(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 2 594 158 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
22.05.2013 Bulletin 2013/21

(51) Int Cl.:
A47B 77/08 *(2006.01)* ***F24C 15/30*** *(2006.01)*

(21) Application number: **11189535.5**

(22) Date of filing: **17.11.2011**

(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

(71) Applicant: **Electrolux Home Products Corporation N.V.**
1930 Zaventem (BE)

(72) Inventor: **Benold, Frank Peter**
I-33080 Porcia (PN) (IT)

(74) Representative: **Maccalli, Marco et al**
Maccalli & Pezzoli S.r.l.
Via Settembrini 40
20124 Milano (IT)

(54) **Fully built-in oven**

(57) A built-in appliance assembly (**200**) is proposed. The built-in appliance assembly comprises a cooking appliance (**205**) having a cooking cavity (**240**) for storing food to be cooked and an appliance door (**235**) hinged to an appliance body for closing access to said cooking cavity. The built-in appliance assembly further comprises a furniture element (**100**) having at least one compartment (**210**), delimited by a lower shelf (210a), an upper shelf (**210b**), and two opposite shoulders (**210c, 210d**) of the furniture element, for housing the cooking appliance, and panels (**120b, 120c**) for closing access to said at least one compartment. In the solution according to the present invention, said panels comprise a first panel (**120c**) hinged (**230)** to the furniture element and coupled to the appliance door by means of a sliding coupling (**250**) configured to cause the appliance door pivot together with the first panel when the first panel is pivoted between a closed position closing access to the cooking cavity and an open position allowing access to the cooking cavity. The panels further comprises a second panel (**120b**) moveable between a closed position in which it closes access to a top section (**305**) of the cooking appliance and an open position allowing access to said top section.

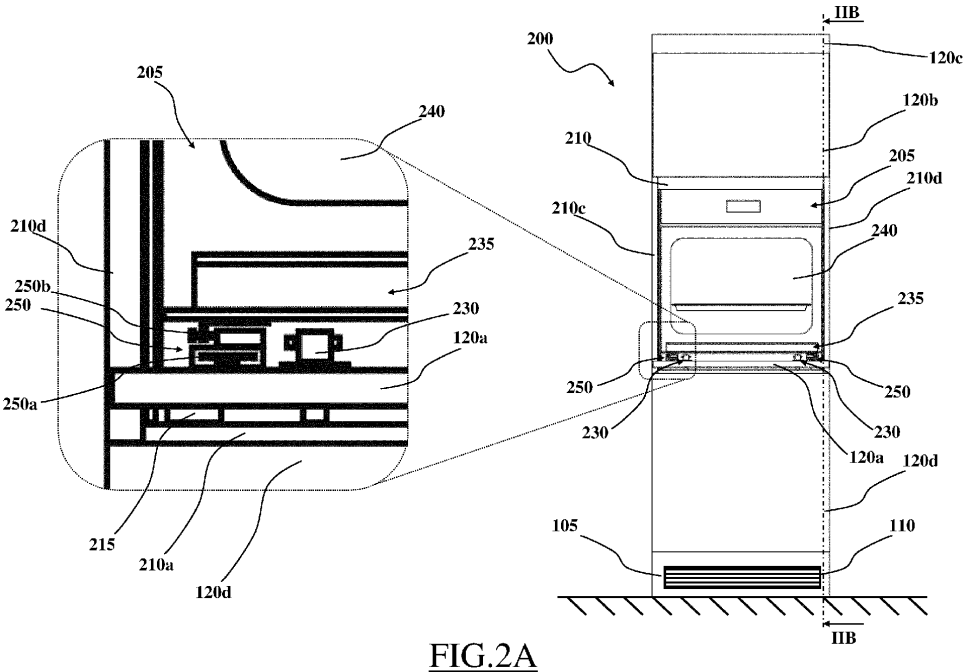

FIG.2A

EP 2 594 158 A1

Description

[0001] The present invention refers to an assembly comprised of a piece of furniture (or furniture element, as also referred to hereinafter) and a cooking electric appliance fully built-in therein.

[0002] Nowadays, a considerable share of the electric household appliances market is covered by built-in type electric appliances, i.e., electric appliances that are designed to be fully embedded in furniture elements. For example, refrigerators and dishwashers are already sold, which are designed to be substantially completely embedded in a kitchen furniture - particularly, with an aesthetic front panel attached to the appliance door-, to the extent that, when the door is closed, the household appliances are indistinguishable from any other cabinet of the kitchen furniture. From an aesthetic point of view, it would be desirable to be able to fully embed every electric appliance in the kitchen furniture, in such a way that the electric appliances are all thoroughly concealed by the kitchen furniture.

[0003] However, there are some electric household appliances that, presently, cannot be fully embedded in the furniture. For example, cooking electric appliances such as electric ovens, microwave ovens and warming drawers, are only partially embedded in the kitchen furniture. Indeed, when these appliances are installed in a kitchen, their door (usually made of metal and refractory, transparent materials), provided for closing an access to a cooking cavity of the appliance, remains flush with the surrounding furniture panels (usually made of laminated wood); thus, a visual continuity, or evenness, of the kitchen furniture design results broken. This discontinuity may reduce an aesthetic appeal of the kitchen furniture as a whole.

[0004] Household appliances like electric ovens, microwave ovens and warming drawers by their very nature generate much heat and humidity that are not and cannot be completely confined within the cooking cavity. Should the appliance be fully enclosed in a furniture cabinet, the heat and the humidity that escape from the cooking cavity could not be released into the environment, as instead required. This may provoke damages to the kitchen furniture cabinet wherein the appliance is embedded and to the surrounding pieces of kitchen furniture as well (causing for example deformations of the wooden structure of the kitchen furniture, partial detachment of the lamination, and so on) or even accidentally provoking fires, and/or malfunctions to the cooking electric appliance itself due to the temperature rise (for example, the functionality of electromechanical parts might be compromised). Moreover, when the oven is working, the oven door, even though made of refractory materials, typically heats up, to an extent that straightforwardly attaching thereto a wooden panel is not feasible.

[0005] The Italian patent N. 1248306 proposes a domestic oven, in particular an electric oven, of the built-in type that tries to overcome such drawbacks. The electric oven can be completely concealed from view by means of doors hinged onto the oven itself or by means of sliding doors, in which the oven control panel constitutes a pull-out or retractable unit. In the retracted position, the doors can be closed and the oven concealed, while in the pull-out position, with the doors open, it is easier to read and operate the oven controls. Microswitches are provided to cut off the power supply to the oven resistors and simultaneously switch off the internal light when the doors are fully closed or when they have been closed beyond a certain point.

[0006] The Applicant believes that the above-described solution is not totally satisfactory, because it only partially achieves the aim of rendering a domestic oven fully built-in in the kitchen furniture: the furniture panel provided to close the cabinet where the oven is accommodated has to remain open in order for the oven to work (if the furniture panel is closed, the oven cannot be turned on). In this way, not only the overall aesthetic is very poor, but the solution is also very uncomfortable from a practical use viewpoint: for example, if the furniture panel is hinged to the furniture cabinet, it is likely that such panel encumbers a considerable portion of a surrounding space when open. Whereas, if the furniture panel is of the sliding type, when open it would prevent the user from accessing adjacent elements of the kitchen furniture.

[0007] Moreover, in the above-described solution, in order for a user to access the oven cooking cavity, both the furniture panel and the oven door have to be opened, so that the user has to perform a double operation, and the presence of the furniture panel may complicate the operations of opening of the oven door and inserting/removing the food from the cooking cavity.

[0008] In view of the state of the art outlined above, the Applicant has tackled the problem of devising a satisfactory solution able to provide cooking electric appliances, such as electric ovens, microwave ovens or warming drawers, that are suitable to be completely embedded in a kitchen furniture element and able to properly operate without provoking any damage to such kitchen furniture, concealing the electric appliances in a practical (*e.g.*, space efficiently) manner.

[0009] One aspect of the present invention relates to a built-in appliance assembly. The built-in appliance assembly comprises a cooking appliance having a cooking cavity for storing food to be cooked and an appliance door hinged to an appliance body for closing access to said cooking cavity. The built-in appliance assembly further comprises a furniture element having at least one compartment, delimited by a lower shelf, an upper shelf, and two opposite shoulders of the furniture element, for housing the cooking appliance, and panels for closing access to said at least one compartment. In the solution according to the present invention, said panels comprise a first panel hinged to the furniture element and coupled to the appliance door by means of a sliding coupling configured to cause the appliance door to pivot together with the first panel when the first panel is pivoted between a

closed position closing access to the cooking cavity and an open position allowing access to the cooking cavity. The panels further comprises a second panel moveable between a closed position in which it closes access to a top section of the cooking appliance and an open position allowing access to said top section.

[0010] In this way, the user can open/close the cooking cavity by performing a single operation, because the opening/closing of the first panel (which is coupled to the appliance door) automatically causes the opening/closing of the appliance door.

[0011] Also, the appliance may remain essentially concealed also during its operation: the first panel is kept closed during the appliance operation, without risk of damages to the furniture, because the heat and humidity produced by the appliance are evacuated outside the compartment thanks to the fact that the second panel is kept open.

[0012] Preferred features of the method are set in the dependent claims.

[0013] In an embodiment of the invention, the appliance door may comprise an internal plate and an external plate, made of a refractory material.

[0014] In an embodiment of the invention, said sliding coupling may comprise at least one sliding guide fixed to one among the first panel and the appliance door, and a sledge fixed to the other one among the first panel and the appliance door, said sledge being slidable along said sliding guide.

[0015] In an embodiment of the invention, the sliding coupling may be adapted to keep the first panel and the appliance door parallel to one another and at a predetermined distance.

[0016] In an embodiment of the invention, the appliance door may further comprise a thermally-insulating material separating the internal and the external plates.

[0017] In an embodiment of the invention, the thermally-insulating material of the oven door may comprise insulating panels having a ventilation duct therebetween, for allowing circulation of an airflow.

[0018] In an embodiment of the invention, the furniture element may further comprises an inlet port for facilitating air circulation inside it.

[0019] In an embodiment of the invention, the built-in appliance assembly may further comprise spacers, fixed to the lower shelf for supporting the cooking appliance spaced apart from the lower shelf.

[0020] In an embodiment of the invention, the cooking appliance may further comprise a user interface provided in the top section of the cooking appliance, allowing a user to set/verify/modify working parameters of the operation of the electric oven.

[0021] In an embodiment of the invention, the built-in appliance assembly may further comprise a lifting mechanism mounted to at least one of the shoulders of the furniture element, for moving the second panel along a substantially vertical direction between the closed position and the open position.

[0022] These, and others, features and advantages of the solution according to the present invention will be better understood by reading the following detailed description of some embodiments thereof, provided merely by way of exemplary and non-limitative examples, to be read in conjunction with the attached drawings, wherein:

Figure 1 schematically shows a front view of a furniture element for built-in electric appliances, *e.g.* an electric oven, according to an embodiment of the invention;

Figure 2A schematically shows a front view of a built-in assembly comprising the furniture element of **Figure 1** having both a flap panel and main panel of the furniture element in an open position, revealing a built-in electric oven embedded therein, with an enlargement of a detail of coupling elements between the oven door and the main panel;

Figure 2B is a cross-sectional side view of the built-in assembly of **Figure 2A** according to IIB-IIB axis with another enlarged detail of the coupling elements between the oven door and the main panel of the furniture element;

Figure 3A schematically shows a front view the appearance of the built-in assembly of **Figure 2A** when the oven is in operation, with the flap panel in the open position and the main panel in a closed position, and

Figure 3B is a cross-sectional side view of the built-in assembly of **Figure 3A** according to **IIIB-IIIB** axis also with an enlargement cutaway view of the built-in electric oven showing a ventilation airflow during operation.

[0023] Considering **Figure 1**, a front view of a furniture element **100** for built-in electric appliances according to an embodiment of the invention there is shown.

[0024] The furniture element **100**, preferably, is of the standard type used for kitchens, adapted to embed electric appliances (refrigerators, dishwashers, electric ovens *etc.).* The furniture element **100** is substantially parallelepiped-shaped and has a bottom support portion **105** resting on floor once the furniture element **100** is arranged (e.g., in a kitchen). Preferably, although not necessarily, the support portion **105** may comprise an air inlet port **110** for facilitating the circulation of air inside the furniture element **100**.

[0025] Frontally, the furniture element **100** comprises panels, made for example in laminated wood or other aesthetically-finished material, articulated to the furniture element structure for being openable to give access to inner compartments of the furniture element itself.

[0026] According to an embodiment of the present invention, the furniture element **100** comprises at least a first panel, or main panel, **120a** and a second panel, or flap panel, **120b**. Additional panels may be provided, depending for example on the height of the furniture element; in the shown example, a third panel **120c** is pro-

vided above the flap panel **120b**, and, below the main panel **120a**, there is provided a fourth panel **120d**.

[0027] The furniture element **100** accommodates, in the exemplary embodiment herein considered, a fully built-in electric oven **205**, which is visible referring jointly to **Figures** 2A and 2B (respectively in front view and in cross-sectional side view according to **IIB-IIB** axis). The assembly formed by the furniture element **100** and the built-in electric oven accommodated therein will hereinafter also referred to as "built-in appliance assembly **200**".

[0028] The electric oven **205** is housed in a box-shaped compartment **210** of the furniture element **100**, said compartment **210** being delimited by a lower shelf **210a**, an upper shelf **210b**, and two opposite shoulders **210c** and **210d** of the furniture element **100**. The electric oven **205** rests on spacers arranged on the lower shelf **210a**, in order to keep the bottom of the electric oven spaced apart from the surface of the lower shelf **210a**. For example, the spacers may be a pair of support rails **215**, fixed to the lower shelf 210a at the two sides thereof (when the furniture element is viewed frontally) and extending parallelly to each other. Alternatively, the spacers may comprise a number of blocks, *e.g.* four, arranged at respective corners of the lower shelf **210a**.

[0029] The spacers allow a path for a ventilation airflow of the electric oven **205** from the rear side of the furniture element **100** (which may be totally or at least partially uncovered, i.e. open) to a front side thereof (as will be described in greater detail in the following), passing through the space under the electric oven **205**, over the lower shelf 210a and between the spacers, *e.g.* the support rails **215**.

[0030] Both the main panel **120a** and the flap panel **120b** are arranged frontally to the compartment **210** and selectively close two different access portions of the compartment **210**, namely the main panel **120a** is associated with a lower access portion whereas the flap panel **120b** is associated with an upper access portion of the compartment **210**.

[0031] The third and fourth panels **120c** and **120d** shown merely as example in the drawings serve instead to close access to other compartments provided in the furniture element 100 wherein the electric oven **205** is accommodated, which other compartments are provided for other purposes not related to the electric oven **205** (*e.g.,* for storing foods, cooking tools, dishware, or even other built-in electric appliances).

[0032] Preferably, although not necessarily, the flap panel 120b is coupled to the shoulders **210c** and **210d** that delimit laterally the compartment 210 by means of a corresponding flap-lifting mechanism **225** affixed thereto (in any suitable known manner, for example, by means of screws). The flap lifting mechanism **225** is for example configured to enable the flap panel **120b** moving along a substantially vertical direction from a closed position (which closes the access to the upper portion of the compartment **210**) to an open position (which allows accessing the upper portion of the compartment **210**) and, *vice versa* from the open position to the closed position. The flap lifting mechanism **225** may for example comprise an articulated quadrilateral manually operated by a user, which can bring flap panel **120b** into the open position by pulling the same upward, or into the closed position by pulling the same downward (a handle may preferably be provided at the external surface of the flap panel **120b**, for facilitating the user operation). Alternatively, the flap lifting mechanism **225** may also comprise (an) actuator (s) **225a** - such as an electric motor or one or more springs - that, upon activation by a user, cause arms **225b** of the articulated quadrilateral, fixed to the flap panel **125b**, to pivot. In this way, it is possible to automatically move the flap panel **120b**. The flap lifting mechanism **225** may be activated by a finger pressure applied on the flap panel **120b** for moving the latter in the open position, while the flap panel **120b** may be returned to the closed position by *e.g.* actuating a pushbutton (not shown) provided, for example, on the flap lifting mechanism **225** or attached to the shoulders **210**c.

[0033] According to an embodiment of the present invention, the main panel 120a is hinged (at a lower side thereof) to the lower panel **210a** of the furniture element **100** by means of hinges **230**, for example conventional hinges used in construction of furniture. In addition, the main panel **120a** is coupled to an oven door 235 (as will be described in further detail in the following), which is in turn hinged to a main body of the electric oven **205** by means of conventional oven door hinges **232**. The oven door **235** comprises an internal plate **235a** and an external plate **235b**, preferably made of a refractory material. The internal and external plates **235a** and **235b** may be separated by a thermally-insulating material **235c** (as will be described in greater detail in the following). The oven door **235**, *i.e.* the internal and external plates and the thermally-insulating material **235c**, may be either transparent (as in conventional ovens) or they may be opaque to the light. The oven door **235** may also comprise a different number of plates, for example 3.

[0034] Advantageously, according to the present invention, the coupling between the main panel **120a** and the oven door **235** is such that the main panel **120a** and the oven door **235** pivot together between a closed position, in which the oven door **235** closes the access to a cooking cavity **240** of the electric oven **205** to an open position, in which the oven door **235** is open and allows accessing the cooking cavity **240**.

[0035] In an embodiment of the present invention, the coupling between the main panel **120a** and the oven door **235** comprises a sliding arrangement **250** partly provided on the main panel **120a** and partly provided on the oven door **235**. For example, at least one sliding guide is fixed to the main panel **120a** on the inner surface thereof, facing the oven door **235**. Complementarily, on the external surface of the oven door **235** facing the main panel 120a, at least one corresponding sledge guide is fixed, in (a) position(s) matching the position of the sliding guide(s) on the main panel. In the example at issue, two sliding

guides **250a** are provided, that are fixed (in any suitable manner, for example, by glue or screws) to the inner surface of the main panel **120a**, and two corresponding sledges **250b** are fixed (in any suitable manner, for example by glue or screws) to the external plate **235b** of the oven door **235**. It should be noted that in other embodiment according to the present invention the sliding arrangement may comprises sliding guide(s) fixed to oven door and sledge guide(s) fixed to the main panel.

[0036] The sledges **250b** slidably engage the respective sliding guides **250a.** For example, as shown in **Figure 2A**, the sliding guides **250a** comprise a coupling portion with a "T"-shaped transversal cross-section, and the sledges **250b** have a "C"-shape transversal cross-section, sized to embrace (with a sufficient play) the sliding guides **250a.** Thanks to the sliding arrangement **250**, when the main panel **120a** is pivoted (around the rotation axis defined by the hinges **230)** from the closed position to the open position by a user (a handle may preferably be provided at the external surface of the main panel, for facilitating the user operation), the sliding arrangement **250** causes the oven door to be also pivoted (around the rotation axis defined by the hinges **232)** from the closed position to the open position together with the main panel **120a**. The sledges **250b**, in the movement from the closed position to the open position, slide along the sliding guides **250a** from a first position to a second position. In this way, the main panel 120a and the oven door **235** can pivot about their respective hinges **230** and **232**, while remaining always parallel to each other, and at a predetermined distance *d* imposed by the sliding arrangement **250**. In this way, it is possible for a user to access the cooking cavity **240** by means of a single opening action, by acting on the main panel **120a**, which brings both the main panel **120a** and the oven door **235** from the closed position to the open position at the same time. Similarly, the user may close the cooking cavity **240** with a single closing action, acting on the main panel **120a**, which brings both the main panel **120a** and the oven door **235** from the open position to the closed position at the same time.

[0037] Figures 3A and 3B show the built-in assembly **200** in front view and lateral cross-sectional views according to **IIIB-IIIB** axis, respectively, showing its appearance while in operation.

[0038] As shown in the figures, during the operation of the oven **205** only the flap panel **120b** is in the open position (the main panel **120a** being instead closed). Thus, only a top portion **305** of the electric oven **205** is exposed to the view. Such oven top portion **305** that remains exposed during the oven operation preferably comprises a user interface **310** allowing a user to set/verify/modify working parameters of the operation of the electric oven **205** (*e.g.,* cooking temperature, cooking times, cooking type, *etc.*). In addition, the oven top portion **305** further comprises a ventilation slit **315** for expelling hot air from the oven **205**.

[0039] Preferably, between the internal plate **235a** and the external plate **235b** of the oven door **235**, an air space **325** is provided (for example, the air space **325** may be defined in the thermally-insulating material **235c** thermally insulating the two door plates **235a** and **235b**: two thermally-insulating panels **320** are provided amongst the two door plates **235a** and **235b**, between which the air space **235** is formed). The air space **325** defines a ventilation duct (hereinafter denoted by the same reference numeral **325** as the air space) for enabling circulation of an airflow **330**, which ventilation duct **325** has an inlet provided in a lower part of the oven door **235** and an outlet in a upper part thereof. Advantageously, the outlet of the ventilation duct **325** is in fluid communication with the ventilation slit **315** provided in the top portion **305** of the electric oven **205**.

[0040] The oven top portion **305** and the user interface **310** are accessible by a user when the flap panel **120b** is in the open position.

[0041] In the embodiment according to the present invention, the built-in assembly **200** achieves a proper air circulation allowing the built-in electric appliance (i.e., electric oven **205)** to operate without risk of overheating and/or accumulating humidity in the compartment **210** of the furniture element **100**.

[0042] During the operation of the electric oven **205** the air in the compartment **210**, where the oven **205** is accommodated, is heated up by the heat emitted by the electric oven **205**; the heated-up air flows, due to convection, around the electric oven **205** and flows out of the compartment **210** through the access left open by the flap panel **120b** (which, as already mentioned, is in the open position during the oven operation). Advantageously, air is sucked by convention from the rear of the furniture element **100** (*e.g.,* coming from the environment *via* the inlet port **110)** into the compartment **210**; thus, fresh air is allowed entering into the compartment **210** thereby promoting a cooling thereof and of the electric oven **205**.

[0043] As should be apparent to those skilled in the art, air **335** flows also between the support rails **215** and between the bottom of the oven **210** and the main panel 120a, from the rear towards the front of the compartment **210**. At the front of the compartment 210, air **340** flows between the main panel **120a** and the oven door **235** (which, as mentioned in the foregoing, are spaced apart by a distance *d*) and exits the furniture element **100** through the access left open by the flap panel **120b** in the open position. In this way, the temperature of the main panel **120a** is advantageously prevented from excessively rise, being kept sufficiently low to prevent damages to the main panel **120a** (which, thanks to this, can thus be made of a wooden material totally similar to that of the remaining kitchen furniture).

[0044] At the same time, air **330** flows through the ventilation duct **325** provided in the oven door **235** from the inlet to the outlet thereof, exits from the electric oven 205 through the ventilation slit **315** and is released into the environment surrounding the furniture element **100**,

again, through the access left open by the flap panel **120b** in the open position.

[0045] In other words, the air 335 flowing under the oven **210** is split so as to flow partly into the door **235** (air **330)** and partly between the door **235** and the main panel 120a (air **340).**

[0046] In this way, during the operation a proper air circulation in the compartment **210** housing the electric oven **205** is ensured. A temperature value inside the whole compartment **210** may thus be advantageously kept within a predetermined range. In the embodiment according to the present invention, this is possible thanks to the air flowing out from the compartment **210** through the access left open by the flap panel **120b** in the open position. Thus, damages to the furniture element **100** due to high temperature values are prevented.

[0047] It should be apparent to those skilled in the art that also heated air along with moisture particles (i.e., humidity) compelled by a fan — comprised in the electric oven 205 and not shown in the figures - out from the electric oven **205** through the ventilation slit **315** (as in a ventilated cooking mode) are released from the compartment **210** into the external environment. Moreover, heat generated by the electric oven **205** can be transferred outside the compartment **210** through the access left open by the flap panel **120b** in the open position.

[0048] The just mentioned advantages are achieved, in the built-in assembly **200** according to an embodiment of the present invention, while the electric oven **205** remains substantially hidden to the sight by the main panel **120a** even during its operation. Moreover, the flap panel **120b** in the open position does not encumber useful space surrounding the furniture element **100** and, at the same time, comfortably allows accessing the user interface **310**.

[0049] Preferably, the built-in appliance assembly **200** according to an embodiment of the present invention comprises a safety arrangement (not shown in the drawings), which prevents the overheating of the compartment **210** even if the flap panel **120b** is closed while the electric oven **205** is in operation. For example, at least a microswitch may be provided in one (or both) the shoulders **210c** and **210d** and electrically connected to the electric oven **205**. The microswitch is configured for interrupting an electric power supply to the electric oven whenever the flap panel **120b** is in the closed position. Thus, the electric oven **205** is prevented from operating when the flap panel **120b** is in the closed position.

[0050] More preferably, according to a further embodiment of the present invention, if the electric oven **205** comprises an electronic control unit (such as a microcontroller, not shown in the figure), the lifting mechanism **225** may be electrically (*e.g.,* by a wire) or electromagnetically (*e.g.,* by a radio-frequency transmission) connected to the same. When the flap panel **120b** is closed, a first signal is inputted to the electronic control unit from the lifting mechanism **225**. Therefore, the electronic control unit forces the electric oven **205** in a stand-by condition and, at the same time, stores (*e.g.,* in a storage memory) a cooking advancement information. When the flap panel **120b** is opened again, a second signal is inputted to the electronic control unit from the lifting mechanism **225**. In response, the electronic control unit restarts the cooking operation according to the cooking advancement information previously stored.

[0051] Alternatively, in a even further embodiment of the present invention, a temperature sensor (*e.g.,* a thermocouple) may be provided (not shown in the drawings), electrically connected to the electronic control unit, for measuring a temperature in the compartment **210**. The electronic control unit, thus, may be configured for detecting when the temperature inside the cavity **210** exceeds a predetermined safe value (*e.g.,* beyond which damages to the built-in appliance assembly **200** may occur). Whenever the exceeding of such predetermined safe value is detected (i.e., most likely when the flap panel **120b** is in the closed position while the electric oven **205** is in operation), the electric oven **205** is forced in a stand-by condition until it is detected a temperature below the predetermined safe value in the compartment **210**. As in the just described further embodiment, a cooking advancement information may be stored for restarting a cooking operation from it was interrupted.

[0052] Naturally, in order to satisfy local and specific requirements, a person skilled in the art may apply to the solution described above many logical and/or physical modifications and alterations. More specifically, although this solution has been described with a certain degree of particularity with reference to one or more embodiments thereof, it should be understood that various omissions, substitutions and changes in the form and details as well as other embodiments are possible. Particularly, different embodiments of the invention may even be practiced without the specific details (such as the numerical examples) set forth in the preceding description to provide a more thorough understanding thereof; conversely, well-known features may have been omitted or simplified in order not to obscure the description with unnecessary particulars. Moreover, it is expressly intended that specific elements and/or method steps described in connection with any embodiment of the disclosed solution may be incorporated in any other embodiment as a matter of general design choice.

Claims

1. A built-in appliance assembly **(200)** comprising
   a cooking appliance (**205**) comprising a cooking cavity (**240**) for storing food to be cooked and an appliance door (**235**) hinged to an appliance body for closing access to said cooking cavity, and
   a furniture element (**100**) having at least one compartment (**210**), delimited by a lower shelf (**210a**), an upper shelf (**210b**), and two opposite shoulders (**210c, 210d**) of the furniture element, for housing

the cooking appliance, and panels (**120b, 120c**) for closing access to said at least one compartment,
characterized in that
said panels comprise a first panel (**120c**) hinged (**230**) to the furniture element and coupled to the appliance door by means of a sliding coupling (**250**) configured to cause the appliance door to pivot together with the first panel when the first panel is pivoted between a closed position closing access to the cooking cavity and an open position allowing access to the cooking cavity, and
said panels further comprises a second panel (**120b**) moveable between a closed position in which it closes access to a top section (**305)** of the cooking appliance and an open position allowing access to said top section.

2. The built-in appliance assembly according to claim 1, wherein the appliance door comprises an internal plate (**235a**) and an external plate (**235b**), made of a refractory material.

3. The built-in appliance assembly according to any one of the preceding claims, wherein said sliding coupling comprises at least one sliding guide (**250a**) fixed to one among the first panel and the appliance door, and a sledge (**250b**) fixed to the other one among the first panel and the appliance door, said sledge being slidable along said sliding guide.

4. The built-in appliance assembly according to claim 3, wherein the sliding coupling is adapted to keep the first panel and the appliance door parallel and at a predetermined distance (*d*) to one another.

5. The built-in appliance assembly according to any one of the preceding claims, wherein the appliance door further comprises a thermally-insulating material (**235c**) separating the internal and the external plates.

6. The built-in assembly according to claim 5, wherein the thermally-insulating material of the oven door comprises insulating panels (**320**) having a ventilation duct (**325**) therebetween, for allowing circulation of an airflow.

7. The built-in appliance assembly according to any one of the preceding claims, wherein the furniture element further comprises an inlet port (**110**) for facilitating air circulation inside it.

8. The built-in appliance assembly according to any one of the preceding claims, further comprising spacers (215), fixed to the lower shelf for supporting the cooking appliance spaced apart from the lower shelf.

9. The built-in appliance assembly according to any one of the preceding claims, further comprising a user interface (310) provided in the top section of the cooking appliance, allowing a user to set/verify/modify working parameters of the operation of the electric oven.

10. The built-in appliance assembly according to any one of the preceding claims, further comprising a lifting mechanism (**225**) mounted to at least one of the shoulders of the furniture element, for moving the second panel upwards from the closed position to the open position and downwards from the open position to the closed position.

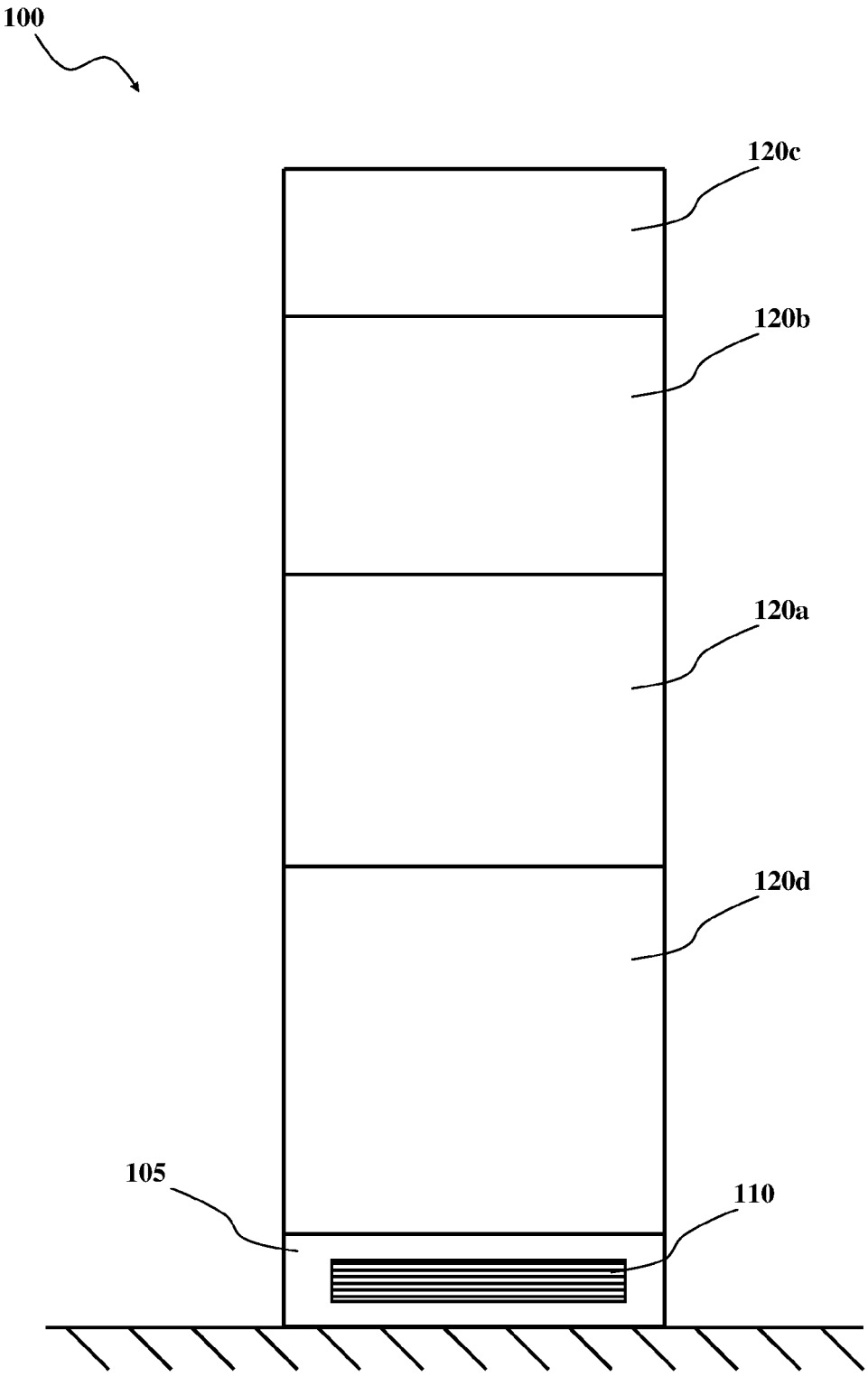

FIG.1

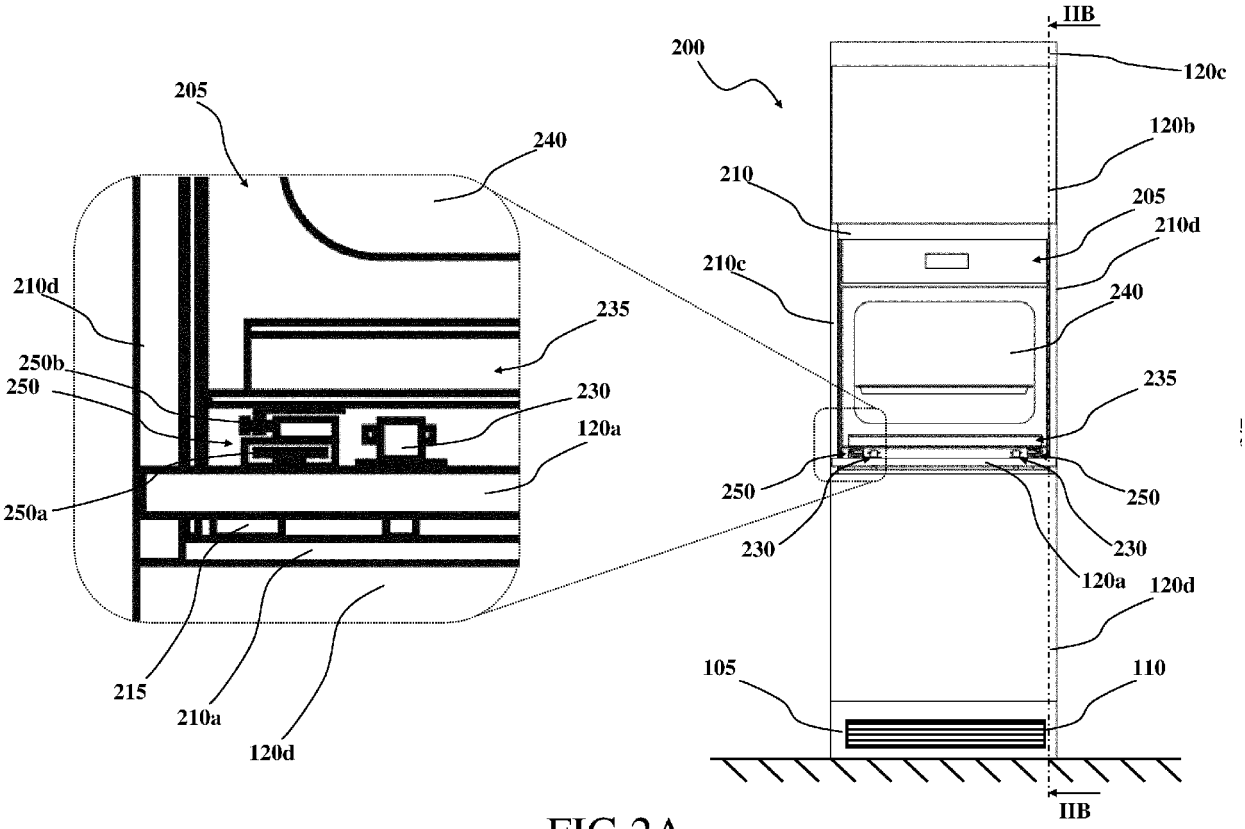
IIB
200
120c
205
240
120b
210
205
210d
210c
240
210d
235
250b
250
230
235
120a
250a
250
250
230
230
120a
120d
215
210a
105
110
120d
IIB

FIG.2A

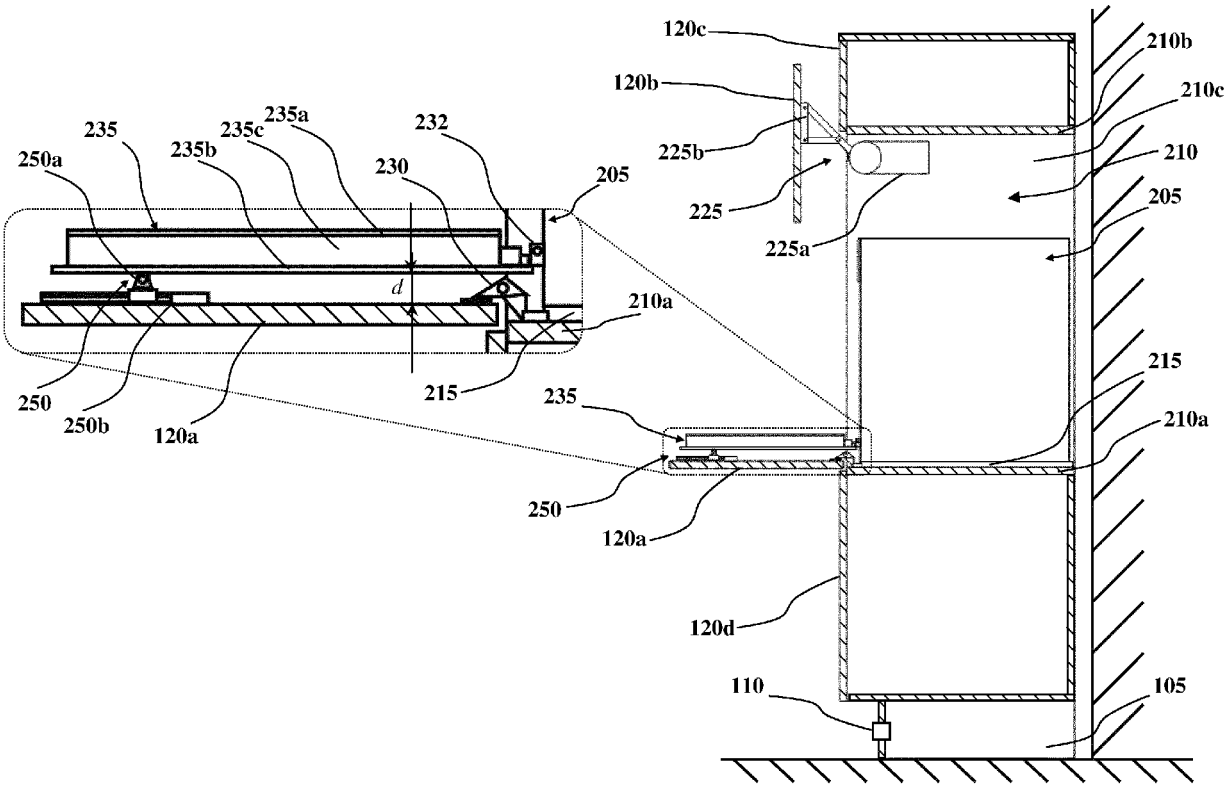
120c
210b
120b
210c
225b
210
225
205
225a
250a
235
235c
235a
232
235b
230
205
d
210a
215
250
250b
120a
235
215
210a
250
120a
120d
110
105

FIG.2B

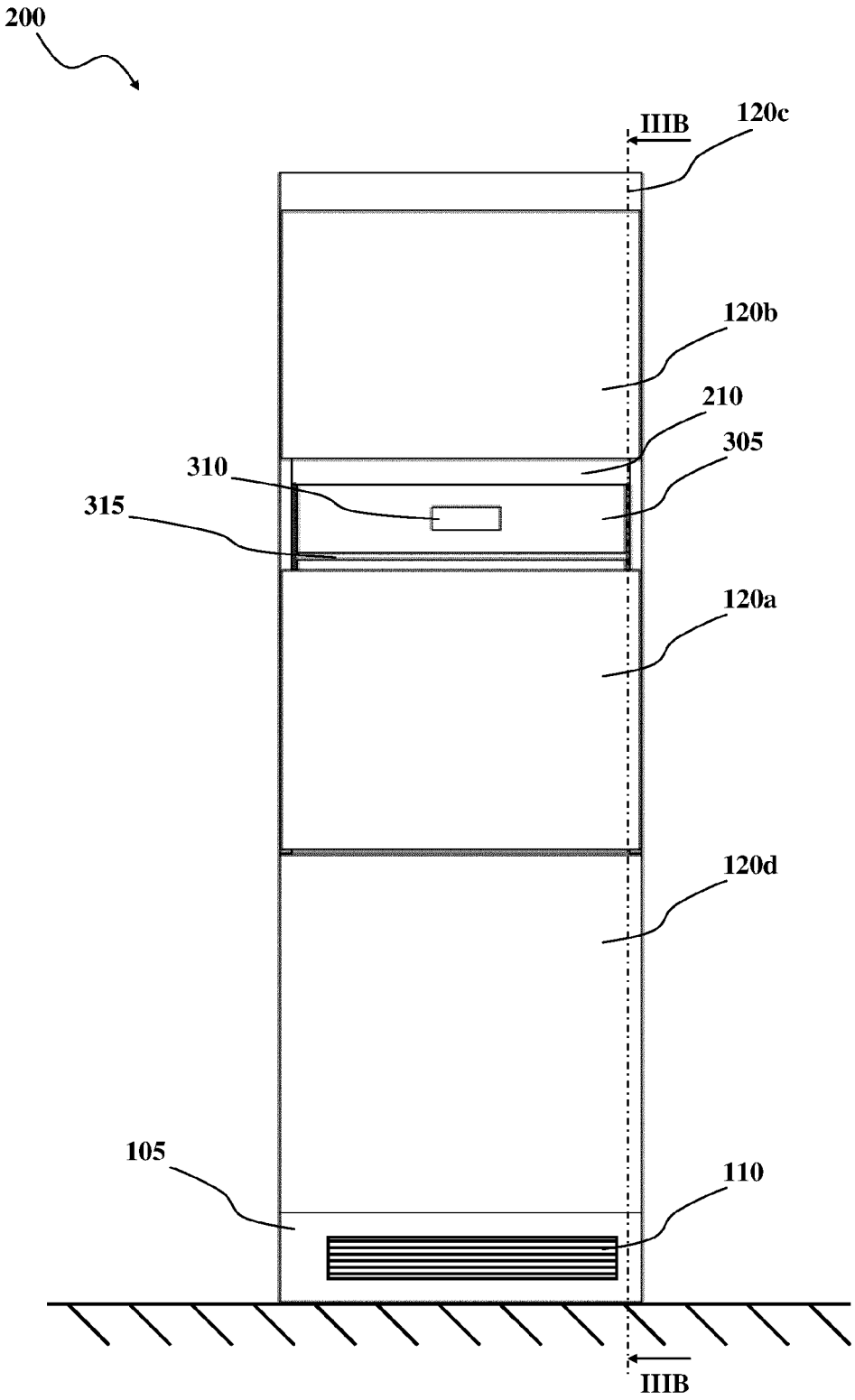

FIG.3A

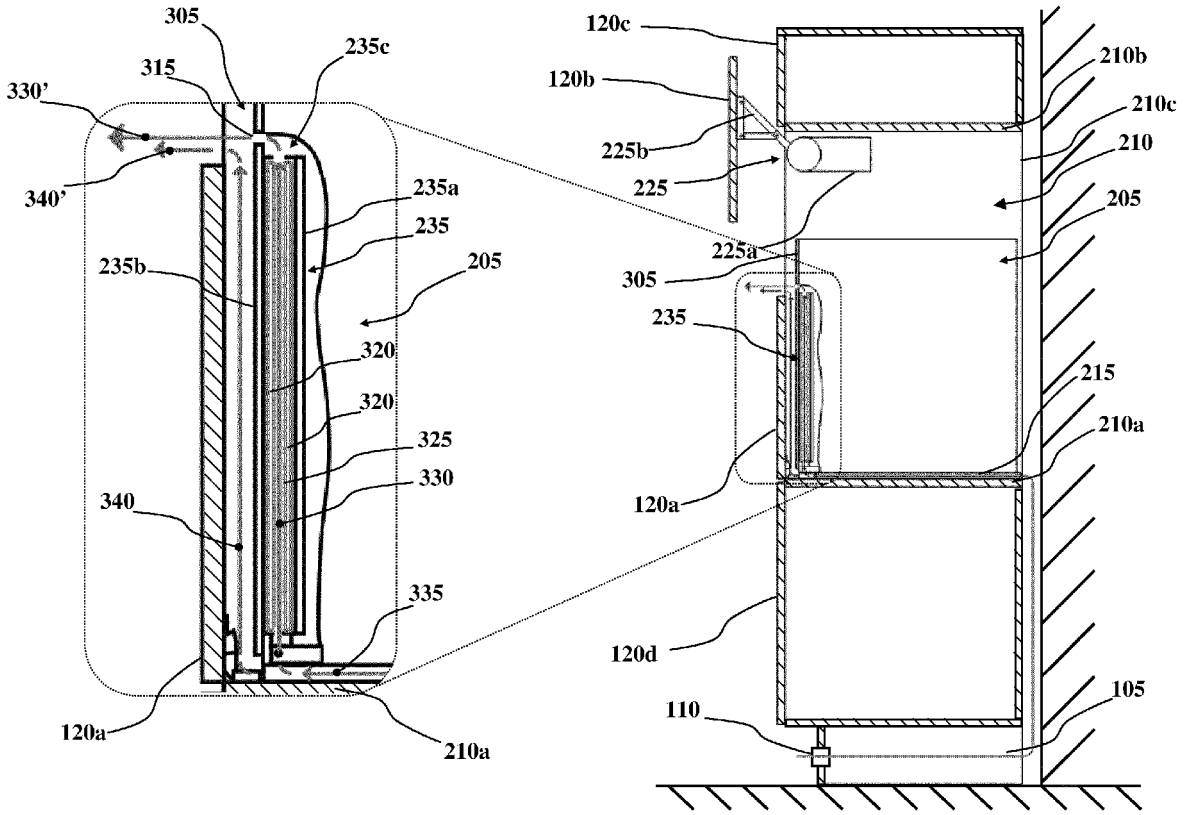
305
315
330'
340'
235c
235a
235
205
235b
320
320
325
330
340
335
120a
210a
120c
120b
225b
225
225a
305
235
120a
120d
110
210b
210c
210
205
215
210a
105

FIG.3B

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 11 18 9535

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 641 584 A (WELDALL & ASSEMBLY LTD; ROBERT CHARLES LIGHTBOURNE) 16 August 1950 (1950-08-16) * the whole document *	1-10	INV. A47B77/08 F24C15/30
A	IT 1 248 306 B (S M E G S P A) 5 January 1995 (1995-01-05) * the whole document *	1-10	
A	EP 0 207 905 A2 (SMEG SPA [IT]) 7 January 1987 (1987-01-07) * the whole document *	1-10	
A	DE 31 29 542 A1 (BOSCH SIEMENS HAUSGERAETE [DE]) 29 April 1982 (1982-04-29) * the whole document *	1-10	
A	DE 32 36 254 A1 (MIELE & CIE [DE]) 5 April 1984 (1984-04-05) * the whole document *	1-10	
A	EP 1 972 873 A1 (ELECTROLUX HOME PROD CORP [BE]) 24 September 2008 (2008-09-24) * figure 5 *	7	TECHNICAL FIELDS SEARCHED (IPC) A47B F24C F25D

1 The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	17 April 2012	Ottesen, Rune

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 11 18 9535

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.

17-04-2012

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB 641584 A	16-08-1950	NONE	
IT 1248306 B	05-01-1995	NONE	
EP 0207905 A2	07-01-1987	NONE	
DE 3129542 A1	29-04-1982	NONE	
DE 3236254 A1	05-04-1984	NONE	
EP 1972873 A1	24-09-2008	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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

- IT 1248306 **[0005]**