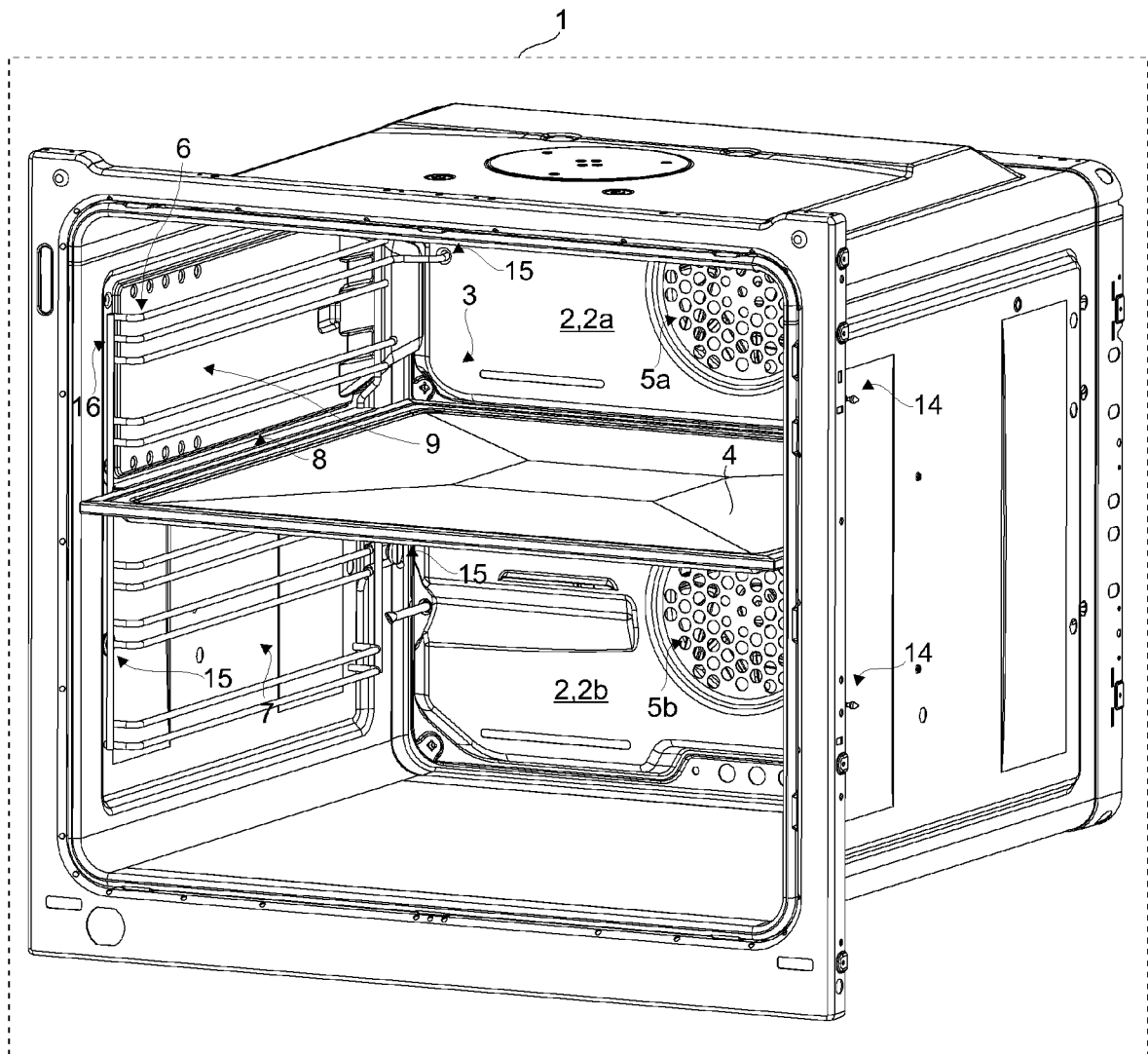


Fig. 2

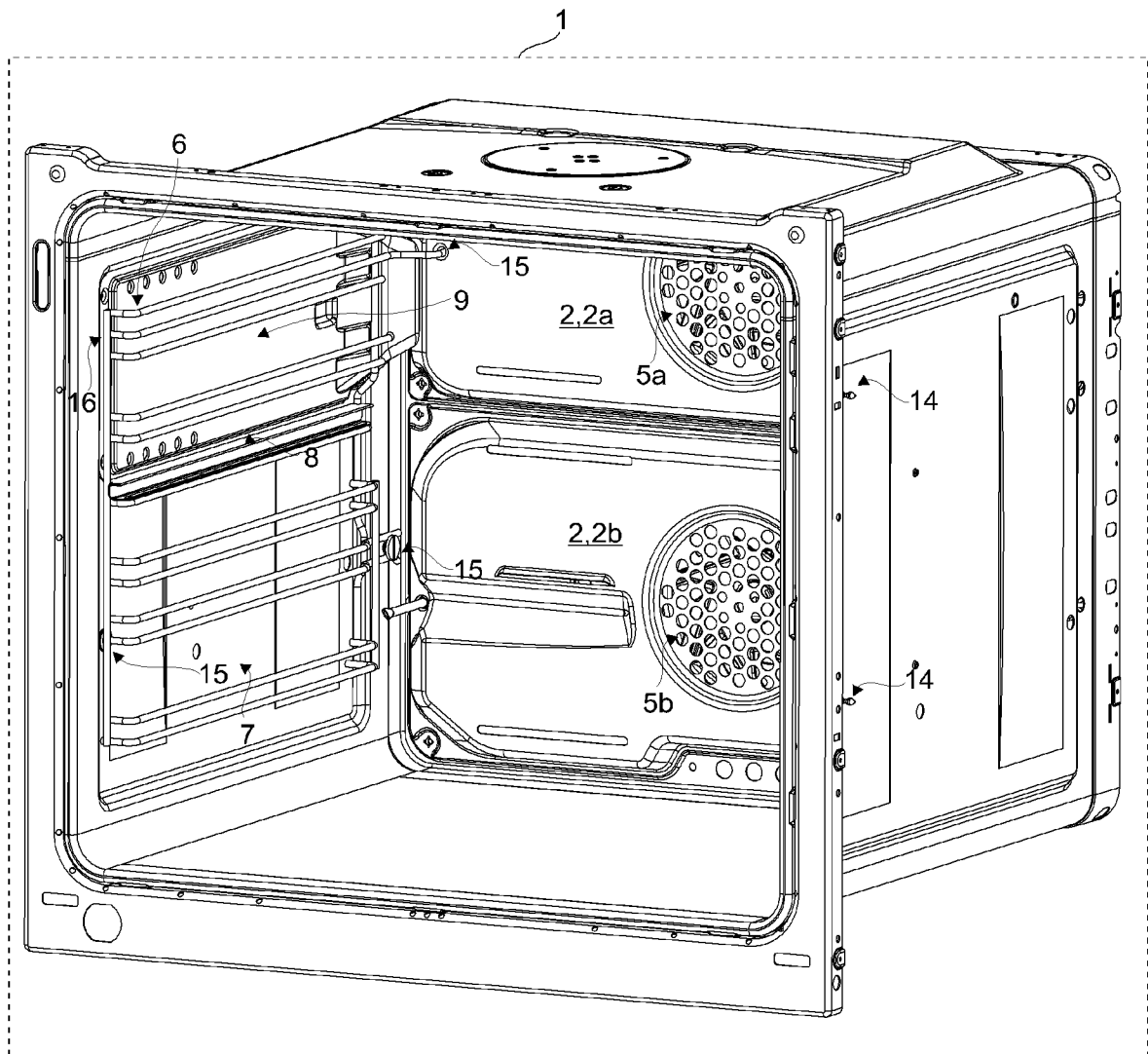


Fig. 3

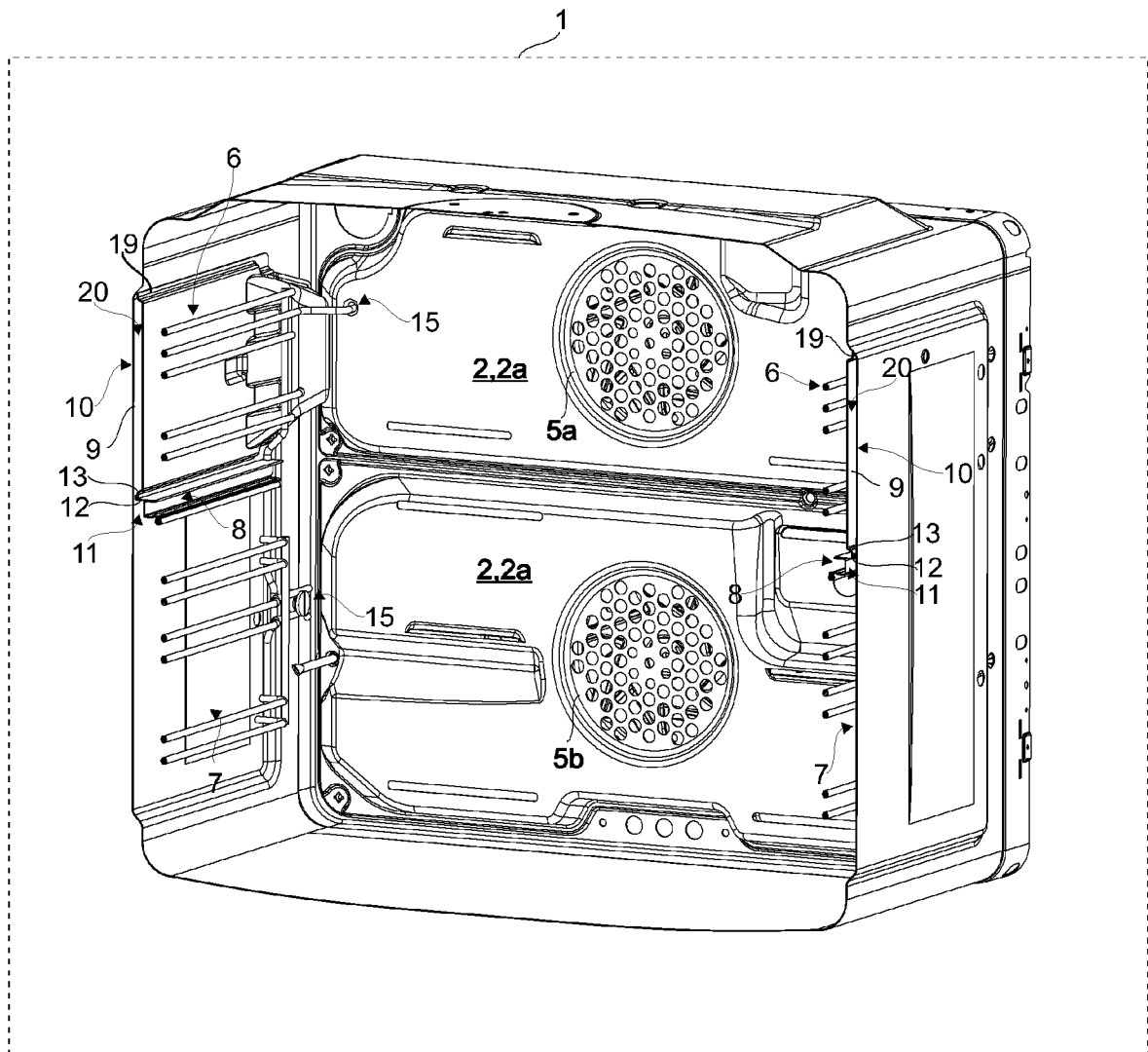


Fig. 4

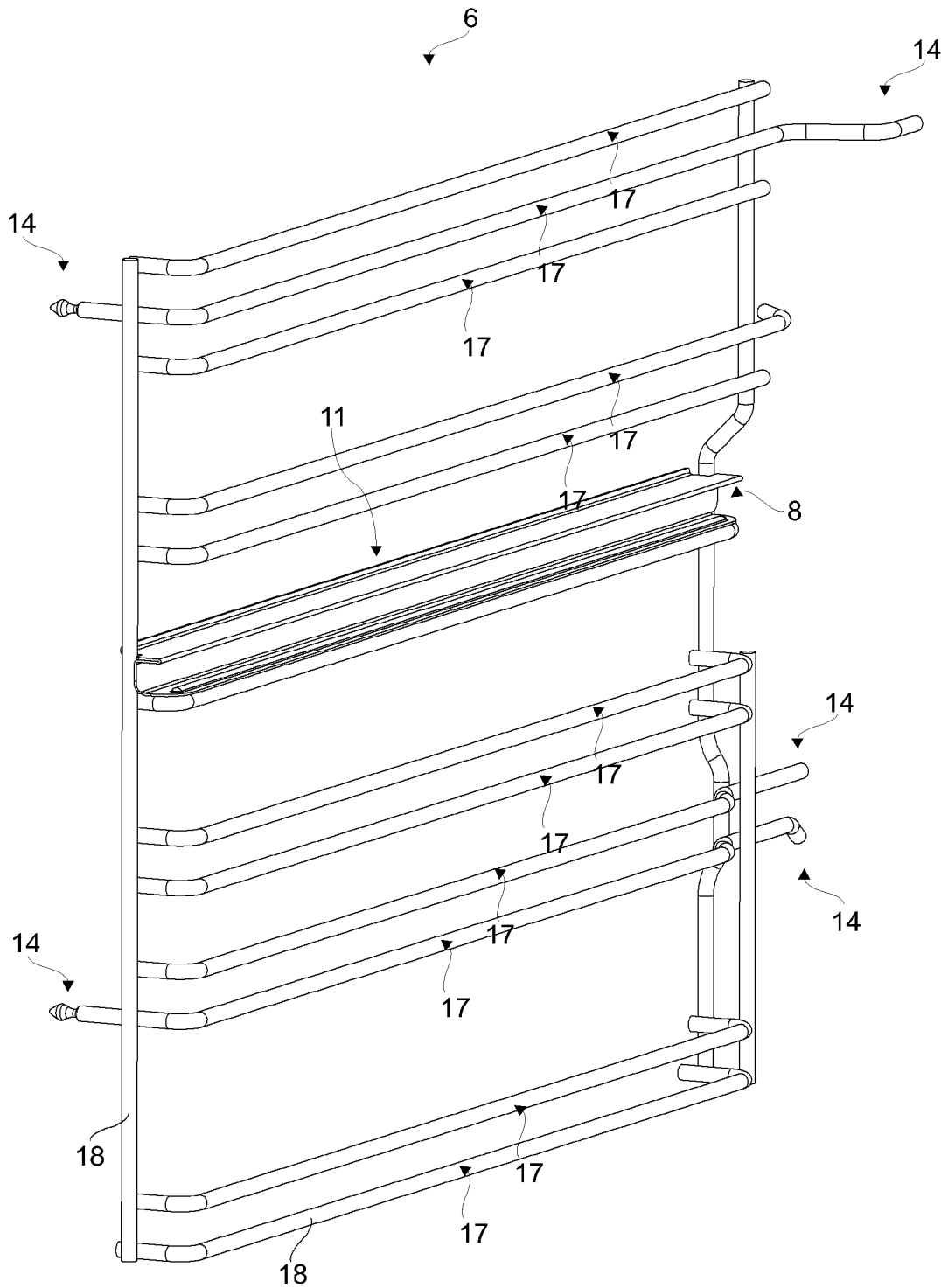


Fig. 5

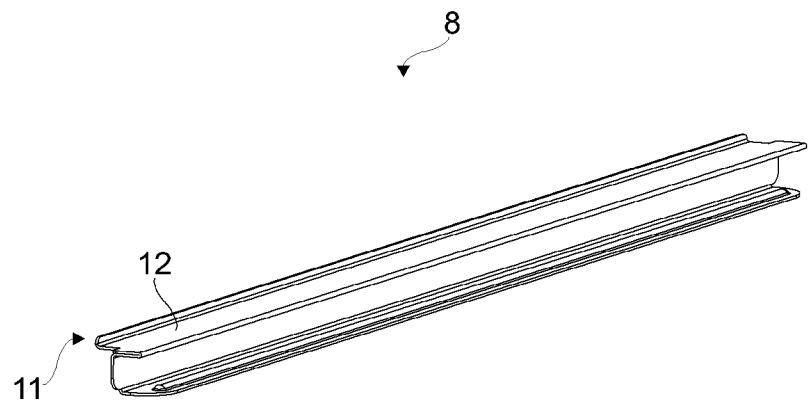
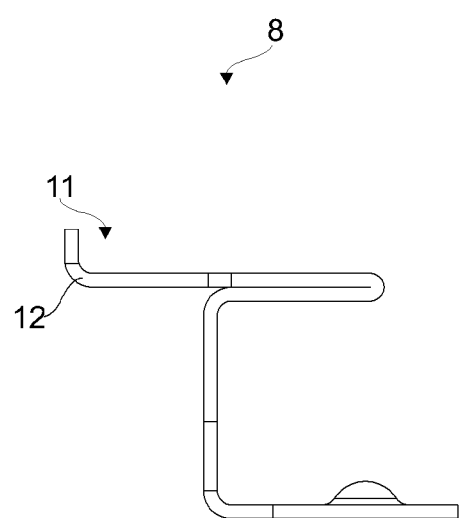


Fig. 6



INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2014/068478

A. CLASSIFICATION OF SUBJECT MATTER
INV. F24C15/18 F24C15/16
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
F24C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2014/083309 A1 (REESE ROBERT J [US] ET AL) 27 March 2014 (2014-03-27) the whole document	1-9
A	WO 2013/050546 A1 (ARCELIK AS [TR]; KANTAS MURAT [TR]) 11 April 2013 (2013-04-11) the whole document	1-9
A	US 2002/060215 A1 (ALLERA RICCARDO [IT] ET AL) 23 May 2002 (2002-05-23) the whole document	1-9
A	US 7 087 863 B1 (KIM CHEOL JIN [KR] ET AL) 8 August 2006 (2006-08-08) the whole document	1-9



Further documents are listed in the continuation of Box C.



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INTERNATIONAL SEARCH REPORT

Information on patent family members

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