



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



(11) EP 2 144 340 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
13.01.2010 Bulletin 2010/02

(51) Int Cl.:
H01R 13/74 (2006.01)
H01R 13/66 (2006.01)
H05B 3/74 (2006.01)

H01R 9/24 (2006.01)
F24C 15/10 (2006.01)

(21) Application number: 08012380.5

(22) Date of filing: 09.07.2008

(84) Designated Contracting States:

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HR HU IE IS IT LI LT LU LV MC MT NL NO PL PT
RO SE SI SK TR

Designated Extension States:

AL BA MK RS

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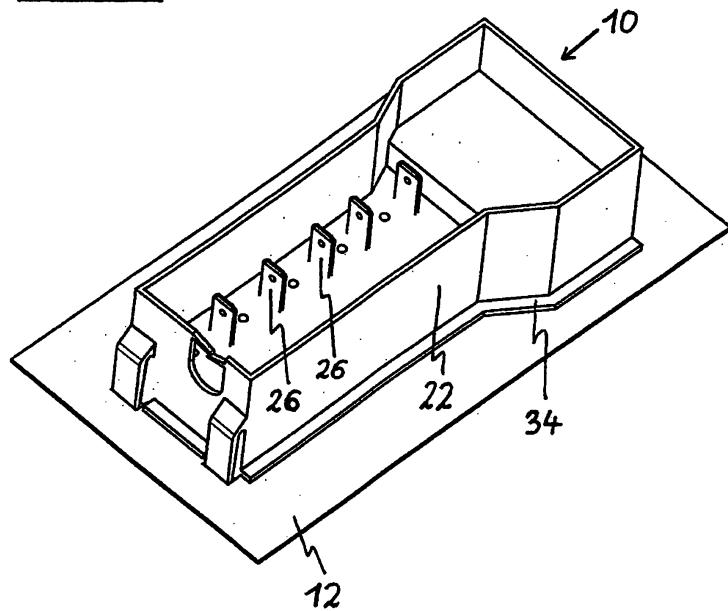
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(54) A junction box for the power supply of a cooking hob

(57) The present invention relates to a junction box (10) for the power supply of a cooking hob. The junction box (10) is mounted or mountable in a recess of a bottom panel (12) or a side panel (14) of the cooking hob. The junction box (10) comprises an interior part (22) associated with the interior space of the cooking hob and an exterior part (24) associated with the exterior of the cooking hob. The junction box (10) comprises at least one

latch element (20) for fastening said junction box (10) in the recess. The junction box (10) is insertable into the recess by a motion of said junction box (10) from the interior space. The junction box (10) comprises a plurality of electric terminals (26, 28) arranged in a central portion of said junction box (10). Further, the present invention relates to a cooking hob with at least one junction box (10).

FIG. 4



Description

[0001] The present invention relates to a junction box for the power supply of a cooking hob according to claim 1. Further, the present invention relates to a cooking hob with at least one junction box for the power supply according to the preamble of claim 9.

[0002] Within a cooking hob the junction box for the power supply, in particular the electric terminals should be protected against the heat generated by the heating devices. In the prior art the junction box comprises a double-walled casing as a protection against the heat. Thus, the junction box is very broad and the distance to the heating device is relatively small, so that at least the outer part of the double-walled casing becomes very hot.

[0003] Further, conventional junction boxes are insertable into a recess in a panel of the cooking hob from the exterior. Thus, the assembler has to turn-over the whole cooking hob during the production process in order to fasten the junction box at the cooking hob.

[0004] It is an object of the present invention to provide a junction box for the power supply of a cooking hob and a corresponding cooking hob, wherein the junction box has an improved protection against the heat and the mounting of the junction box at the cooking hob is simplified.

[0005] The object of the present invention is achieved by the junction box according to claim 1.

[0006] According to the present invention a junction box for the power supply of a cooking hob is provided, wherein:

- the junction box is mounted or mountable in a recess of a bottom panel or a side panel of the cooking hob,
- the junction box comprises an interior part associated with the interior space of the cooking hob and an exterior part associated with the exterior of the cooking hob,
- the junction box comprises at least one latch element for fastening said junction box in the recess,
- the junction box is insertable into the recess by a motion of said junction box from the interior space, and
- the junction box comprises a plurality of electric terminals arranged in a central portion of said junction box.

[0007] The main idea of the present invention is the assembly of the junction box into the recess from the interior space of cooking hob and the arrangement of the terminals in the central portion of said junction box. The first point simplifies the production process of the cooking hob, since the casing of the cooking hob need not to be turned-over by the assembler. The second point improves the protection of the terminals against heat, since the temperature in the central portion is the lowest within the junction box.

[0008] According to the preferred embodiment of the

present invention the casing of the junction box is single-walled. The single-walled junction box allows a smaller width of the junction box and a bigger distance between the junction box and the neighbouring heating devices within the cooking hob. The air between the junction box and the heating devices delays a heating of the terminals and contributes to the cooling of the junction box.

[0009] In particular, the dimensions of the junction box are adapted to the structure of the cooking hob, so that the distances between the casing of the junction box and the neighbouring heating devices are maximised.

[0010] For example, the electric contact elements are arranged in a series within the junction box. This allows a relative big distance from the heating devices and contributes also to a reduced heating of the terminals.

[0011] Preferably, the cross-section of the exterior part of the junction box is marginally smaller than the cross-section of the recess in the bottom panel or side panel. Also this feature simplifies the assembly of the junction box in the cooking hob.

[0012] In order to allow a stable fixation of the junction box in the recess, the junction box comprises supporting elements for supporting said junction box at the edge and/or at the border of the recess. In particular, the junction box comprises appendices arranged at least partially on an opposite side of the latch element, wherein at least one edge of the recess is engageable into said appendices.

[0013] Further, the junction box comprises detection means for sensing the temperature of the electric terminals, in particular of the electric terminals in the interior part of said junction box. The power supply for the heating devices of the cooking hob can be reduced or switched off, if the temperature of the electric terminals is too high.

[0014] This is an additional feature for preventing a destruction of the junction box.

[0015] The object of the present invention is also achieved by the cooking hob with a junction box for the power supply according to claim 9.

[0016] According to the present invention the cooking hob comprises at least one junction box as described above.

[0017] The production process of the cooking hob is simplified, since the casing of the cooking hob need not to be turned-over by the assembler. The protection of the terminals against heat is improved, since the temperature in the central portion is the lowest within the junction box.

[0018] According to the preferred embodiment of the present invention the position and the dimensions of the junction box are adapted to the structure of the cooking hob, so that the distances between the casing of the junction box and the neighbouring heating devices are maximised. The air between the junction box and the heating devices delays a heating of the terminals and contributes to the cooling of the junction box.

[0019] Further, the cooking hob comprises a glass-ceramic panel forming the top side of said cooking hob. Preferably, a barrier is arranged between the junction

box and the glass-ceramic panel in order to hold the heat off from a top side of the interior part of said junction box. [0019] The novel and inventive features believed to be the characteristic of the present invention are set forth in the appended claims.

[0020] The invention will be described in further detail with reference to the drawings, in which

FIG 1 illustrates a schematic diagram of a perspective view of a cooking hob in an open state according to a preferred embodiment of the present invention,

FIG 2 illustrates a schematic diagram of a perspective view at an exterior part of a junction box snapped-in within a recess according to the preferred embodiment of the present invention,

FIG 3 illustrates a schematic diagram of a perspective view at the exterior part of the junction box in an open state according to the preferred embodiment of the present invention, and

FIG 4 illustrates a schematic diagram of a perspective view at an interior part of the junction box snapped-in within the recess according to the preferred embodiment of the present invention.

[0021] FIG 1 illustrates a schematic diagram of a perspective view of a cooking hob in an open state according to a preferred embodiment of the present invention. The cooking hob comprises a casing with a bottom panel 12 and four side panels 14. In this open state the cooking hob is shown, without a glass-ceramic panel. Said glass-ceramic panel is provided to cover the open top side of the casing.

[0022] The cooking hob comprises a junction box 10, four heating devices 16 and a housing 18. In this example the heating devices 16 are radiant heating devices. The housing is provided for an electric and/or electronic circuitry. The heating devices 16 and the housing 18 are arranged within an interior space enclosed by the bottom panel 12 and the four side panels 14. An interior part 22 of the junction box 10 is also arranged within said interior space of the cooking hob.

[0023] The junction box 10 includes the interior part 22 and the exterior part 24. The interior part 22 is arranged within the interior space of the cooking hob. The interior part 22 is further arranged above the bottom panel 12. The exterior part 24 is arranged below the bottom panel 12. The junction box 10 is arranged within a recess in the bottom panel 12. During assembling the cooking hob the junction box 10 is inserted from the interior space into the recess. In this example the junction box 10 is inserted into the recess top down.

[0024] FIG 2 illustrates a schematic diagram of a perspective view at the exterior part 24 of the junction box 10 snapped-in within the recess in the bottom panel 12

according to the preferred embodiment of the present invention. In FIG 2 only a section of said bottom panel 12 is shown. The junction box 10 is snapped-in by two latch elements 20. The latch elements 20 are arranged at a narrow side of the junction box 10. In this perspective view only the exterior part 24 of the junction box 10 is shown. Said exterior part 24 is closed by a cover element 36. The cover element 36 includes a recess provided for a power cable.

[0025] FIG 3 illustrates a schematic diagram of a perspective view at the exterior part 24 of the junction box 10 in an open state according to the preferred embodiment of the present invention. Unlike FIG 2 the bottom panel 12 and the cover element 36 are not shown in FIG 3.

[0026] Further, the junction box 10 comprises a number of exterior terminals 28 inside the exterior part 24. The exterior terminals 28 are arranged in a series. In this example the exterior part 24 comprises five exterior terminals 28. Each of the exterior terminals 28 comprises a screw for clamping a wire. The wires of a power cable are connectable to the exterior terminals 28. Near the recess of the cover element 36 the exterior part 24 of the junction box 10 comprises a pull relief for the power cable.

[0027] At the narrow side of the junction box 10 opposite to the latch elements 20 two lateral appendices 30 and a central appendix 32 are arranged at the junction box 10. The lateral appendices 30 and the central appendix 32 extend into the opposite direction of the engagement hooks at the latch elements 20. The lateral appendices 30 belong to the exterior part 24 of the junction box 10. The central appendix 32 belongs to the interior part 22 of the junction box 10.

[0028] The lateral appendices 30 and the central appendix 32 are displaced in such a way that an edge of the panel 12 or 14 can be engaged between the lateral appendices 30 and the central appendix 32, wherein the lateral appendices 30 are arranged on the one side and the central appendix 32 is arranged on the other side of the panel 12 or 14.

[0029] Two flange sections 34 are arranged between the interior part 22 and the exterior part 24. Each of the flange sections 34 is arranged at one of the longitudinal sides, respectively, of the junction box 10. Each flange section 34 extends between the latch element 24 and interior appendix 30.

[0030] When the junction box 10 is inserted into the recess of the bottom panel 12, in a first step a predetermined edge of said recess is engaged between the lateral appendices 30 and the central appendix 32 from the interior space of the cooking hob. The lateral appendices 30 are arranged at the exterior side of said edge. The central appendix 32 is arranged at the interior side of said edge. In a next step the junction box 10 is pressed into the recess, in particular near the opposite narrow side of the lateral appendices 30 and the central appendix 32, so that the latch elements 20 snap-in within said recess. In the mounted state the flange sections 34 rest against the inner side of the bottom panel 12. Thus, the junction

box 10 is supported within the recess by the latch elements 20, the lateral appendices 30, the central appendix 32 and the flange sections 34.

[0031] FIG 4 illustrates a schematic diagram of a perspective view at the interior part of the junction box 10 snapped-in within the recess of the bottom panel 12 according to the preferred embodiment of the present invention. In FIG 4 only a section of said bottom panel 12 is shown.

[0032] The flange sections 34 and the central appendix 32 support the junction box 10 at the interior side of the recess. The engagement hooks of the latch elements 20 and the lateral appendices 30 support the junction box 10 at the exterior side of the recess.

[0033] A number of interior terminals 26 is arranged in series within the interior part 22 of the junction box 10. Each of said interior terminals 26 is associated with one of the exterior terminals 28. In particular, the interior terminal 26 is associated with that exterior terminal 28 having the shortest distance from said interior terminal 26. The interior terminals 26 are electrically connected to the corresponding exterior terminals 28, respectively. The interior terminals 26 are also arranged in series. The interior terminals 26 are provided for the connection to the electric and/or electronic components of the cooking hob.

[0034] According to the invention the interior terminals 26 are arranged at a central portion within the junction box 10. In said central portion the temperature has the lowest values within the junction box 10. Further, the distance between said interior terminals 26 and the heating devices 16 beside the junction box 10 is maximised. This allows a low thermal impact. The junction box 10, in particular the interior part 22 of said junction box 10, is single-walled. This allows a small size of the junction box 10 and a bigger distance to the heating devices 16 beside the junction box 10.

[0035] The junction box 10 according to the present invention can be inserted into the recess from the interior space of the cooking hob. Since the interior space is accessible during the whole production process, it is not necessary to turn-over the casing of the cooking hob. This allows a substantial simplification of the production process of the cooking hob.

[0036] The junction box 10 comprises at least one temperature sensitive element in order to sense the temperature at and/or near the terminals 26 und 28, in particular at and/or near the interior terminals 26. If the temperatures at the terminals 26 und 28 reach a dangerous value, then the power of the corresponding heating device 16 may be reduced or switched off.

[0037] Preferably, a barrier is arranged between the junction box 10 and the glass-ceramic panel in order to hold the heat off from a top side of the junction box 10.

[0038] Although illustrative embodiments of the present invention have been described herein with reference to the accompanying drawings, it is to be understood that the present invention is not limited to those preferred embodiments, and that various other changes

and modifications may be affected therein by one skilled in the art without departing from the scope or spirit of the invention. All such changes and modifications are intended to be included within the scope of the invention as defined by the appended claims.

List of reference numerals

[0039]

10	junction box
12	bottom panel
14	side panel
16	radiant heating device
18	housing
20	latch element
22	interior part
24	exterior part
26	interior terminal
28	exterior terminal
30	lateral appendix
32	central appendix
34	flange section
36	cover element
38	pull relief

Claims

30 **1.** A junction box for the power supply of a cooking hob, wherein:

- the junction box (10) is mounted or mountable in a recess of a bottom panel (12) or a side panel (14) of the cooking hob,
- the junction box (10) comprises an interior part (22) associated with the interior space of the cooking hob and an exterior part (24) associated with the exterior of the cooking hob,
- the junction box (10) comprises at least one latch element (20) for fastening said junction box (10) in the recess,
- the junction box (10) is insertable into the recess by a motion of said junction box (10) from the interior space, and
- the junction box (10) comprises a plurality of electric terminals (26, 28) arranged in a central portion of said junction box (10).

35 **2.** The junction box according to claim 1, **characterized in, that**
the casing of the junction box (10) is single-walled.

40 **3.** The junction box according to claim 1 or 2, **characterized in, that**
the dimensions of the junction box (10) are adapted to the structure of the cooking hob, so that the distances between the casing of the junction box (10)

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and the neighbouring heating devices (16) are maximised.

4. The junction box according to any one of the preceding claims,
characterized in, that
the electric contact elements (26, 28) are arranged in series within the junction box (10). 5

5. The junction box according to any one of the preceding claims,
characterized in, that
the cross-section of the exterior part (24) of the junction box (10) is marginally smaller than the cross-section of the recess in the bottom panel (12) or side panel (14). 10 15

6. The junction box according to any one of the preceding claims,
characterized in, that
the junction box (10) comprises supporting elements (30, 32, 34) for supporting said the junction box (10) at the edge and/or at the border of the recess. 20

7. The junction box according to any one of the preceding claims,
characterized in, that
the junction box (10) comprises appendices (30, 32) arranged at least partially on an opposite side of the latching element (20), wherein at least one edge of the recess is engageable into said appendices (30, 32). 25 30

8. The junction box according to any one of the preceding claims,
characterized in, that
the junction box (10) comprises detection means for sensing the temperature of the electric terminals (26, 28), in particular of the electric terminals (26) in the interior part (22) of said junction box (10). 35 40

9. A cooking hob with at least one heating device (16) and at least one junction box (10) within the interior space of said cooking hob,
characterized in, that
the cooking hob comprises at least one junction box (10) according to any one of the claims 1 to 9. 45

10. The cooking hob according to claim 9,
characterized in, that
the position and the dimensions of the junction box (10) are adapted to the structure of the cooking hob, so that the distances between the casing of the junction box (10) and the neighbouring heating devices (16) are maximised. 50 55

11. The cooking hob according to claim 9 or 10,
characterized in, that

the cooking hob comprises a glass-ceramic panel forming the top side of said cooking hob.

12. The cooking hob according to claim 11,
characterized in, that

a barrier is arranged between the junction box (10) and the glass-ceramic panel in order to hold the heat off from a top side of the interior part (22) of said junction box (10).

FIG. 1

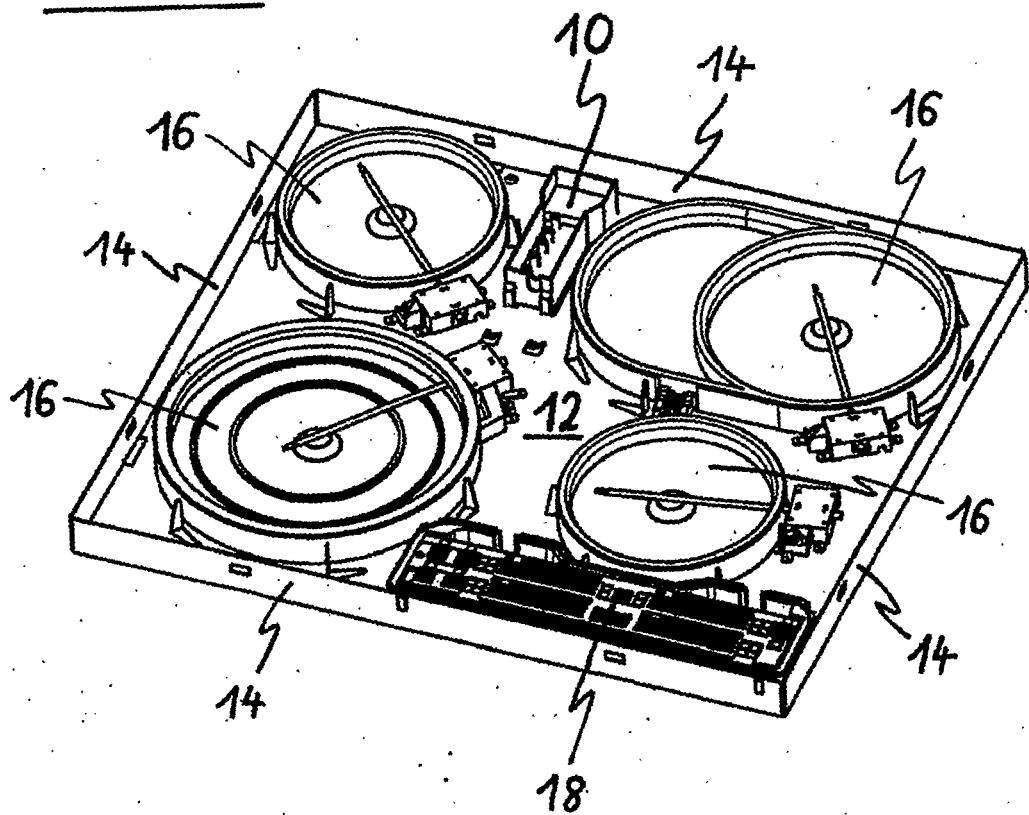


FIG. 2

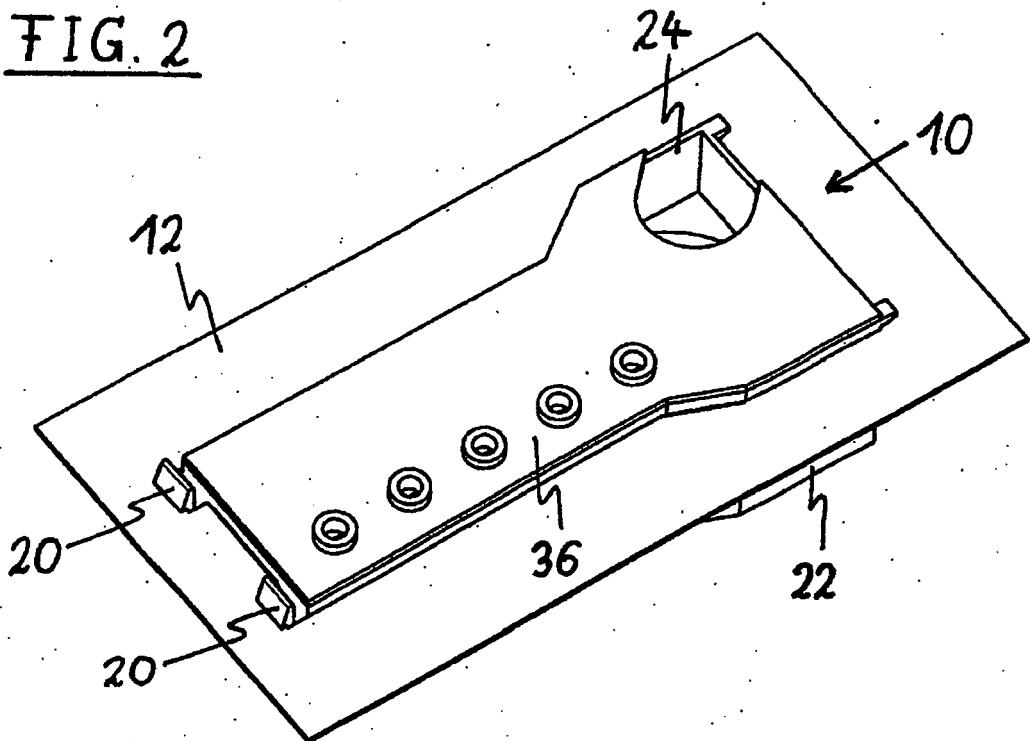


FIG. 3

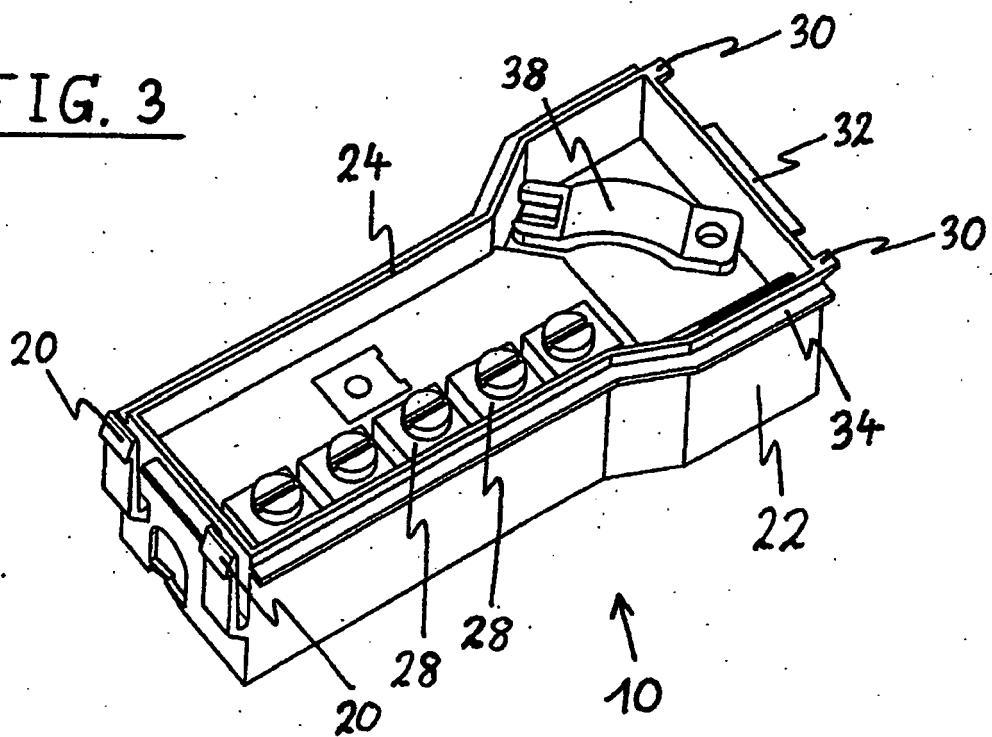
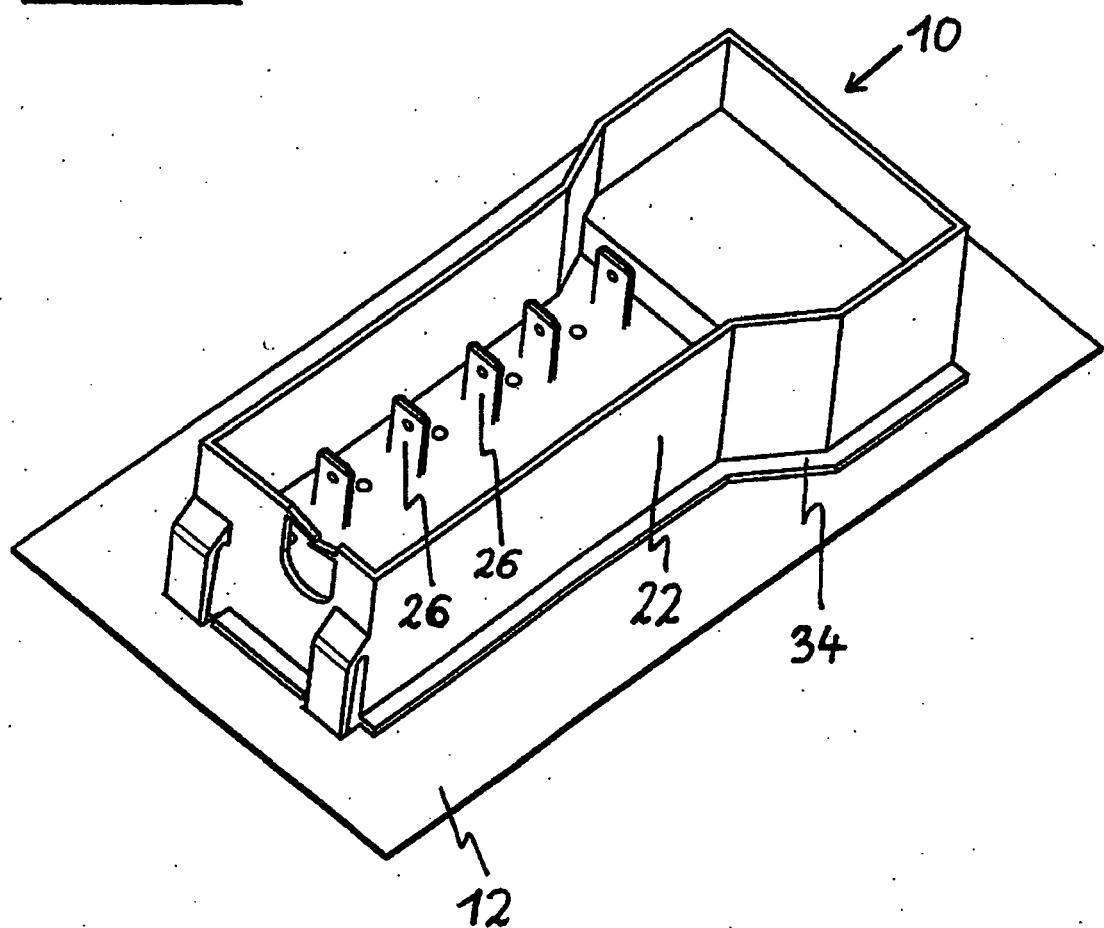


FIG. 4





EUROPEAN SEARCH REPORT

Application Number
EP 08 01 2380

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (IPC)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
Y	DE 10 2006 024739 A1 (ELECTROLUX HOME PROD CORP [BE]) 29 November 2007 (2007-11-29) * abstract * * page 3, paragraph 32 * * figure 1 * -----	1-12	INV. H01R13/74 H01R9/24 H01R13/66 F24C15/10 H05B3/74
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Y	US 3 838 505 A (DONER J) 1 October 1974 (1974-10-01) * abstract * * column 2, lines 44-49 * * column 3, lines 13-43 * * figures 1,2,4,5 * -----	1-6,8-11	
Y	WO 02/061893 A (PCD INC [US]) 8 August 2002 (2002-08-08) * abstract; figures 5A,5B,5C * -----	1-11	TECHNICAL FIELDS SEARCHED (IPC)
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The present search report has been drawn up for all claims			
3	Place of search Munich	Date of completion of the search 8 December 2008	Examiner Kardinal, Ingrid
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			

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

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