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(54) **Interlocked socket with modular automatic protection switch**

(57) An interlocked socket with modular automatic protection switch, **characterized in that** it comprises a front body (2) that is adapted to be applied to a panel

(100) or other wall-mounted support; said front body (2) contains a support (4) which extends internally and comprises a holder member (5) shaped as a DIN guide; a modular switch (6) is attached to said holder member (5).

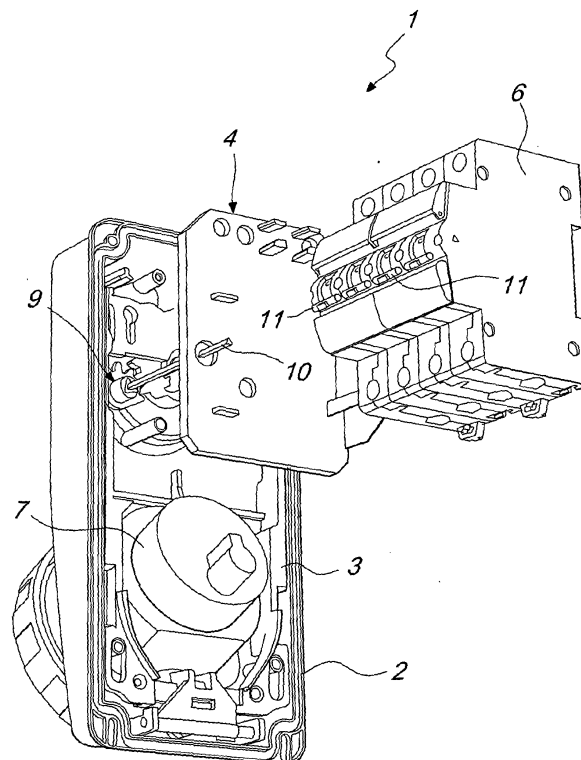


*Fig. 2*

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## Description

**[0001]** The present invention relates to an interlocked socket with modular automatic protection switch.

**[0002]** As is known, an interlocked socket incorporates a mechanical or electrical locking device, which is connected to an interruption system that does not allow the insertion or extraction of the plug when the socket is powered, i.e. in the presence of voltage.

**[0003]** Interlocked sockets equipped with magneto-thermal or residual current operated breakers are known.

**[0004]** In most conventional interlocked sockets, the modular switch is arranged at the bottom of the socket, and the front part and the bottom of the socket constitute a single assembly.

**[0005]** In case of intervention of the automatic protection switch, resetting is performed by using the knob of the interlocked socket that is connected to the means for the actuation of the switch by means of levers and gears. The levers and gears operate the handles of the modular switch.

**[0006]** EP-A-0534173 discloses such type of industrial electrical socket provided with an interlocking system that controls the handles of the modular switches by means of a lever system.

**[0007]** The aim of the present invention is to provide an interlocked socket with modular automatic protection switch that can be easily integrated in an electrical panel.

**[0008]** Within the scope of this aim, an object of the invention is to provide an interlocked socket with modular automatic protection switch that is compact and can be wired more easily and quickly than the conventional interlocked sockets.

**[0009]** Another object of the present invention is to provide a socket with a structure which, by virtue of its particular constructive characteristics, is capable of giving the greatest assurances of reliability and safety in use.

**[0010]** This aim and these and other objects that will become better apparent hereinafter are achieved by an interlocked socket with modular automatic protection switch, characterized in that it comprises a front body adapted to be applied to a panel or other wall-mounted support; said front body contains a support which extends internally and comprises a holder member shaped as a DIN guide; a modular switch is attached to said holder member.

**[0011]** The modular switch is wired with a socket associated with the front body; the socket has a locking means, which prevents the insertion and disconnection of a plug when there is electrical voltage in the system; the locking means is actuated by a control knob by means of a lever system.

**[0012]** The knob transmits a rotary motion to the handles of the modular switch, by means of a gear lever system, which has a pivot that passes within the modular switch, connecting the various handles of the switch.

**[0013]** Further characteristics and advantages will become better apparent from the description of preferred

but not exclusive embodiments of the invention, illustrated by way of non-limiting example in the accompanying drawings, wherein:

Figure 1 is an exploded perspective view of the interlocked socket with modular automatic protection switch according to the present invention;

Figure 2 is a partially exploded perspective view of the rear part of the socket;

Figure 3 is a perspective view of the rear part of the socket in the assembled condition;

Figure 4 is a view, similar to the preceding one, in which the socket does not have the modular switch;

Figure 5 is a perspective view of an electrical panel with which interlocked sockets according to the present invention are associated.

**[0014]** With reference to the cited figures, an interlocked socket with modular automatic protection switch according to the invention, generally designated by the reference numeral 1, comprises a front body 2 which is adapted to be applied to a panel 100 or other wall-mounted support where one intends to apply the interlocked socket.

**[0015]** The front body 2 contains a support 4 which extends internally and comprises a holder member 5.

**[0016]** The holder member 5 is shaped as a DIN guide.

**[0017]** A modular switch 6, for example a series of magneto-thermal poles, each associated with a pole of the socket, is attached to the holder member 5.

**[0018]** Preferably, the support 4 is made of technopolymer.

**[0019]** The modular switch 6 is wired to a socket 7 associated with the front body 2.

**[0020]** The socket 7 comprises a locking means which prevents the insertion and disconnection of a plug, when the system is powered, in a per se known manner.

**[0021]** The locking means is actuated by a control knob 8 by means of a lever system.

**[0022]** The rotary motion provided by the knob 8 is transmitted by means of a gear lever system, generally designated by the reference numeral 9, which ends with a metallic pivot 10 that passes within the modular switch 6, connecting the various handles 11 of the switch.

**[0023]** The interlocked socket forms a single unit with the modular switch 6, which is jointly connected to the front body 2 of the socket and can thus be mounted on a panel 100, for example a so called Q DIN panel.

**[0024]** In practice it has been found that the invention achieves the intended aim and objects, an interlocked socket having been provided which, differently from conventional interlocked sockets, has the modular switch associated directly with the front body and therefore does not require a separate support or a base for the switch.

**[0025]** The interlocked socket according to the present invention is quicker and easier to install, because it is sufficient to connect the power supply cables that arrive from the panel to the modular switch, which is already

wired with the socket in the front.

**[0026]** The knob 8 controls the handles of the modular switch by means of a metallic pivot 10 that passes within the modular switch itself.

**[0027]** This application claims the priority of Italian Patent Application No. MI2009A001910, filed on November 2, 2009, the subject matter of which is incorporated herein by reference.

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## Claims

1. An interlocked socket with modular automatic protection switch, **characterized in that** it comprises a front body (2) adapted to be applied to a panel (100) or other wall-mounted support; said front body (2) contains a support (4) which extends internally and comprises a holder member (5) shaped as a DIN guide; a modular switch (6) is attached to said holder member (5). 15 20
2. The interlocked socket according to claim 1, **characterized in that** said modular switch (6) is wired to a socket (7) associated with said front body (2); said socket (7) comprises a locking means, which prevents the insertion and disconnection of a plug when there is electrical voltage in the system; said locking means is actuated by a control knob (8) by means of a lever system. 25 30
3. The interlocked socket according to claim 2, **characterized in that** said knob (8) transmits a rotary motion to the handles (11) of said modular switch (6) by means of a gear lever system (9), which ends with a pivot (10) that passes through said modular switch (6), connecting the various handles (11) of said switch (6). 35
4. The interlocked socket according to claim 1, **characterized in that** said front body (2) is mounted on a Q DIN panel (100). 40
5. The interlocked socket according to claim 1, **characterized in that** said support (4) is made of technopolymer. 45

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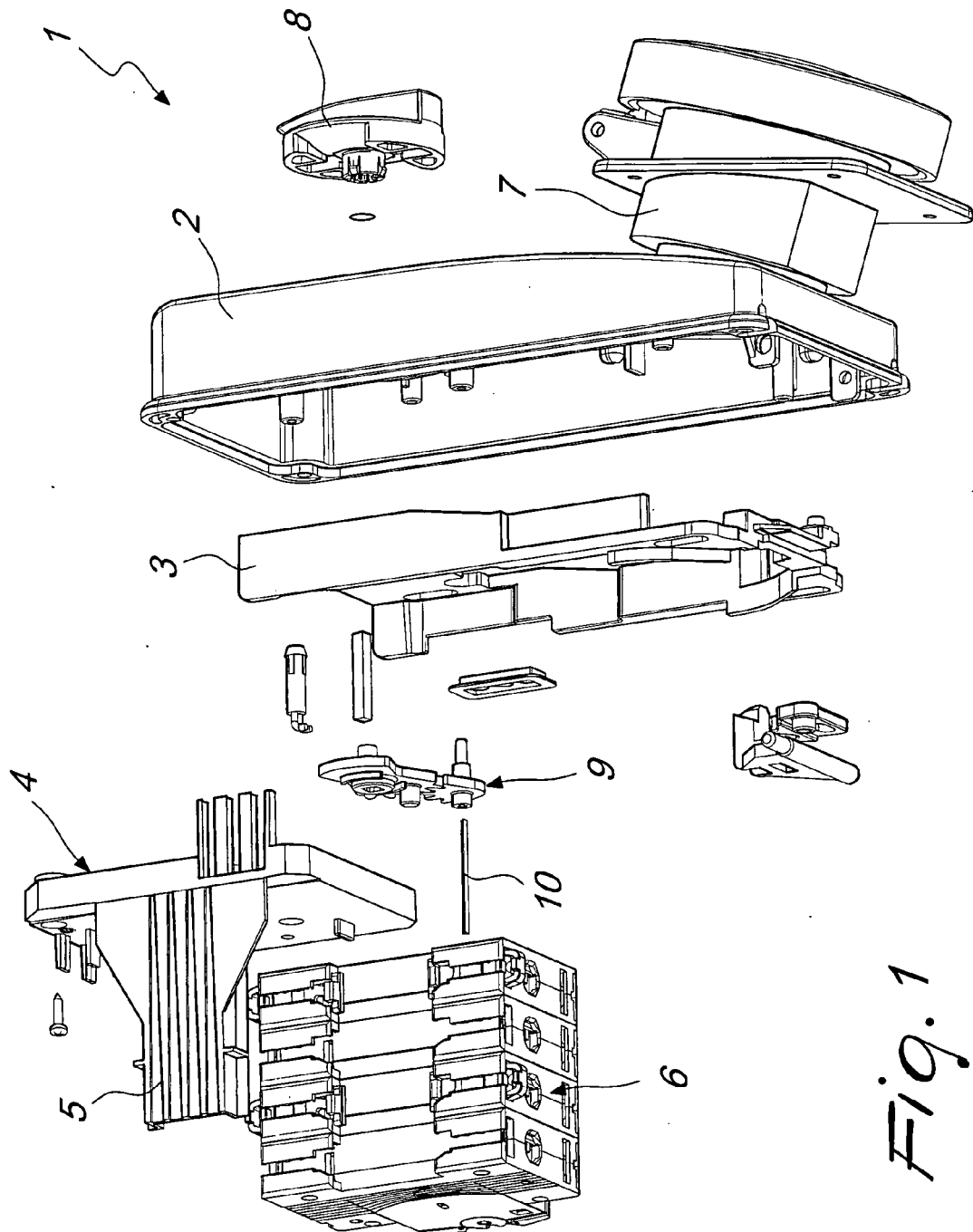


Fig. 1

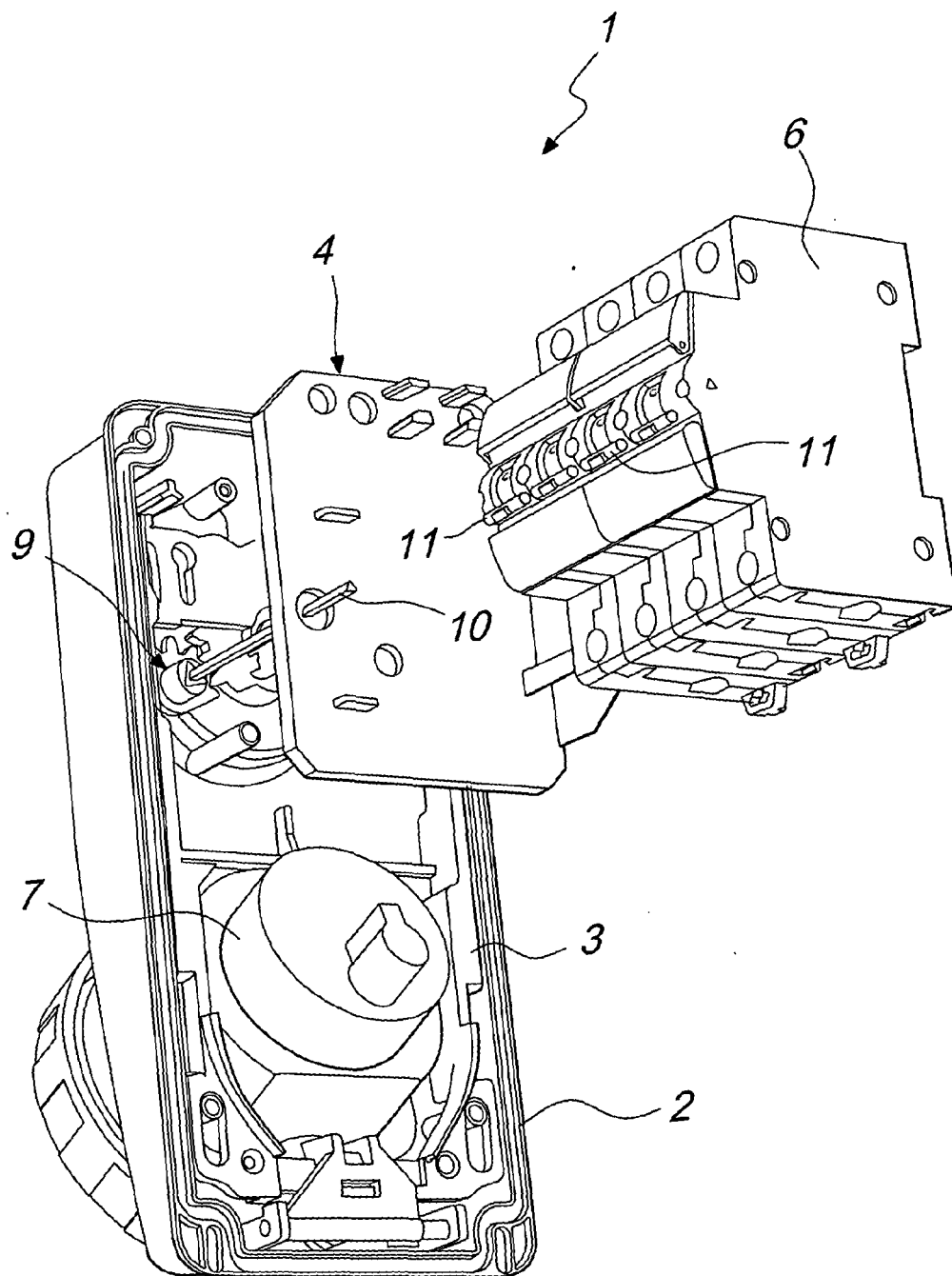


*Fig. 2*

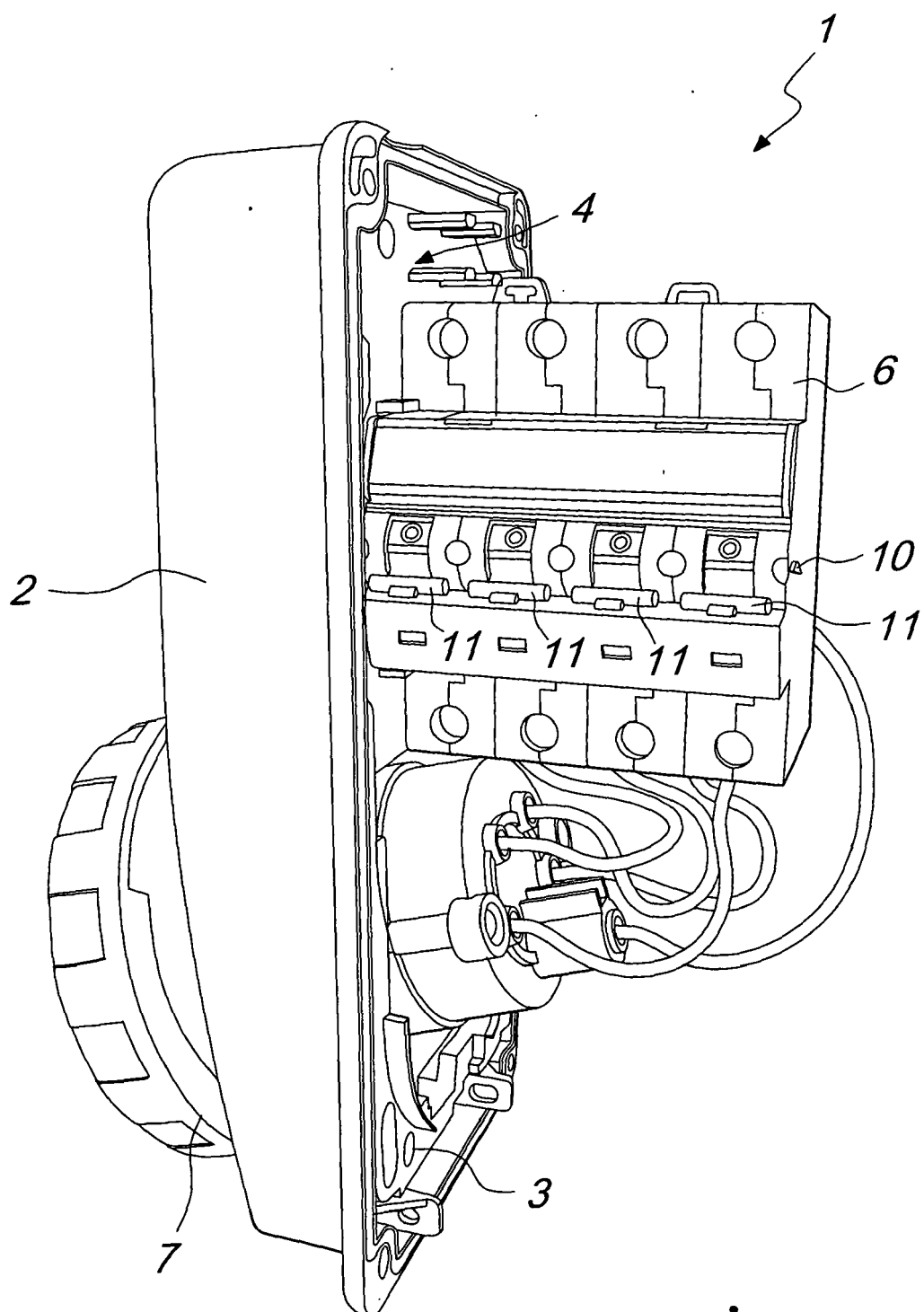


*Fig. 3*

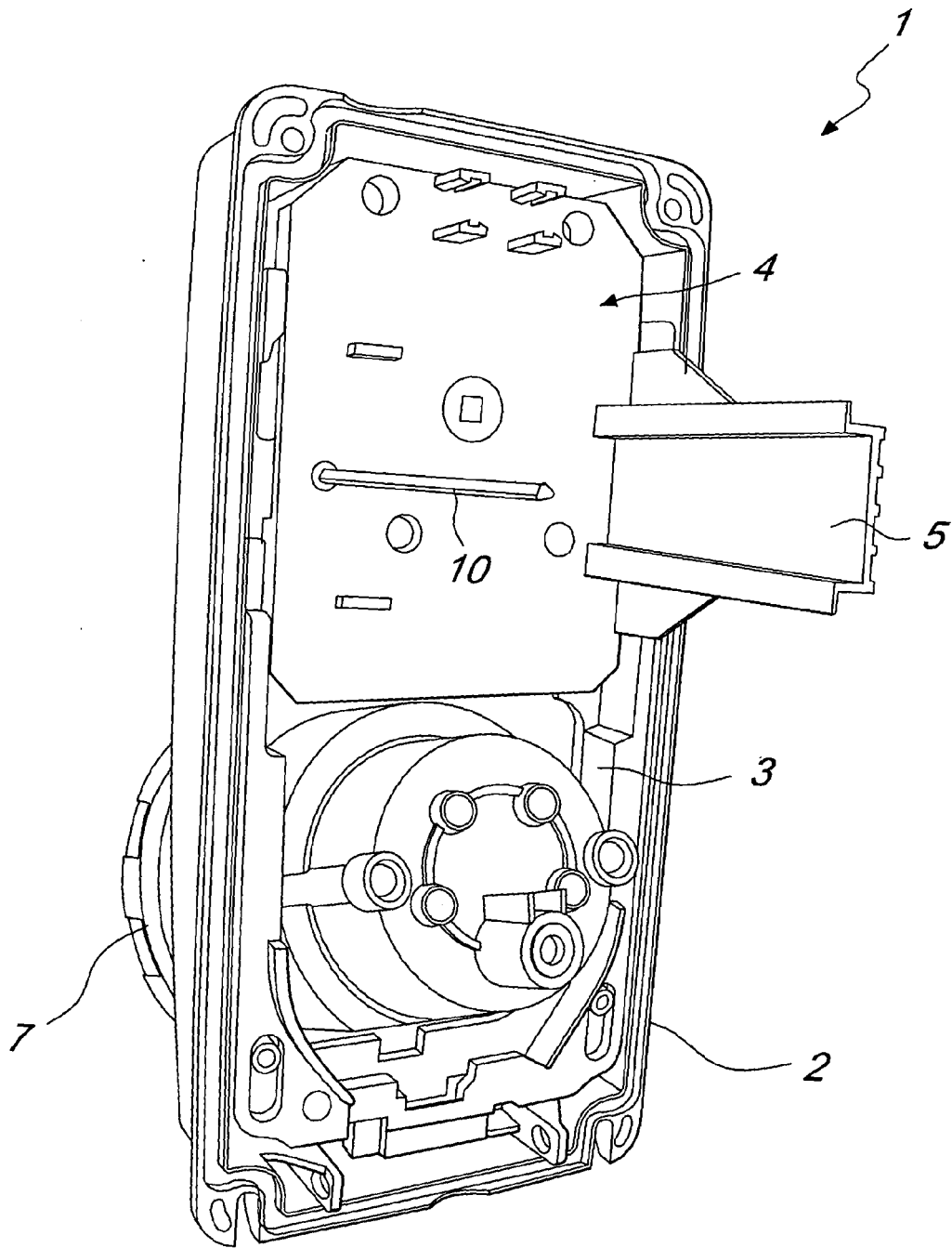


*Fig. 4*

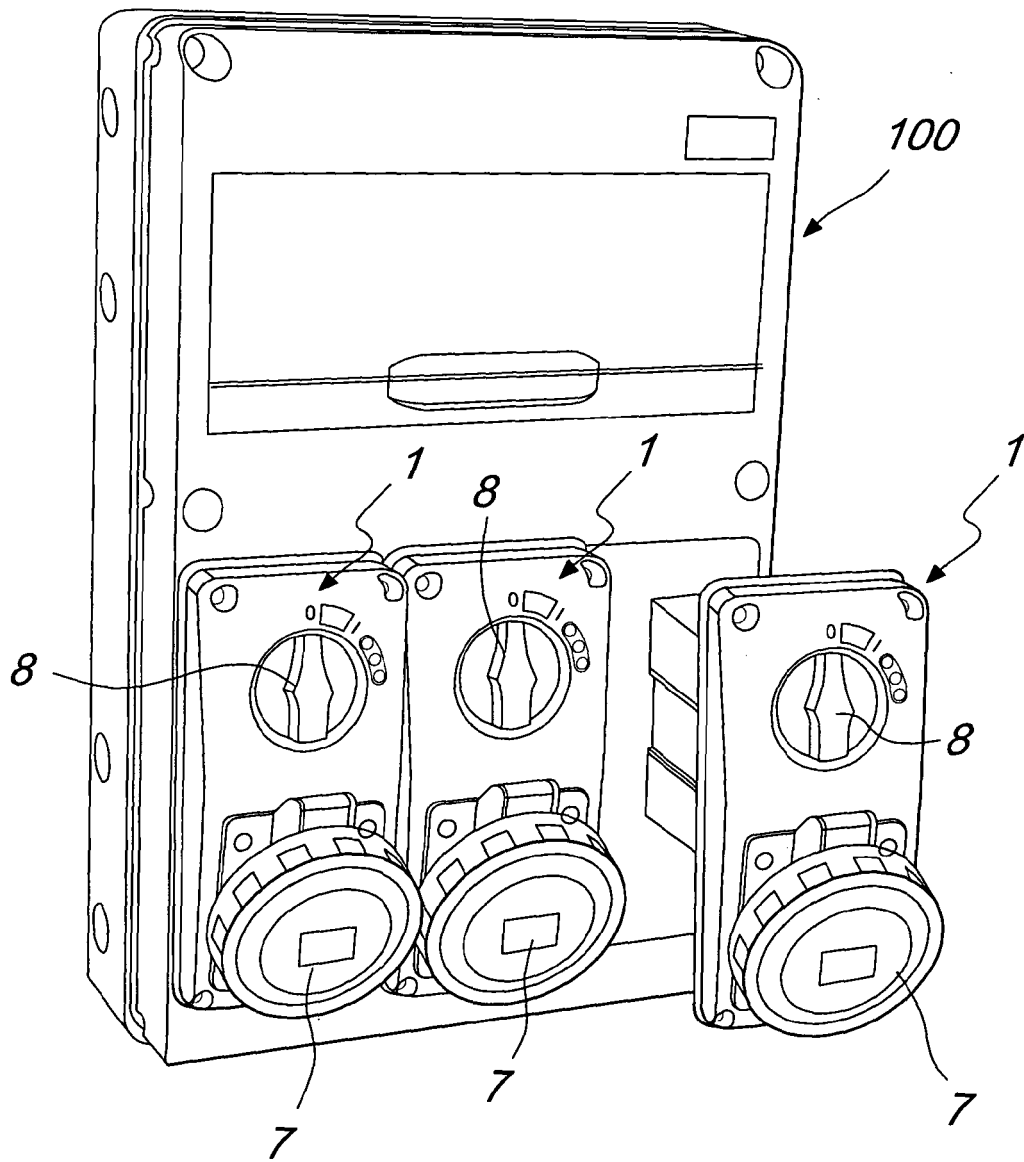


*Fig. 5*



## EUROPEAN SEARCH REPORT

Application Number  
EP 10 01 4017

| DOCUMENTS CONSIDERED TO BE RELEVANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                             |                                                    |                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|----------------------------------------------------|-----------------------------------------|
| Category                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Citation of document with indication, where appropriate, of relevant passages                               | Relevant to claim                                  | CLASSIFICATION OF THE APPLICATION (IPC) |
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| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | US 2002/092743 A1 (WHIPPLE)<br>18 July 2002 (2002-07-18)<br>* paragraphs [0020], [0022] *                   | 1                                                  |                                         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                             |                                                    | TECHNICAL FIELDS SEARCHED (IPC)         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                             |                                                    | H01R<br>H02B                            |
| The present search report has been drawn up for all claims                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                             |                                                    |                                         |
| Place of search<br>Munich                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                             | Date of completion of the search<br>4 January 2011 | Examiner<br>Garcia Congosto, M          |
| <p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone<br/>Y : particularly relevant if combined with another document of the same category<br/>A : technological background<br/>O : non-written disclosure<br/>P : intermediate document</p> <p>T : theory or principle underlying the invention<br/>E : earlier patent document, but published on, or after the filing date<br/>D : document cited in the application<br/>L : document cited for other reasons<br/>&amp; : member of the same patent family, corresponding document</p> |                                                                                                             |                                                    |                                         |

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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
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EP 10 01 4017

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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04-01-2011

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