

(19)



(11)

EP 2 620 731 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:

31.07.2013 Bulletin 2013/31

(51) Int Cl.:

F25D 29/00 (2006.01)
A47L 15/42 (2006.01)

F24C 7/08 (2006.01)

(21) Application number: **13151363.2**

(22) Date of filing: **15.01.2013**

(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

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(30) Priority: **27.01.2012 IT RN20120007**

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(54) **Electrical household appliance**

(57) An electrical household appliance comprising:

- a facia (2) comprising a user interface (20);
- a control box (3) which, in combination with the facia (2), defines a housing compartment (4) for control means;
- a bracket (6) which at least partly frames the facia (2);
- first supporting means (7) to which a door giving access

to a space (90) inside the electrical household appliance (1) can be hinged;

characterized in that it comprises a first threaded element (81) which passes through the bracket (6) and connects the first supporting means (7) and the control box (3); the control box (3) comprising at least a first cavity (31) for receiving the first threaded element (81).

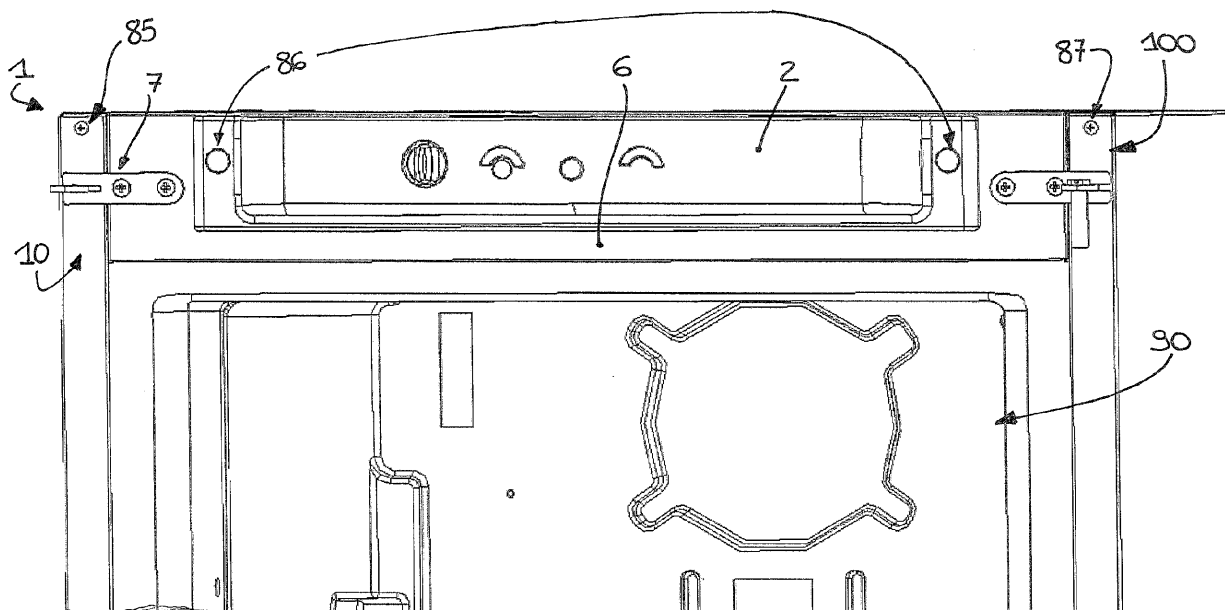


Fig. 1

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Description

[0001] The present invention relates to an electrical household appliance.

[0002] A refrigerator comprising a food storage compartment which can be shut off by a door is well known.

[0003] The refrigerator conveniently comprises a metal bracket interposed between a user interface facia and a control box. The control box, in combination with the facia, defines a housing for a printed circuit board. The refrigerator further comprises supporting means to which a door can be hinged.

[0004] The supporting means are secured by means of a plurality of screws which pass through both the supporting means and bracket and a reinforcement plate behind the bracket. In particular, the screws have an outer diameter that is slightly larger than the hole fashioned in the reinforcement plate, which is thus threaded by insertion of the screw. The reinforcement plate is situated alongside the control box. Moreover, the plate is connected to the metal bracket by virtue of its specific shape.

[0005] This constructive solution is not devoid of drawbacks, mainly tied to the time it takes to assemble the multiple components required (which moreover have a respective cost).

[0006] In this context, the technical task at the basis of the present invention is to propose an electrical household appliance which enables faster and simpler assembly. A further object of the present invention is to reduce production costs by optimizing the components of the electrical household appliance.

[0007] The stated technical task and the specified objects are substantially achieved by an electrical household appliance comprising the technical features set forth in one or more of the appended claims.

[0008] Additional features and advantages of the present invention will be more apparent from the approximate, and hence non-restrictive description of a preferred but non-exclusive embodiment of an electrical household appliance, as illustrated in the appended drawings, in which:

- figure 1 shows a partially interrupted view with some parts removed to better point out others of an electrical household appliance according to the present invention;
- figures 2 and 3 respectively show a front perspective view of several components of an electrical household appliance according to the present invention;
- figures 4 and 5 show two perspective views, from two different angles, of a component of an electrical household appliance according to the present invention.

[0009] With reference to the appended figures, the reference number 1 indicates an electrical household appliance.

[0010] Advantageously, the electrical household appliance

1 is an apparatus for refrigerating foods, typically a refrigerator, a fridge-freezer or a freezer with preponderant vertical extension. It is to be not ruled out, however, that the electrical household appliance 1 may also be of other types, for example an oven for baking food.

[0011] The electrical household appliance 1 comprises a facia 2 comprising a user interface 20. Conveniently, the user interface 20 could comprise selectors such as, for example, knobs or pushbuttons; the user interface 20 could optionally also comprise a display or indicator lights for communicating with the outside.

[0012] The electrical household appliance 1 further comprises a control box 3, which, in combination with the facia 2, defines housing compartment 4 for control means. The control means could be of an electronic type. For example, they comprise a printed circuit board and possibly means for electrically powering the printed circuit board. In this regard the control box 3 comprises a passage hole 30 for the wiring of the printed circuit board. Conveniently, the printed circuit board is secured to positioning means fashioned on the facia 2 (it is typically inserted in a suitable cavity fashioned on the facia 2).

[0013] In an alternative embodiment, the control means could also be of a mechanical or electrical type. For example, the control means could comprise a mechanical thermostat.

[0014] Conveniently, the control box 3 is shaped like a tray. The control box 3 is a single block. It does not consist of an assembly of several parts. Conveniently, the control box 3 is a single moulded block. The control box 3 is entirely made of plastic material.

[0015] Conveniently, the printed circuit board extends both in a first part 41 of the compartment 4 and in a second part 42 of the compartment 4, the first part 41 being defined (surrounded) by the facia 2 and the second part 42 being defined (surrounded) by the control box 3.

[0016] Conveniently, the electrical household appliance 1 comprises a bracket 6 which at least partly frames the facia 2. Typically, the bracket 6 is made of metal.

[0017] The electrical household appliance 1 further comprises first supporting means 7 to which a door giving access to a space 90 inside the electrical household appliance 1 can be hinged. The space 90 inside the electrical household appliance 1 is the space in which the treatment of the products or food takes place. The electrical household appliance 1 comprises the door and the door is rotatably connected to remaining parts of the electrical household appliance 1. In the case of a food storage apparatus, the space 90 is the place in which the products are positioned in order to keep them at a low temperature.

[0018] In the case of an oven (not a preferred embodiment however) the space 90 could be the muffle.

[0019] Conveniently, the facia 2 surmounts the door.

[0020] The electrical household appliance 1 comprises a first threaded element 81 which passes through the bracket 6 and connects the first supporting means 7 and the box 3. In this regard, the bracket 6 comprises a passage opening 36 for the first threaded element 81.

[0021] The first threaded element 81 comprises a head and an at least partially threaded shank. The first supporting means 7 comprise, for example, a first arm 71 comprising a passage hole for the first threaded element 81 and a second arm 72 comprising a pin or a hole which contributes to defining a hinge of the door. Conveniently, the first and second arms 71, 72 are integrated in an "L"-shaped element.

[0022] One part of the bracket 6 and one part of the first supporting means 7 (in particular a part of the first arm 71) are interposed between the head of the first threaded element 81 and the box 3. Conveniently, the head of the first threaded element 81 is in contact with the first supporting means 7. In particular, the head of the first threaded element 81 compresses the first supporting means 7 toward the bracket 6 and the control box 3. Conveniently, the control box 3 comprises at least a first cavity 31 which receives the first threaded element 81. Typically, the first cavity 31 is a blind hole. The first threaded element 81 is screwed into the first cavity 31. The first cavity 31 comprises a female screw which interacts with the first threaded element 81. Preferably, but not necessarily, the female screw is obtained by inserting the first threaded element 81 into the first cavity 31. During insertion, the first threaded element 81 cuts into the control box 3, creating the female screw (or reverse thread). This is particularly advantageous if the control box 3 is made of plastic material.

[0023] The electrical household appliance 1 comprises a second threaded element 82 which passes through the bracket 6 and connects the first supporting means 7 and the box 3. The control box 3 comprises at least a second cavity 32 which receives the second threaded element 82. The second cavity 32 is alongside the first cavity 31. Conveniently, what was indicated with reference to the first threaded element 81 and the interaction with the first cavity 31 can be repeated for the second threaded element 82 and the second cavity 32.

[0024] The second cavity 32 comprises a female screw which interacts with the second threaded element 82. Typically, the female screw is obtained by inserting the second threaded element 82 in the second cavity 32.

[0025] The second threaded element 82 likewise comprises a head and an at least partially threaded shank. One part of the bracket 6 and one part of the first supporting means 7 are interposed between the head of the second threaded element 82 and the box 3. Conveniently, the head of the second threaded element 82 is in contact with the first supporting means 7, in particular with the first arm 71 of the first supporting means 7. The presence of the first and second threaded elements 81, 82 prevents the rotation of the first supporting means 7 around a rotation axis parallel to a preponderant direction of extension of the first and second threaded elements 81, 82.

[0026] Advantageously, the control box 3 comprises at least a first hole 33 for fastening second supporting means 70 to which the door can be hinged (conveniently,

there is present a first and a second hole 33, 34 for fastening second supporting means 70). Conveniently, an extension of the pair of holes reaches into the bracket 6. Conveniently, the facia 2 is interposed between the first hole 33 and the first cavity 31.

[0027] This enables an arrangement of the control box 3 and of the bracket 6 to be made; this arrangement enables the door to be fastened on one side of the electrical household appliance 1 or on the other side. Advantageously, the electrical household appliance 1 comprises the second supporting means 70, to which the access door can be hinged instead of being hinged to the first supporting means 7. In this case, in addition to the arrangement, the electrical household appliance 1 is also provided with the second supporting means 70 to facilitate the subsequent work of the furniture installers (who, depending on the user's final requirements, can remove the door from the first supporting means 7 if necessary so as to mount it on the second supporting means 70). The connection of the door to the first supporting means 7 in fact enables the door to be opened in a first direction of rotation; the connection of the door to the second supporting means 70 enables the door to be opened in an opposite direction of rotation. Conveniently, a vertical plane intersecting the facia 2 is interposed between the first and second supporting means 7, 70. In particular the facia 2 is interposed between the first and second supporting means 7, 70.

[0028] The electrical household appliance 1 comprises a first screw 83 which passes through the bracket 6 and which connects the second supporting means 70 and the box 3. The control box 3 thus comprises at least the first hole 33 which receives the first screw 83. Advantageously, the electrical household appliance 1 comprises a second screw 84 which passes through the bracket 6 and which connects the second supporting means 70 and the box 3. The control box 3 comprises at least the second hole 34 which receives the second screw 84. The first and second holes 33, 34 are alongside each other.

[0029] The second supporting means 70 comprise, for example, an element provided with two arms 701, 702:

- one of the two arms 701, 702 comprises a passage hole for the first screw (if necessary it comprises two passage holes for both the first and the second screw 83, 84);
- the other of the two arms 701, 702 comprises a pin or a hole which contributes to defining a hinge of the door. Conveniently, the two arms 701, 702 are integrated in an "L"-shaped element.

[0030] One part of the bracket 6 and one part of the second supporting means 70 (in particular a part of one of the two arms 701, 702) are interposed between the head of the first screw 83 and the box 3. Conveniently, the head of the first screw 83 is in contact with the second supporting means 70.

[0031] The first hole 33 comprises a female screw

which interacts with the first screw 83. The first screw 83 is screwed into the first hole 33. Typically, the female screw of the first hole 33 is obtained by inserting the first screw 83 into the first hole 33.

[0032] One part of the bracket 6 and one part of the first supporting means 7 (in particular a part of the first arm 71) are interposed between the head of the second screw 84 and the box 3. Conveniently, the head of the second screw 84 is in contact with the second supporting means 70.

[0033] The second hole 34 comprises a female screw which interacts with the second screw 84. The second screw 84 is screwed into the second hole 34. Typically, the female screw of the second hole 34 is obtained by inserting the second screw 84 in the second hole 34.

[0034] Conveniently, the electrical household appliance 1 comprises:

- a first aesthetic profile 10 which surmounts a portion of the bracket 6; Conveniently, the bracket 6 comprises a low relief which overlies the first aesthetic profile 10; in particular, the low relief is behind the first aesthetic profile 10;
- a first threaded member 85 which passes through the bracket 6 and connects the first profile 10 and the box 3. The first profile 10 is thus also connected to the box 3.

[0035] The control box 3 comprises at least a first housing 35 for receiving the first threaded member 85.

[0036] Conveniently, the first threaded member 85 comprises a head and an at least partially threaded shank. At least a part of the first aesthetic profile 10 and a part of the bracket 6 are interposed between the head of the first threaded member 85 and the control box 3. Conveniently, the electrical household appliance 1 comprises a second threaded member 850 which connects a second aesthetic profile 100 to the box 3, trapping the bracket 6 between them. The second aesthetic profile 100 can more or less coincide with the first profile 10. Advantageously, the second threaded member 850 is inserted into a second housing 350 fashioned in the box 3. Conveniently, the fascia 2 is interposed between the first and second threaded members 85, 850.

[0037] Conveniently, the control box 3 and the bracket 6 are symmetrical.

[0038] The bracket 6 surrounds an opening 37 which places the second part 42 of the housing 4 in communication with the first part 41 of the housing 4. The control box 3 and the fascia 2 extend away from the opening (37) in two opposite directions. Advantageously, the control box 3 is fastened to the bracket 6. In particular, the control box 3 comprises tabs 11 for fastening it to the bracket 6. Preferably, the tabs 11 fasten to the bracket 6 around the opening 37.

[0039] Advantageously, the electrical household appliance 1 comprises threaded connecting means 86 which connect the fascia 2 to the control box 3. At least a first

part of the threaded connecting means 86 is screwed into at least a first concavity 38 of the control box 3. In particular, the introduction of at least a first part of the threaded connecting means 86 into the first concavity 38 fastens the fascia 2 to the control box 3. At least a second part of the threaded connecting means 86 is screwed into at least a second concavity 39 of the control box 3.

[0040] The invention thus conceived enables many advantages to be obtained.

[0041] In fact, the invention makes it possible to optimize the number of components of the electrical household appliance. This serves to speed up the operations of assembling the electrical household appliance. This is moreover associated with a cost reduction tied both to the smaller number of components and shorter labour time.

[0042] The invention thus conceived is susceptible of numerous modifications and variants, all falling within the scope of the inventive concept which characterises it. Moreover, all the details may be replaced with other technically equivalent ones. In practice, all of the materials used, as well as the dimensions, can be any whatsoever according to need.

Claims

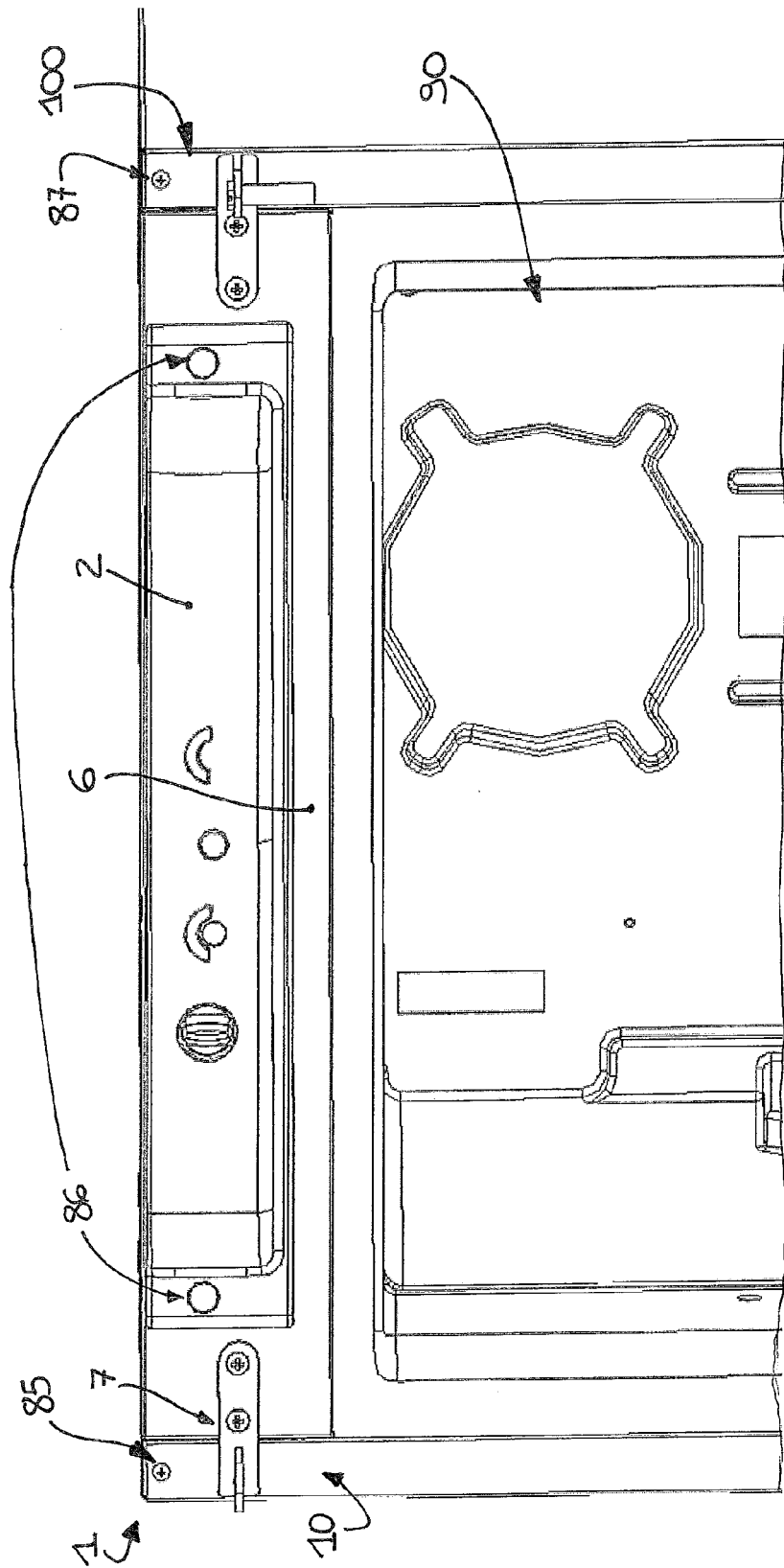
1. An electrical household appliance comprising:

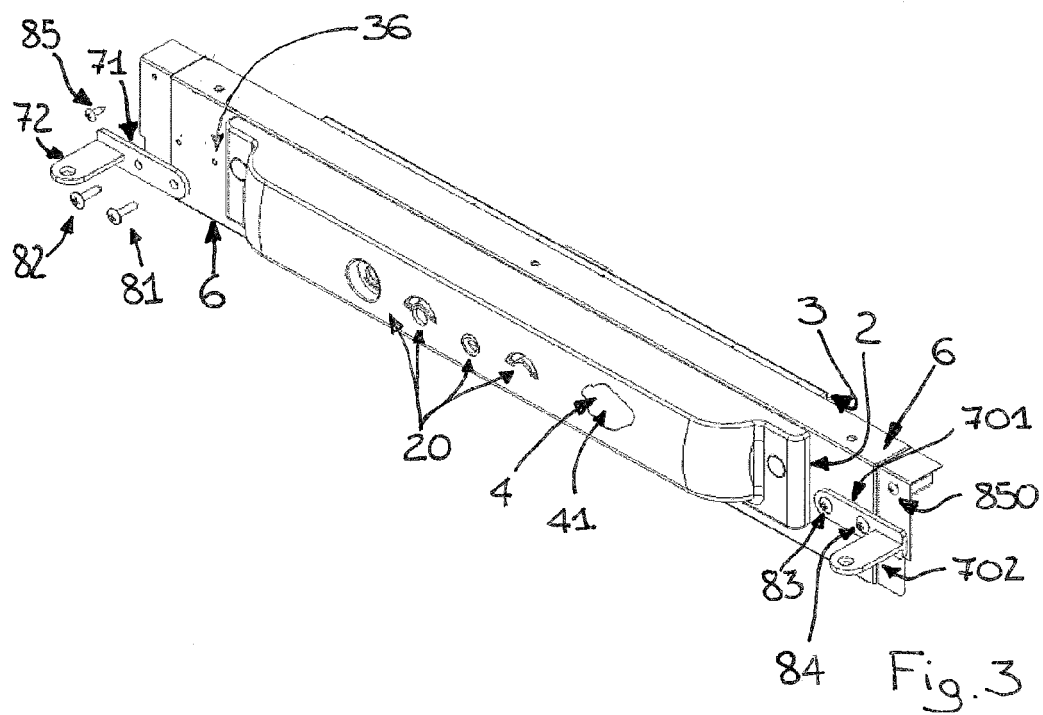
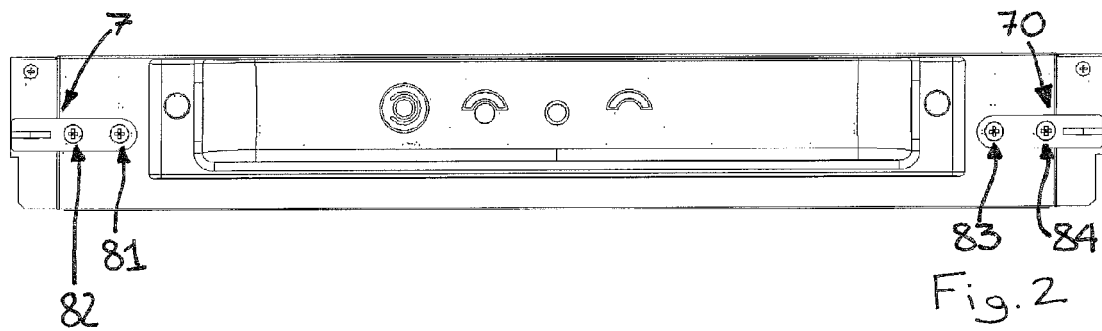
- a fascia (2) comprising a user interface (20);
 - a control box (3) which, in combination with the fascia (2), defines a housing compartment (4) for control means;
 - a bracket (6) which at least partly frames the fascia (2);
 - first supporting means (7) to which a door giving access to a space (90) inside the electrical household appliance (1) can be hinged;
- characterized in that** it comprises a first threaded element (81) which passes through the bracket (6) and connects the first supporting means (7) and the control box (3); the control box (3) comprising at least a first cavity (31) for receiving the first threaded element (81).

2. The electrical household appliance according to claim 1, **characterized in that** it comprises a second threaded element (82) which passes through the bracket (6) and connects the first supporting means (7) and the control box (3); the control box (3) comprising at least a second cavity (32) for receiving the second threaded element (82), the second cavity (32) being alongside the first cavity (31).

3. The electrical household appliance according to either of the preceding claims, **characterized in that** it comprises:

- second supporting means (70) to which the access door can be hinged instead of being hinged to the first supporting means (7), an imaginary vertical plane intersecting the facia (2) being interposed between the first and the second supporting means (7,70); 5
 - a pair of screws (83, 84) which pass through the bracket (6) and which connect the second supporting means (70) and the control box (3); the control box (3) comprising at least two holes (33,34) alongside each other, each of which receives one of the two screws (83, 84). 10
4. The electrical household appliance according to any of the preceding claims, **characterized in that** the control box (3) is a single moulded block. 15
 5. The electrical household appliance according to any of the preceding claims, **characterized in that** it comprises: 20
 - an aesthetic profile (10) which surmounts a portion of the bracket (6);
 - a first threaded member (85) which passes through the bracket (6) and connects the profile (10) and the control box (3); the control box (3) comprising at least a first housing (35) for receiving the first threaded member (85). 25
 6. The electrical household appliance according to any of the preceding claims, **characterized in that** the control box (3) comprises a first concavity (36) forming part of the housing compartment (4); the bracket (6) surrounding an opening (37) which places the first concavity (36) in communication with the facia (2). 30 35
 7. The electrical household appliance according to claim 6, **characterized in that** the control box (3) and the facia (2) extend away from the opening (37) in two opposite directions. 40
 8. The electrical household appliance according to any of the preceding claims, **characterized in that** the control box (3) is made entirely of a plastic material and/or the bracket (6) is made of metal. 45
 9. The electrical household appliance according to any of the preceding claims, **characterized in that** it comprises threaded connecting means (86) which connect the facia (2) to the control box (3). 50
 10. The electrical household appliance according to any of the preceding claims, **characterized in that** it is a food refrigerating appliance, the facia (2) surmounting the door. 55





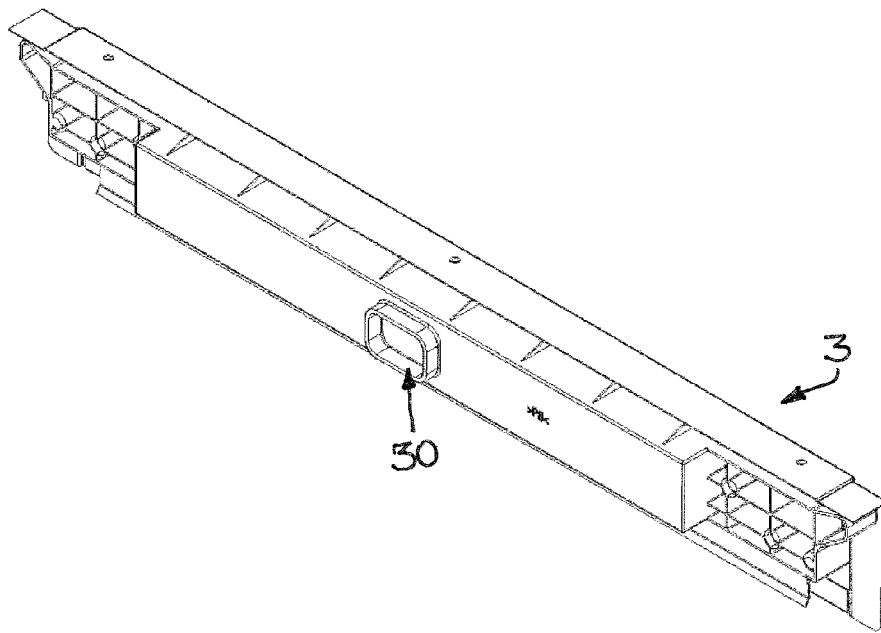


Fig. 4

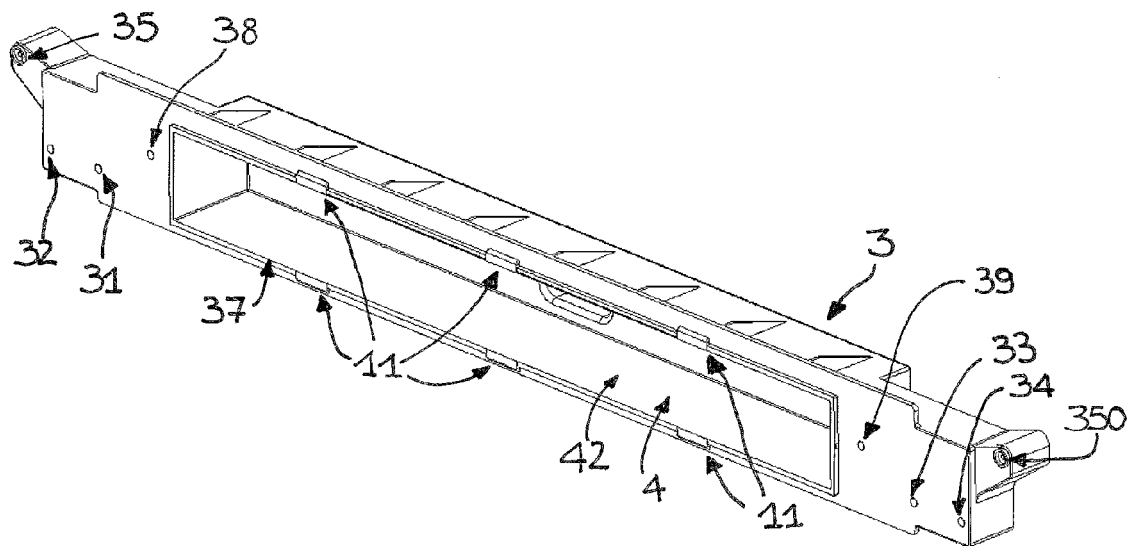


Fig. 5



EUROPEAN SEARCH REPORT

Application Number
EP 13 15 1363

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	DE 10 2009 027630 A1 (BSH BOSCH SIEMENS HAUSGERAETE [DE]) 13 January 2011 (2011-01-13) * paragraph [0030] - paragraph [0041]; figures 1-4 *	1-10	INV. F25D29/00 F24C7/08 A47L15/42
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			TECHNICAL FIELDS SEARCHED (IPC)
			F25D A47L F24C
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 6 February 2013	Examiner Lucic, Anita
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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06-02-2013

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