

(19)



(11)

EP 2 801 762 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
12.11.2014 Bulletin 2014/46

(51) Int Cl.:
F24C 15/02 (2006.01) **A47L 15/42** (2006.01)
D06F 39/14 (2006.01) **F25D 23/02** (2006.01)

(21) Application number: **14166604.0**

(22) Date of filing: **30.04.2014**

(84) Designated Contracting States:
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO
PL PT RO RS SE SI SK SM TR**
Designated Extension States:
BA ME

(72) Inventors:
• **IVANOVIC, Branko**
91541 Rothenburg ob der Tauber (DE)
• **HILDNER, Dietmar**
91541 Rothenburg ob der Tauber (DE)

(30) Priority: **08.05.2013 EP 13166936**

(74) Representative: **Röder, Richard**
Electrolux Dienstleistungs GmbH
Group Intellectual Property
90327 Nürnberg (DE)

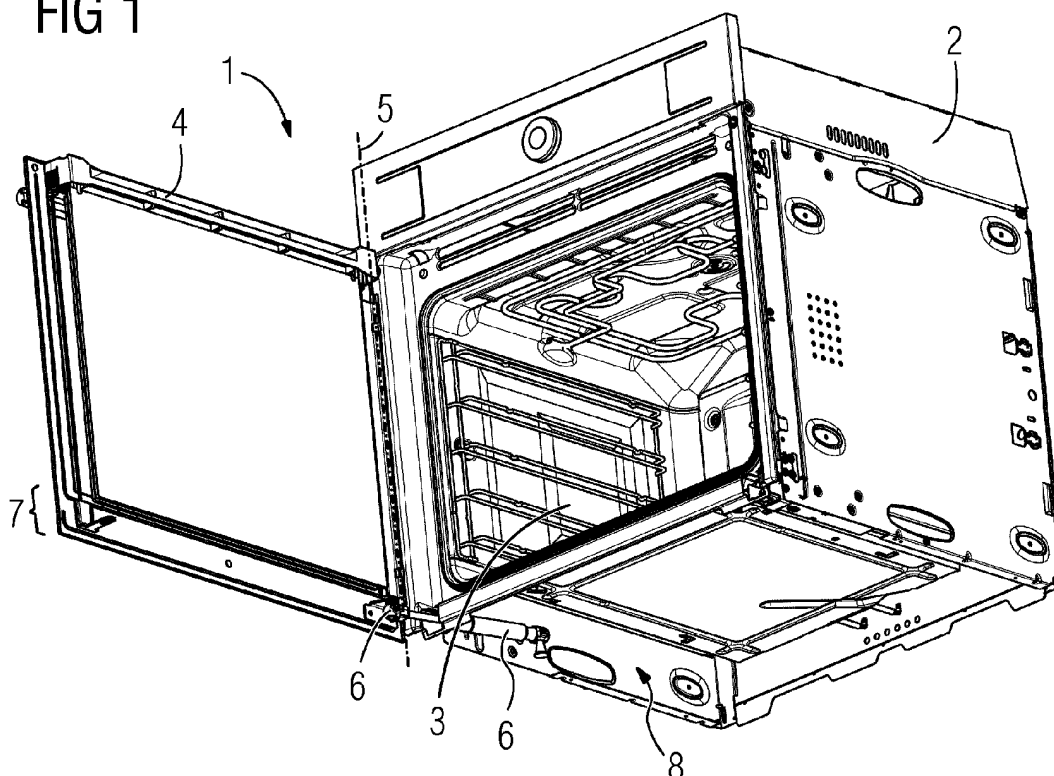
(71) Applicant: **Electrolux Appliances Aktiebolag**
105 45 Stockholm (SE)

(54) **Cooking oven comprising a side opening door and a damper of the door movement**

(57) The present application in particular is related to a cooking oven (1). The oven (1) comprises a main body (2) with a cavity (3) and a side-opening door (4) configured for closing the cavity (3). The door (4) is hingedly attached to the main body (2). The oven (1)

further comprises a damping element (6) which bridges between the door (4) and the main body (2) and is adapted to at least one of damping an opening movement of the door (4) and damping a closing movement of the door (4).

FIG 1



EP 2 801 762 A1

Description

[0001] The present application in particular is related to a cooking oven, and in particular to improvements for cooking oven doors.

[0002] Doors of cooking or baking ovens, in general are hingedly attached to a support structure of the oven. In order to improve handling and operability of the door it is known, for example from EP 1 731 704 A2, to provide respective hinges of drop-down-type doors with rotational dampers in particular in order to damp the drop-down opening movement of the door. Such rotational dampers in some instances, however, are comparatively complex to implement and, as they have to damp drop-down movements of the door against the action of gravity, in general are of robust and heavy construction, and comparatively expensive, and therefore are not suitable for all types of hinged doors.

[0003] It is an object of the invention to solve the problems associated with the state of the art. In particular it is an object to provide solutions for damping hinged doors of ovens, such as for example baking ovens, cooking ovens, and microwave ovens, wherein respective damping elements shall be comparatively easy to implement and shall be available at comparatively low cost.

[0004] This object is solved by independent claim 1. Embodiments result from the dependent claims and the description below.

[0005] Claim 1 is related to cooking and/or baking ovens. The terms cooking oven, baking oven or their combination in particular shall cover any type of conventional oven, in particular operated with gas, electricity to generate radiant heat and/or hot air circulation, but also may cover microwave cooking ovens.

[0006] The oven as proposed in claim 1 comprises a main body, in particular constituting or comprising a support structure of the oven, with a cavity, muffle or cooking chamber which in particular is adapted to accommodate food to be processed.

[0007] The oven further comprises a side-opening door configured for opening and closing the cavity.

[0008] The term "side-opening" shall mean that a hinge axis of the door is oriented, in particular parallel to, the vertical direction relative to the ordinary operational state of the oven. Note that positional and locational specifications, in particular the term "vertical" as used in claim 1, shall relate to the ordinary operational position of the oven, or of respective elements.

[0009] The side-opening door is mounted hingedly about a vertical axis to the main body of the oven, in particular to a support structure of the oven. This in particular shall mean that the door is attached to the main body to be rotatable around a vertical axis of rotation from a closed to an open position and vice versa.

[0010] The oven further comprises a damping element which is mounted, in particular at opposite ends thereof, to the door and the main body, and which bridges between the door and the main body. The damping element

is installed in such a way, and is further adapted and configured such that it can, in the ordinary operational mode, damp at least one of a sideways opening movement of the door and a sideways closing movement of the door.

[0011] The damping element may be mounted or installed via a hinge assembly to the door and main body. At least one hinge element of the hinge assembly may be connected to or integrally implemented with a bracket that may be attached to the door or main frame, respectively.

[0012] The term "bridging between" in particular shall mean, that the damping element extends between the door and main body and, in the ordinary mounted state interconnects them with each other, which in the end results in damping effects or damping forces at least in sections of the opening or closing movements or cycles of the door. The generation of damping forces in particular may be advantages in end phases of the sideways opening and closing movements of the door, in particular for avoiding damages, e.g. to hinges, and/or slamming noises in opening and closing actions.

[0013] In embodiments, the damping element may comprise at least one bracket that is adapted for connecting the dampening element to the door. Advantageously, the bracket related to the damping element may be adapted for rotatably connecting the dampening element to the door. A respective axis of rotation may be parallel to the vertical direction.

[0014] The bracket in particular may function of an adapter between the door and/or main frame and the damping element, in particular may have a function of a mounting adapter. A respective mounting adapter may be advantageous for facilitating assembly of the damping element to the oven, in particular door and/or main frame, probably also in view of retrofit solutions.

[0015] A respective bracket may comprise a folded sheet, in particular may be implemented as an angle bracket. The angle bracket may comprise two rectangular flat sheet-type or flat-sheet-shaped wings. One of the wings may be attached in its longitudinal orientation to the door or main frame.

[0016] The proposed solution for damping sideways or side-opening and/or sideways or side-closing movements of the door of the oven in connection with a bracket, in particular mounting bracket, can be implemented with comparatively low complexity. Further brackets have been found to be suitable for side-hinged or side-opening doors of the mentioned ovens, in particular due to the comparatively moderate damping forces occurring with respective side-opening doors. Hence the side-opening assemblies of side-opening doors of ovens related to the invention are open for implementing brackets, in particular angular sheet type shape.

[0017] In embodiments, the door may comprise a door panel or an outer door panel that has an outer side facing the outside of the cooking oven, in particular is oriented away from the inside of the cavity in the closed state of

the door. The dampening element in such embodiments may be connected via the bracket to an inner side of the outer door panel, which inner side is oriented towards the cavity (3), i.e. faces the inside of the cavity in the closed state of the door.

[0018] In variants, the bracket, which is attached to the door, may be attached directly to an inner surface of the inner side of the outer door panel. "Directly" in this connection in particular shall mean that the attachment between the bracket and inner surface is accomplished by primary attachment elements, such as screws, glue, bolts and the like, and that the attachment is free or does not comprise secondary attachment elements involved in the attachment effect as such.

[0019] In further embodiments, the door may comprise a door support structure that is connected to the inner side of the outer door panel. Here, the bracket may be formed as an integral part of or may be integrated with the door support structure. It is advantageous, in particular for stability reasons, that the bracket is formed as an integral part of the door support structure and is adapted for being connected to the dampening element.

[0020] In particular in embodiments as referred to before, the bracket formed as an integral part of the door support structure may be adapted for being rotatably connected to the dampening element. This in particular shall mean, that the bracket is fixed at the door support structure and may provide an interface for rotatably connecting thereto the bracket having a counterpart interface matching with that of the bracket.

[0021] In embodiments, the damping element may comprise at least one of a piston-type gas and oil-spring damping element, in particular of linear type or extension. The piston type damping element may comprise a cylinder and a piston moveable in axial direction within the cylinder. Respective damping elements are comparatively effective in damping rotational movements, in particular sideways pivoting movements, of the door, and can be implemented with comparatively low complexity.

[0022] The damping element as proposed herein may be hingedly attached or connected in particular via respective swivel connections to the door and main body. This in particular shall mean, that in particular in case of a piston-type damping element, one end of the damping element may be connected via a swivel or hinged connection to the door, and the other end of the damping element may be connected via a swivel or hinged connection to the main body or support structure.

[0023] In embodiments, at least one hinge of the hinge assembly is implemented as a bolt bearing connection or as a ball stud connection. Both connection types allow comparatively flexible connections and joints between damping element and door or main body, respectively, in particular in connection with using a bracket or mounting bracket for fixation with/to the door and/or main frame.

[0024] In embodiments, a bearing of the bolt bearing connection is provided at the door and/or main body, and the damping element comprises corresponding counter

bearing elements establishing a connection, in particular detachable connection, to the corresponding bearing. In this case the bearing may comprise bearing flanges, and the counter bearing element may comprise a bolt, or vice versa.

[0025] In the alternative, a ball stud of the ball stud connection may be provided at the door and/or main body, and the damping element may comprise a corresponding stud clutch element, in particular of semispherical shape, in particular configured to be able to at least partially enclose the ball stud. The stud clutch element in particular may be adapted to establish a connection, in particular detachable connection, to the bearing or ball stud. A stud clutch element may for example be provided at one or both outer ends of a piston-type damping element.

[0026] It shall be noted, that respective bearing and counter bearing and ball stud and stud clutch elements may be interchanged. Hence it may for example be possible that the stud clutch element is provided at the door or main body and that the ball stud is provided at the damping element and so on.

[0027] In embodiments, the bearing or ball stud, or in the alternative the counter bearing or stud clutch, may be connected to or integrally implemented or formed with the bracket which is attached to the door and/or main frame. The proposed bracket in particular is advantageous for service and/or maintenance issues, in particular in case that a respective element has to be exchanged.

[0028] In embodiments, in particular as indicated further above, the bracket may be attached to the door, in particular to a door mechanical structure or a glass pane of the door. The attachment may be a bonded connection, in particular a gluing connection.

[0029] In particular via a bonded connection, the bracket may on the one hand be tightly fixed, and on the other hand may be attached to allow comparatively easy replacement.

[0030] Further, with regard to gluing connections, in particular gluing connections for attaching the bracket or brackets of the damping element to the oven, in some instances it may even be advantageous to retrofit ovens with respective damping mechanisms just by attaching respective mounting brackets for the damping element.

[0031] In embodiments, one of the bearing or ball stud, or as the case may be, corresponding counter coupling elements, is/are integrally formed with a section, in particular of a mechanical structure of the door or main body. Such embodiments in particular may provide comparatively robust bearing or ball stud connections.

[0032] In embodiments, the bolt bearing connection and/or ball stud connection at least partially are/is formed from at least one of a plastic and metal material. In preferred embodiments, respective elements are made from plastic materials sufficiently heat and/or wear resistant.

[0033] In embodiments, the damping element is positioned close, i.e. nearby, in particular as close as possi-

ble, to a hinge connecting the door to the main body. Here, advantageous mechanical and technical configurations can be obtained, and, in particular, opening and closing forces can be effectively absorbed, i.e. damped. In particular, the attachment site, such as the bracket, may be attached close to or nearby a door hinge, in particular with respect to the radial direction of the hinge axis.

[0034] The damping element in particular may be arranged and provided at a lower side or edge of the door. This may be advantageous for reasons of space utilization and/or heat exposure of the damping element. In embodiments, the damping element may be mounted or provided at the bottom site, i.e. near or close to the bottom, of the door and main body. This in particular is advantageous for side-opening doors in order to avoid interferences in the ordinary use of the oven. The bottom side, lower side or lower edge of the door corresponds to the coldest area of an oven during its operation. The inventors have observed that the temperature in that region rarely rises above about 80 °C during operation of an oven. Hence, the invention proposes to arrange a dampening element in that region wherein it is effectively protected from any thermal stress. Thus, a dampening element that is arranged in said region does not require any expensive structural or material adaptations to high temperature. Further, a dampening element that is arranged at the bottom side of the door is almost invisible, especially when the whole dampening unit is covered by a front lining of the oven that comprises an opening through which the dampening element passes. The lower side or the lower edge of the door corresponds also to the region of the oven, where a dampening element is very easy to assemble and where, in the instance of a service call to a customer's home it can be very easily exchanged, since after removing the oven bottom liner, which is more convenient than any removal of an oven housing side wall, the dampening element can be directly accessed. It is particular advantage that in an oven with a door that the hinge opening in the lower region of the front lining of the oven door can also be used for passing through the dampening element.

[0035] Further, the damping element may be configured to bridge between the door and an inner surface of a lateral side wall of the main frame. In particular in this proposed configuration, the damping element may reach through or pass a front panel or front cover of the cooking oven.

[0036] In embodiments, the damping element may be part of a damper unit which further comprises an electronic component, in particular a switch, configured for executing or triggering a preset process in dependence of at least one opening state of the door. The preset process in particular may be at least one of switching on or switching off a light configured or illuminating the cavity, issuing a warning or message indicative of a closed or opened state of the door and the like.

[0037] In embodiments, and in particular as proposed above, the damping element may be attached or mount-

ed in such a way that the damping element passes through an opening provided in a front lining or passes by a front lining, in particular lower front lining or lower section of a front lining, of the main body. However, the damping element preferably is provided at a lower site of the door, in particular located below the oven cavity or muffle.

[0038] In embodiments, the bracket has an angle profile, in particular a 90 degree angle profile. The angle profiled bracket in particular may comprise two angled branches, such as for example 90-degree angled branches, in particular of sheet-type configuration.

[0039] In an angled configuration of the bracket, a first one of the branches may be adapted for attaching the bracket to the oven and a second one of the branches may be adapted for attaching or integrating a respective hinge element.

[0040] It shall, however, be noted, that the bracket may have a u-shaped cross section rather than an L-shaped cross section, or may be of any other suitable cross section.

[0041] In embodiments the first branch may have a rectangular shape, in particular a rectangular footprint. The second branch in this embodiment may be provided at a longside of the first branch. The second branch may protrude from the first branch in an angle of 90 degrees. Further, the second branch may have a triangular-type shape, in particular also dome-type or hemicycle-type shape, in particular footprint.

[0042] In embodiments, the bracket may be attached to the oven such that the second branch lies vertically above, the first branch. It shall, however be noted, that the second branch may be located at a lower side or at a lateral side of the first branch. The first branch, in particular adapted to be attached to the oven, in particular door, may be oriented vertically, and the second branch may be oriented horizontally, or vice versa.

[0043] As can be seen in particular from the description above, the proposed damping solutions for cooking or baking ovens can easily be implemented and provide enhanced user comfort.

[0044] Selected embodiments will now be described in connection with the annexed figures, in which:

FIG. 1 shows a perspective view of a domestic cooking oven;

FIG. 2 shows a detail of a damping unit of the cooking oven;

FIG. 3 shows a variant with respect to the damping arrangement of the cooking oven; and

FIG. 4 shows a further variant with respect to the damping arrangement.

[0045] FIG. 1 shows a perspective view of a domestic cooking oven 1. The cooking oven 1 comprises a main

body 2, or support structure, which comprises a cavity 3, in the present case a cooking or baking cavity 3. Fig. 2 shows a detail of a damping unit of the cooking oven 1.

[0046] The cooking oven 1 further comprises a door 4 configured for opening and closing the cavity 3 during different operational cycles of the cooking oven 1.

[0047] The door 4 constitutes a side-opening door, which means that the door 4 is hingedly attached to the main body 2 via hinges defining a vertical hinge axis 5.

[0048] The oven 1 further comprises a damping element 6. The damping element 6 is attached via a hinge assembly at one end to a bottom side 7 of the door 4, and at the other end to an inner side face 8 of the main body 2.

[0049] The damping element 6 comprises a linear piston-type gas and/or oil-spring damping element bridging between the door 4, in particular an inner side of the door 4, and the main body 2, in particular an inner side face 8 of the main body 2.

[0050] The term "bridging" in particular shall mean, that the damping element 6 is attached both to the door 4 and the main body 2, and thus is able to generate a damping force acting on the door 4 in at least one of a closing and opening movement of the door 4.

[0051] As can be seen from FIG. 2, the damping element 6 passes, at least in the opened state of the door 4, through or by a front lining, in particular an opening provided in a lower frame or lining of the main body 2.

[0052] In the embodiment shown in FIG. 1 and FIG. 2, the damping element 6 is connected at one end to the door 4 and at the other end to the inner side, in particular side face 8 of the main body 2, wherein respective connections are implemented as swivel or hinged connections.

[0053] In more detail, the swivel or hinged connections are implemented as ball stud connections in which both ends of the damping element 6, i.e. cylinder and piston of the damping element 6, are respectively provided with ball stud couplings or stud clutch elements 9. The stud clutch elements 9 preferably may be in the shape of a half sphere adapted to at least partially enclose a corresponding ball stud (not visible in the figures), and advantageously adapted to be coupled to the ball stud in a snapping action. Ball stud connections are comparatively robust and nevertheless allow easy replacement in case of a failure or malfunction.

[0054] As can be seen in more detail from FIG. 2, the door-sided ball stud in the present case is attached to a bracket 11. The bracket 11 may be made from a plastic material, from metal, or from a plastic-metal composite material.

[0055] The bracket 11 in the present case is attached directly to the door 4, and at a lower side of the door 4 and main body 2 close to or at or below the level of a lower hinge 13 connecting the door 4 to the main body 2. A respective location of the bracket 11 and therefore the damping element 6 is advantageous in particular for the reason that interference with actions of a user oper-

ating the oven 1, and in particular heat impacts, can be greatly avoided.

[0056] The bracket 11 as shown in FIG. 1 and 2 is or may be connected to the door 4 by a gluing connection, which in particular can be readily applied to a variety of different materials such as glass, metal or plastic, in particular glass, metal or plastic surfaces of the door 4 or door frame. Other types of connections, such as screwing, caulking and the like may be used as well. Here it shall be mentioned, that the main-body sided ball stud can also be implemented and attached by gluing, however, also screwing type connections may be used.

[0057] The bracket 11 as shown in more detail in FIG. 2 comprises two branches, limbs or wings angled by about 90 degrees, wherein one of the limbs, i.e. a first branch 14, is glued to the door 4 and the other limb, i.e. a second branch 15, projects from an inner surface of the door 4 and supports the ball stud to which a respective stud clutch element 9 is coupled to. A corresponding bracket 11 may be provided at the other end of the damping element 6, in particular with a gluing connection to the inner face side 8 of the main body 2. As can be seen from the figures, the wings may comprise a sheet-type configuration, in particular of rectangular or, dome-shaped, hemicycle-shaped or triangular shape.

[0058] The bracket 11 in the present case is L-shaped, in particular has, in particular with respect to its longitudinal direction, an angled profile, in particular L-shaped angled profile, in which the two branches 14 and 15 are angled by 90 degrees. The first branch 14 comprises a rectangular footprint. The second branch 15 is arranged at an upper longside of the first branch 14. The second branch 15 is, relative to the longside of the first branch 14, shorter than the first branch 14. Further, the second branch has a dome-shaped or hemicycle-shaped footprint.

[0059] As can in particular be seen from FIG. 2, the second branch 15 lies, with respect to the vertical direction, above the first branch 14. However, the second branch 15 may also be arranged at a lower side, or at a lateral side of the first branch 14.

[0060] The damping element 6 may be part of a damper unit which may further comprise a switch (not shown) configured for executing or triggering a preset process in dependence of at least one opening state of the door 4. As already stated, such a process or action may be issuing or indicating a door opening and/or closing state and others.

[0061] FIG. 3 shows a variant with respect to the damping arrangement of the cooking oven 1. In this variant, the door 4 comprises an outer door panel 16 that is adapted to close the cavity, and may in the closed configuration, as in the present embodiment, also cover section of the front side of the oven (1).

[0062] An outer surface of the outer door panel 16 in the closed state of the door may face away from the oven and be visible from the exterior. The outer door panel 16 may be made for example from metal or glass. Further, a

central inspection window allowing inspection of the inner of the cavity 3 in the closed state of the door 4 may be implemented with the outer door panel 16.

[0063] To the inner side of the outer door panel 16, i. e. the side facing the oven 1 and cavity 3 in the closed state of the door 4, there may be attached at least one strut 17, in particular intended for supporting and/or mechanically stabilizing the door structure and/or outer door panel 16, but may also have additional mechanical functions, such as acting as a support structure for attachment of the door 4 to the main body 2.

[0064] Regarding the strut or struts 17, it may be preferred to provide at struts respectively at opposing vertical sides or edges, in particular lateral edges, and/or at least two opposing horizontal sides or edges, in particular lateral edges, of the outer door panel 17. However, the struts 17 may also be provided at vertical and/or horizontal edges to implement an open U-or L-shaped frame, in particular partial frame.

[0065] Advantageously, a strut 17 is provided at a vertical lateral edge of the outer door panel 16 where it is hingedly connected to the main body 2. The at least one strut 17 may implement and/or be part of a supporting frame or supporting structure of the door 4, in particular outer door panel 16.

[0066] Adjacent to a strut 17 or in between two opposing struts 17 an inner door pane may be provided so as to face and be adjacent to the cavity 3 in the closed state of the door 4.

[0067] Within the frame, in particular as made up by the struts 17, and between the outer door panel 17 and the inner door pane an intermediate pane may be provided particular for obtaining improved thermal insulation.

[0068] Regarding the bracket 11, it may with the present embodiment directly attached to the inner side of the outer door panel 16, e.g. by gluing, which is the case with the embodiment shown in FIG. 3.

[0069] Other possibilities for attaching the bracket 11 to the door 4 are to fix the bracket 11 to a strut 17 located at the hinge side of the door 4. Attachment to the strut 17 may for example comprise a form-fit or force-fit connection between the bracket 11 and strut 17. For example, the bracket 11 and strut 17 may be configured such that the bracket 11 can be inserted into an opening, orifice or slot of the strut 17.

[0070] As a further possibility, which is shown in FIG. 4, it may be that the bracket 11 forms an integral element or part of the strut 17 located at the hinge side of the door 4.

[0071] In particular with the different attachment modalities of the bracket 11 as mentioned before, it may in all cases be provided that the bracket 11 can be mechanically connected with the damping element 6 in an articulated or hinged joint manner.

[0072] Regarding the strut or struts 17 again, they may be made from a plastic material, in particular via injection molding. In particular, the strut or struts 17 may be glued

to the inner panel side 18 of the outer door panel.

[0073] In all it becomes clear, that the solution, for damping a door 4 of a cooking oven 1, as proposed herein is effective for easily implementing damping elements with side-opening cooking oven doors.

Reference signs

[0074]

- | | |
|----|-----------------------|
| 1 | domestic cooking oven |
| 2 | main body |
| 3 | cavity |
| 4 | door |
| 5 | hinge axis |
| 6 | damping element |
| 7 | bottom side |
| 8 | inner side face |
| 9 | stud clutch element |
| 10 | ball stud |
| 11 | bracket |
| 13 | hinge |
| 14 | first branch |
| 15 | second branch |
| 16 | outer door panel |
| 17 | strut |
| 18 | inner panel side |

Claims

1. Cooking oven (1) comprising a main body (2) with a cavity (3), and a side-opening door (4) configured for closing the cavity (3) and being mounted hingedly about a vertical axis to the main body (2), **characterized in that** it comprises a damping element (6) which mounted to and bridges between the door (4) and the main body (2) and is adapted to at least one of damping a sideways opening movement of the door (4) and damping a sideways closing movement of the door (4).

2. Cooking oven (1) according to claim 1, wherein the damping element (6) comprises a bracket (11) that is adapted for connecting the dampening element (6) to the door (4), wherein the bracket (11) in particular may be adapted for rotatably connection the dampening element (6) to the door (4). 5
3. Cooking oven (1) according to claim 2, wherein the door (4) comprises an outer door panel (20) that has an outer side (21) that faces the outside of the cooking oven (1), and the dampening element (6) is connected via the bracket (11) to an inner side (22) of the outer door panel (29), which is oriented towards the cavity (3). 10
4. Cooking oven (1) according to claim 3, wherein the bracket (11) is attached directly to an inner surface of the inner side (22) of the outer door panel (20). 15
5. Cooking oven (1) according to claim 1 and 3, wherein the door (4) comprises a door support structure (12) that is connected to the inner side (22) of the outer door panel (20), wherein the bracket is formed as an integral part of the door support structure (12), wherein preferably the bracket is formed as an integral part of the door support structure and is adapted for being connected to the dampening element. 20 25
6. Cooking oven according to claim 5, wherein the bracket is formed as an integral part of the door support structure, wherein the bracket is adapted for being rotatably connected to the dampening element. 30
7. Cooking oven (1) according to at least one of claims 1 to 6, wherein the damping element (6) is at least one of a piston-type gas and/or oil-spring damping element (6). 35
8. Cooking oven (1) according to at least one of claims 1 to 7, comprising a hinge assembly hingedly connecting the door (4) to the main body (2), wherein at least one hinge (13) of the hinge assembly is implemented as a bolt bearing connection or as ball stud connection (9). 40
9. Cooking oven (1) according to claim 8, wherein a bearing of the bolt bearing connection or a ball stud of the ball stud connection is provided at the door (4) and/or main body (2), and wherein the damping element (6) comprises corresponding counter bearing or stud clutch (9) element/s, respectively, establishing a connection, in particular detachable connection, to the bearing or ball stud. 45 50
10. Cooking oven (1) according claim 9, wherein the bearing or ball stud is connected to or integrally implemented with the bracket (11) which is attached to the door (4) and/or main frame (2). 55
11. Cooking oven (1) according to claim 2, wherein the bracket (11) is attached to the door (4), in particular a door mechanical structure (12) or glass pane of the door (4) via a bonded, in particular gluing, connection. 5
12. Cooking oven (1) according to claim 8, wherein one of the bearing or ball stud is integrally formed with a section, in particular of a mechanical structure (12), of the door (4) or main body (2). 10
13. Cooking oven (1) according to claim 8, wherein the bolt bearing connection and/or ball stud connection (9) at least partially is/are formed from at least one of a plastic and metal material. 15
14. Cooking oven (1) according to at least one of claims 1 to 13, wherein the damping element (6) is positioned, close to a door hinge (13) connecting the door (4) to the main body (2). 20
15. Cooking oven (1) according to at least one of claims 1 to 14, wherein the damping element (6) bridges between the door (4) and an inner surface of a lateral side wall of the main frame (2). 25
16. Cooking oven (1) according to at least one of claims 1 to 15, wherein the damping element (6) is part of a damper unit which further comprises an electronic component, in particular a switch, configured for executing or triggering a preset process in dependence of at least one opening state of the door (4). 30
17. Cooking oven (1) according to at least one of claims 1 to 16, wherein the damping element (6) is arranged at a bottom side (7) of the door (4). 35
18. Cooking oven (1) according to at least one of claims 1 to 17, wherein the damping element (6) passes through an opening provided in a front lining, in particular lower front lining, of the main body (2). 40
19. Cooking oven (1) according to at least one of claims 1 to 18, wherein the bracket (11) has an angle profile with two angled branches (14, 15), in particular 90-degree branches (14, 15), wherein a first one of the branches (14) is for attaching the bracket (11) to the oven (1) and a second one of the branches (15) is for attachment or integration of the hinge element, wherein preferably, the first branch (14) has a rectangular shape, and the second branch (15) is provided at a longside thereof, wherein the second branch (15) preferably has a triangular-type shape, and wherein further preferably the bracket (11) is attached to the cooking oven (1) such that the second branch (15) lies above the first branch (14). 45 50 55

FIG 1

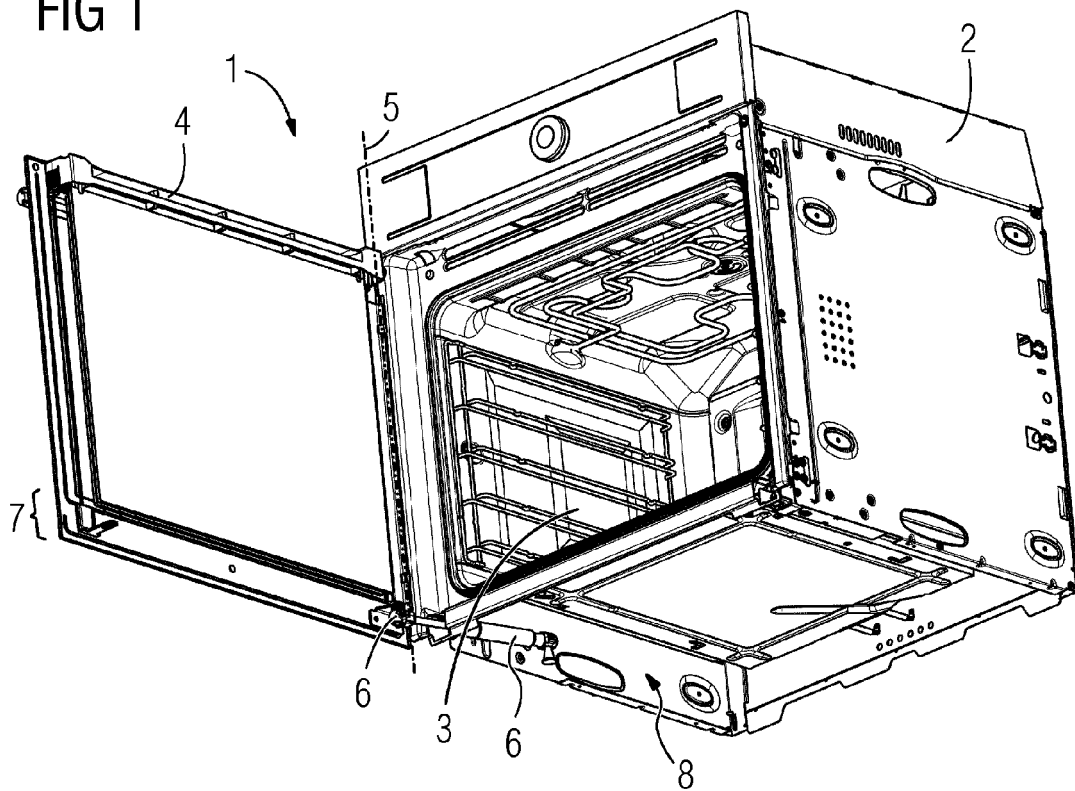


FIG 2

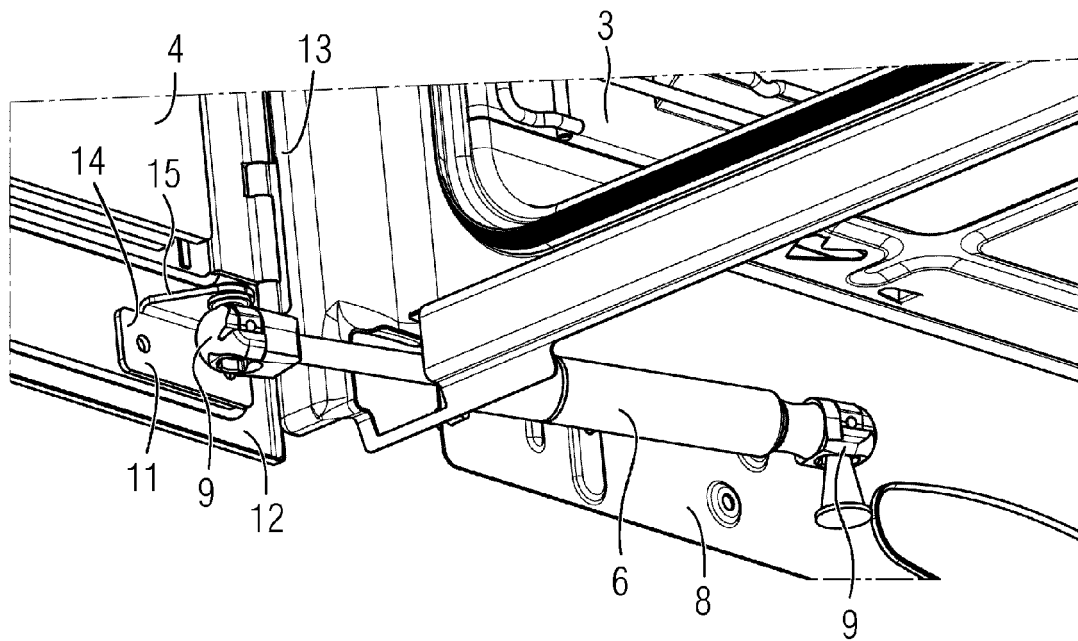


FIG 3

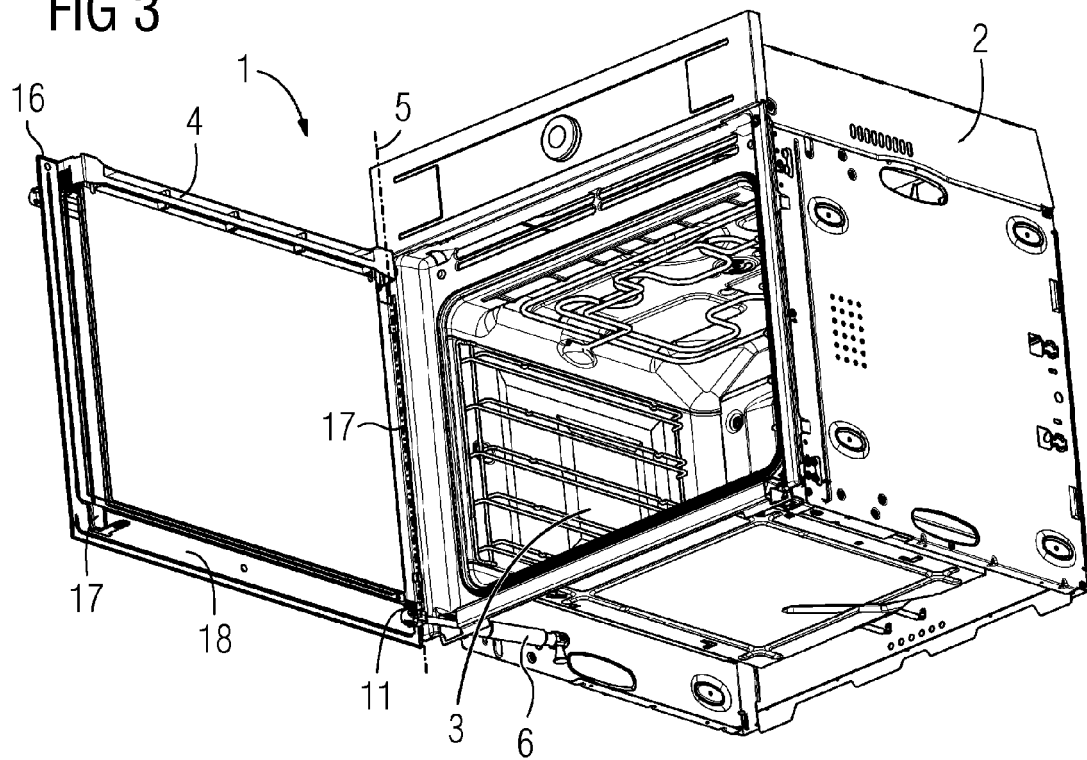
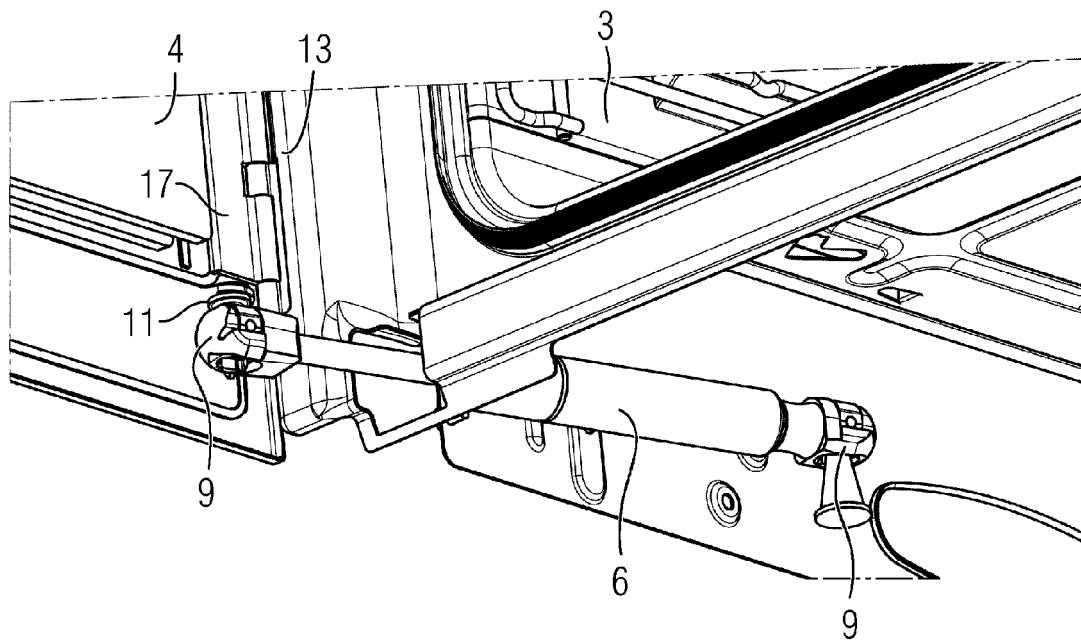


FIG 4





EUROPEAN SEARCH REPORT

Application Number
EP 14 16 6604

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	GB 2 350 863 A (BELLING APPLIANCES LTD [GB]) 13 December 2000 (2000-12-13)	1-8, 10-19	INV. F24C15/02 A47L15/42 D06F39/14 F25D23/02
Y	* claim 23; figures 2, 10 *	9	
X, P	EP 2 708 820 A1 (GUANGDONG GALANZ MICROWAVE OVEN AND ELECTRICAL APPLIANCES MFG CO LTD []) 19 March 2014 (2014-03-19) * figures 1-3 *	1	
Y	US 2005/206286 A1 (FINKELSTEIN BURL [US]) 22 September 2005 (2005-09-22) * figure 2 *	9	
A	DE 10 2006 019332 A1 (SUSPA HOLDING GMBH [DE]; LIEBHERR HAUSGERAETE [DE]) 7 December 2006 (2006-12-07) * figure 1 *	9	
A	EP 2 574 712 A1 (BSH BOSCH SIEMENS HAUSGERAETE [DE]) 3 April 2013 (2013-04-03) * figures 1-4 *	1-19	TECHNICAL FIELDS SEARCHED (IPC)
			F24C E05F A47B A21B H05B A47L F24H F23B D06F F25D
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		26 June 2014	Adant, Vincent
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	

EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 14 16 6604

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
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

26-06-2014

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB 2350863 A	13-12-2000	NONE	
EP 2708820 A1	19-03-2014	CN 102168866 A	31-08-2011
		EP 2708820 A1	19-03-2014
		WO 2012152093 A1	15-11-2012
US 2005206286 A1	22-09-2005	NONE	
DE 102006019332 A1	07-12-2006	NONE	
EP 2574712 A1	03-04-2013	DE 102011083512 A1	28-03-2013
		EP 2574712 A1	03-04-2013

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- EP 1731704 A2 [0002]