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(71) Applicant: **Schneider Electric España, S.A.**
08019 Barcelona (ES)

(72) Inventor: **Barrio Goñi, Juan Pedro**
31172 Eguillor De Ollo (ES)

(74) Representative: **Cabinet Plasseraud**
52, rue de la Victoire
75440 Paris Cedex 09 (FR)

(54) Connection system for connecting electrical elements

(57) The present invention relates to a connection system for connecting electrical elements to establish an electrical connection between consecutive independent electrical elements (1), there being arranged in the electrical elements (1) connectors (3) provided with sockets (4) for the connection of power supply cords and an additional socket (5) for the connection of a bridge piece (6) for electrical communication between the independent electrical elements (1).

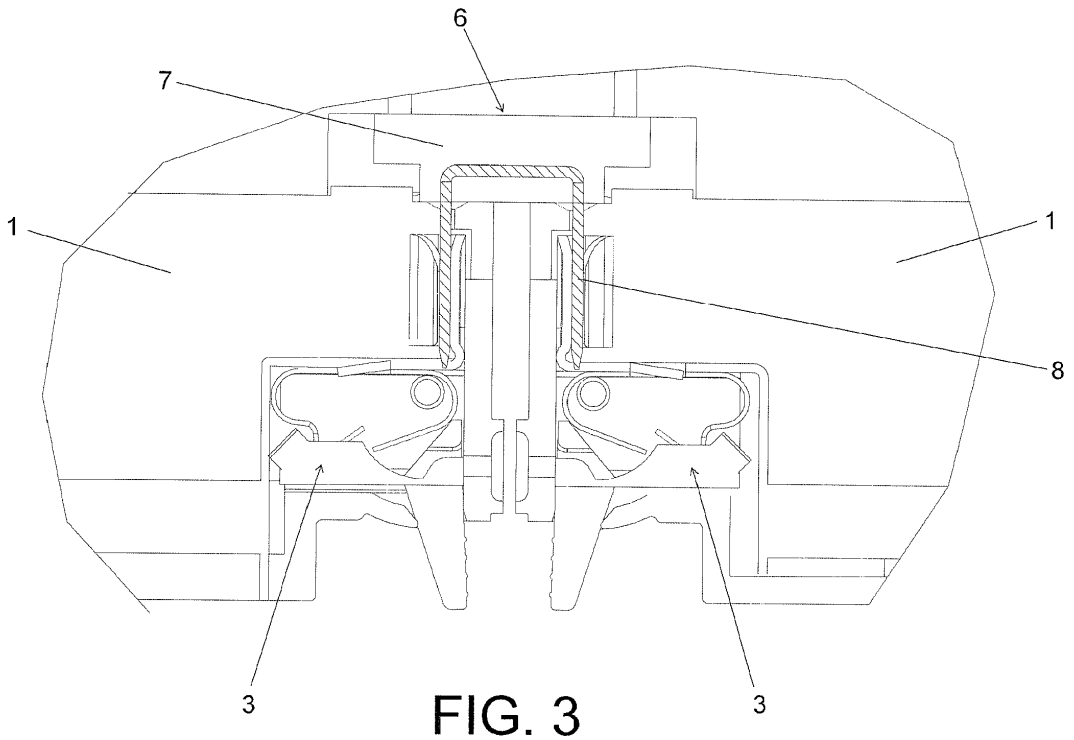


FIG. 3

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Description

Field of the Art

[0001] The present invention relates to the assembly for installing functional elements in electrical installations, proposing a connection system facilitating the electrical connection of elements arranged in series to form associated units of said elements in the corresponding installation, allowing said installation to be performed quickly and safely.

State of the Art

[0002] The functional elements of electrical installations such as sockets, switches, etc., incorporate connectors for the connection of power supply cords, for such purpose there being screw connectors which allow establishing connections through tightening, assuring good electrical contact thereof, but requiring the use of tools to perform said tightening; and there are also connectors with pressure elements that do not require screws, whereby connections can be made more quickly since it is not necessary to use tools.

[0003] With said conventional connectors, regardless of whether or not they are screw connectors, when a series of consecutive electrical elements must be installed to form multiple sockets by means of two or more simple sockets electrically associated with one another, for example, the solution usually adopted is to establish, by means of sections of cord, a bridge for electrical connection between independent electrical elements, the sections of cord being attached to the respective connectors of the electrical elements to be associated.

[0004] There are also solutions for the connection between independent electrical elements by means of connecting bridge pieces provided with connecting pins attached to the connectors of the electrical elements, the need to prepare and manipulate sections of cords being prevented with said pieces, allowing a simpler and quicker assembly for installing the electrical elements that must be connected to one another.

[0005] However, to establish connection between the electrical elements, regardless of whether this is done with sections of cords or with bridge pieces prepared for that purpose, the connections are established by the connection sockets for connecting electric cords in the connectors of the electrical elements, so complicated manipulations are required and if the connection between the electrical elements is through their opposing ends, in order to disconnect an intermediate electrical element from a unit of electrical elements arranged in series, it is necessary to move at least one part of the rest of the electrical elements of the unit arranged in series, with the complexity and time that it entails.

Object of the Invention

[0006] The invention proposes a connection system that allows establishing electrical connection between independent electrical elements to form associated units of said elements, regardless of the connection sockets for connecting power supply cords to the unit when assembling the corresponding installation.

[0007] This connection system object of the invention is based on providing the electrical elements with connectors for electrical connection provided with sockets for power supply cords and a specific additional socket to establish connection of a bridge piece for electrical connection between independent electrical elements.

[0008] An arrangement which allows establishing electrical connection between independent electrical elements in a simple manner is thus obtained without said electrical connection between the independent electrical elements affecting the connection of the power supply cords, since both connections are made independently in relation to the connection sockets defined in the same connectors, but with a different configuration for each of the connections.

[0009] This connection system therefore allows the assembly for installing the electrical elements according to the arrangement of the unit to be configured therewith and establishing the connection of the power supply to the unit, for establishing the electrical connection between the independent electrical elements once they are arranged in their installation by means of incorporating corresponding connecting bridge pieces between consecutive electrical elements, each connecting bridge piece being able to be inserted and removed without having to manipulate or move the connected electrical elements, which in turn allows removing and incorporating any intermediate electrical element to/from a unit of electrical elements arranged in series without having to move the other associated electrical elements in the unit, thus facilitating the necessary replacement and/or repair operations.

[0010] Based on the foregoing, the proposed connection system has very advantageous features for the assembly of independent electrical elements in units of electrical elements associated with one another, this connection system acquiring its own identity and preferred character with respect to the known solutions used for connecting independent electrical elements associated with a common power supply in electrical communication.

Description of the Drawings

[0011]

Figure 1 shows an exploded perspective view of a connection system for connecting electrical elements according to the invention.

Figure 2 is a side view of the unit of the preceding

figure assembled.

Figure 3 is a cross-section view of an enlarged detail of area III indicated in Figure 2.

Figure 4 is a cross-section view of an enlarged detail of area IV indicated in the same Figure 2.

Figure 5 is a perspective view of an example of screwless connector provided with independent sockets for power supply cords and for a bridge piece for electrical connection according to the invention.

Figure 6 is a sectioned side view of said connector of the preceding figure.

Figure 7 is a perspective view of an example of a screw connector provided with independent sockets for power supply cords and for a bridge piece for electrical connection according to the invention.

Figure 8 is a side view of said connector of the preceding figure.

Detailed Description of the Invention

[0012] The invention relates to a connection system for connecting independent electrical elements (1) to form a series of said independent electrical elements (1) electrically associated with one another, with a common power supply for the entire unit by means of a single connection of power supply cords (2) with respect to an electrical element (1) of the unit.

[0013] The connection system according to the invention is based on providing the electrical elements (1) with connectors (3) provided with one or more sockets (4) for the connection of power supply cords (2) and with an additional independent socket (5) for the connection of a bridge piece (6) for electrical connection between independent electrical elements (1).

[0014] Therefore, in order to form an electrically associated unit of electrical elements arranged in series with two or more independent electrical elements (1), such that the entire unit is electrically powered with a single connection of power supply cords (2), the assembly for installing the different electrical elements (1) can be performed in the relative positioning placement between them and the connection of the power supply cords (2) can be established with respect to any of the electrical elements (1); and regardless of said assembly and said power supply connection, the electrical communication between the consecutive electrical elements (1) can be established by means of respective bridge pieces (6).

[0015] To that end, the connectors (3) are configured such that the additional socket (5) thereof is in a perpendicular or inclined position, oriented to the front or to the side in the electrical elements (1) of application, according to the assembly arrangement of said electrical elements in the installation thereof; the bridge pieces (6) being formed by a body (7) made of insulating material and metal parts (8) embedded in said body (7), the pins thereof emerging outwardly. In a non-limiting manner, the metal parts (8) can be U-shaped, for example, and their end branches can emerge outwardly.

[0016] Therefore, the connection for electrical communication between consecutive electrical elements (1) can be done simply and quickly by means of simple insertion of the corresponding bridge piece (6) such that the emerging parts of the branches of the metal parts (8) thereof fit into the additional sockets (5) of the respective connectors (3) of the consecutive electrical elements (1) to be connected to one another.

[0017] The insertion of the bridge piece (6) for connecting two electrical elements (1) therefore does not require manipulating or moving the electrical elements (1) whatsoever when they are arranged in their assembly for installation; the bridge piece (6) also being able to be removed from the installation insertion without manipulating or moving the electrical elements (1) whatsoever, which also facilitates the compulsory maintenance operations, as it allows disassembling any of the electrical elements (1) from the unit of electrical elements arranged in series for replacement or repair without having to move the other electrical elements (1) of the unit of electrical elements arranged in series.

[0018] This connection system object of the invention applies to any type of connectors (3), both to pressure connectors by means of a strap (9) or other equivalent screwless means for the connection of the power supply cords (2), such as the example of Figures 5 and 6, and clamping screw connectors (10) for said connection of the power supply cords (2), as in the example of Figures 7 and 8; each connector (3) having in each case means (11) for connecting with the mechanism of the electrical element (1) of application, said means (11) being able to be a pin, for example, to establish electrical mechanism connection thereon.

[0019] The sockets (4) for the connection of power supply cords (2) can in turn be configured in any orientation position in the connectors (3), so that in the electrical elements (1) of application said sockets (4) are orientated at the end thereof, on the front part or on one side, both in a position perpendicular to those parts of the electrical elements (1) and in inclined positions, to facilitate the insertion of the power supply cords (2) in a comfortable manner in each case of application.

Claims

1. A connection system for connecting electrical elements to establish a connection for electrical communication between independent electrical elements (1) in units of electrical elements arranged in series, **characterized in that** the electrical elements (1) are provided with connectors (3) having one or more sockets (4) for the connection of power supply cords (2) and an additional independent socket (5) for the connection of a bridge piece (6) for electrical communication between consecutive independent electrical elements (1).

2. The connection system for connecting electrical elements according to claim 1, **characterized in that** each bridge piece (6) comprises a body (7) made of insulating material in which metal parts (8) are embedded, pins thereof emerging outwardly.

3. The connection system for connecting electrical elements according to claim 1, **characterized in that** the additional socket (5) in the connectors (3) is linked with the electrical elements (1) of application in a perpendicular or inclined position, oriented to the front or to the side according to the assembly position of said electrical elements (1) in the installation thereof.

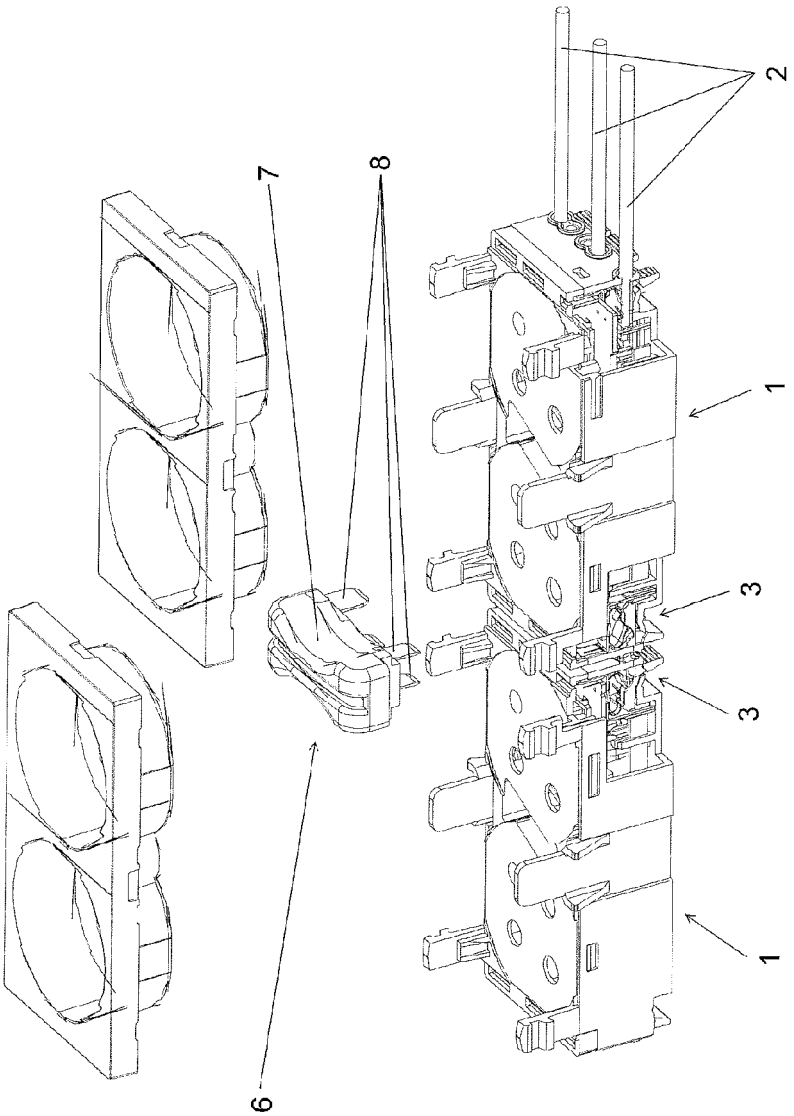


FIG. 1

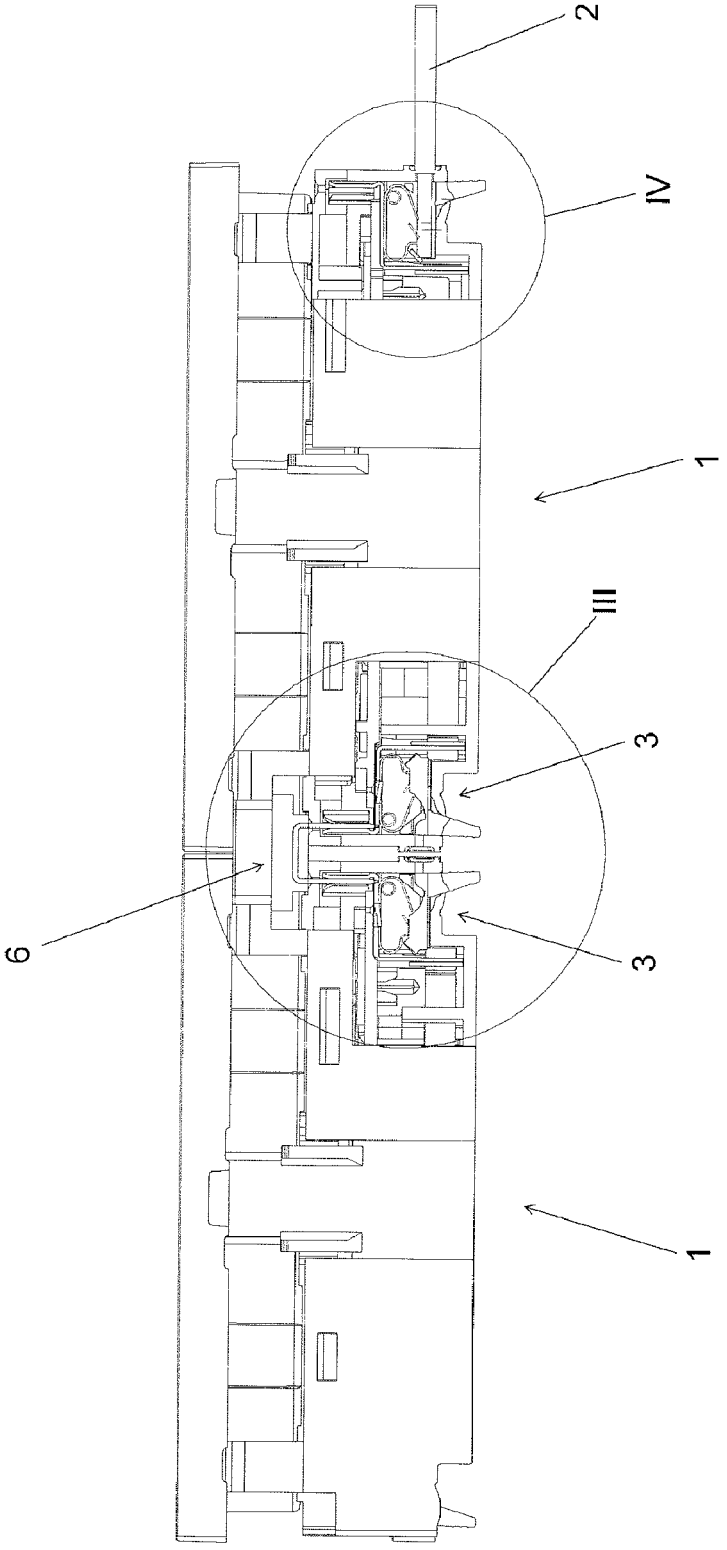


FIG. 2

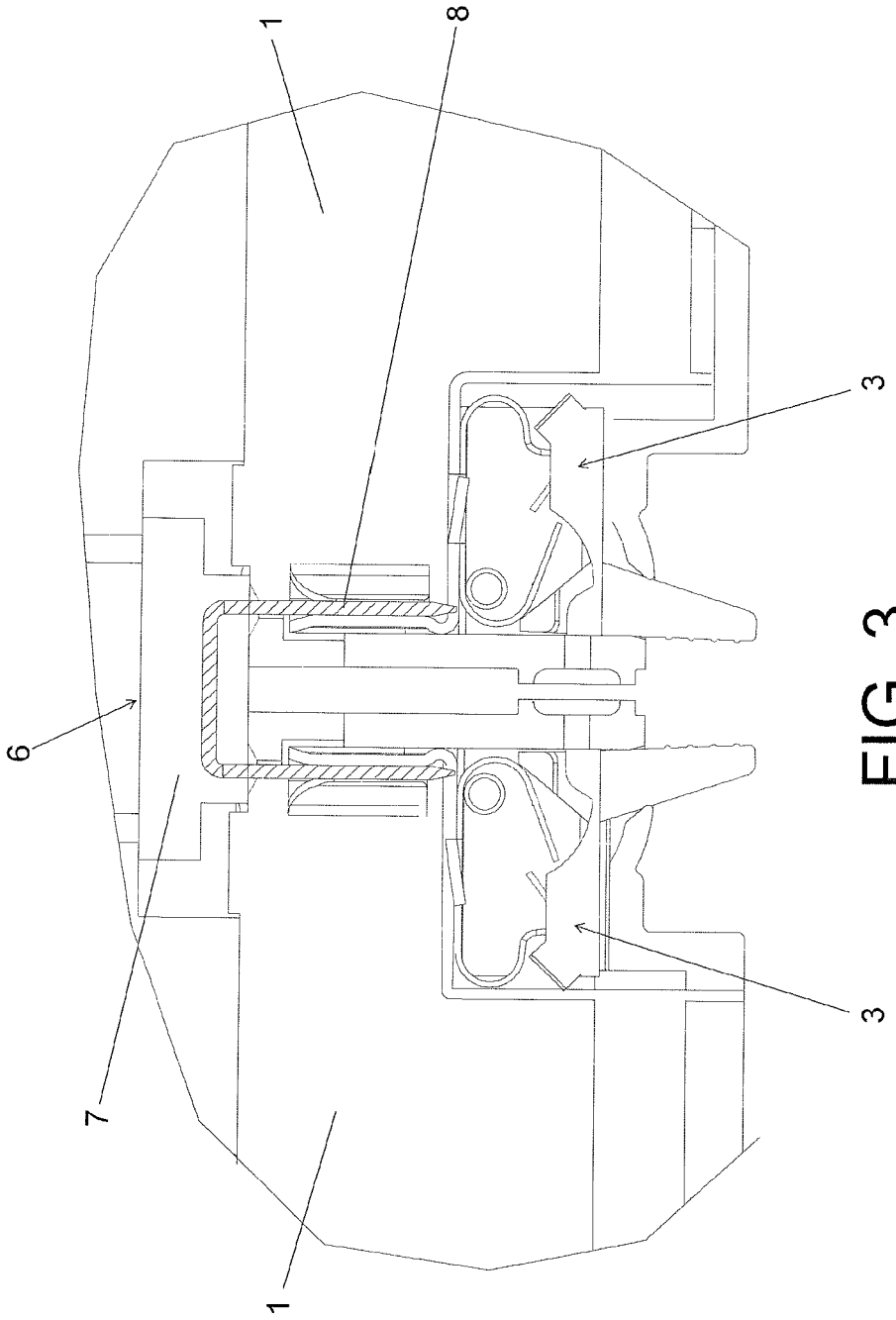


FIG. 3

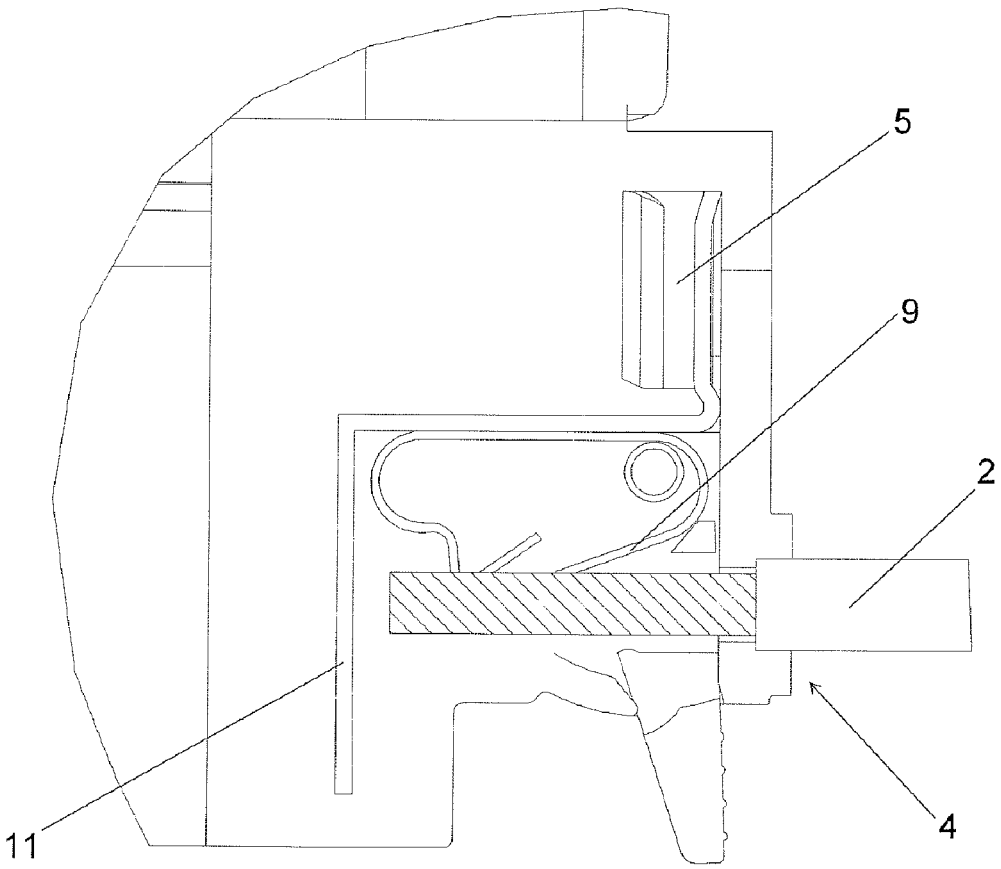


FIG. 4

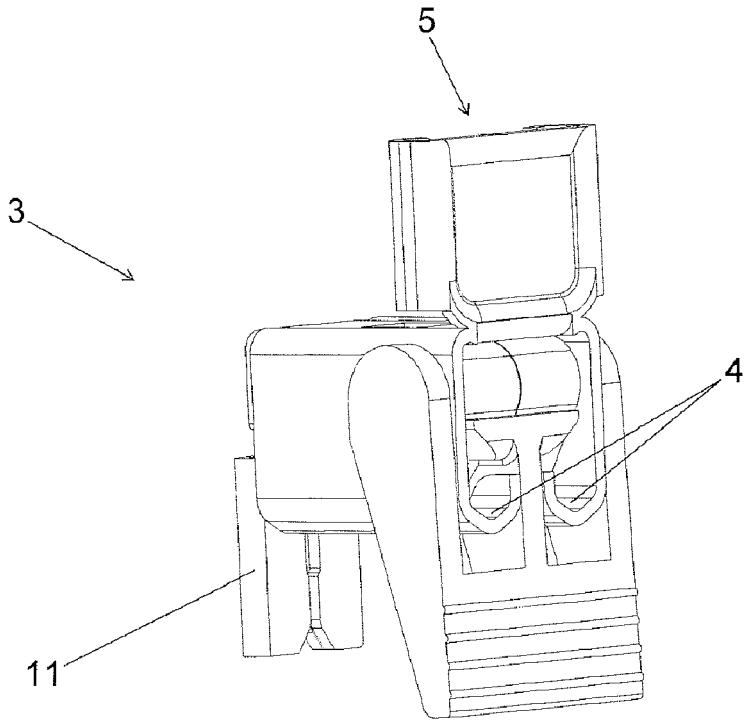


FIG. 5

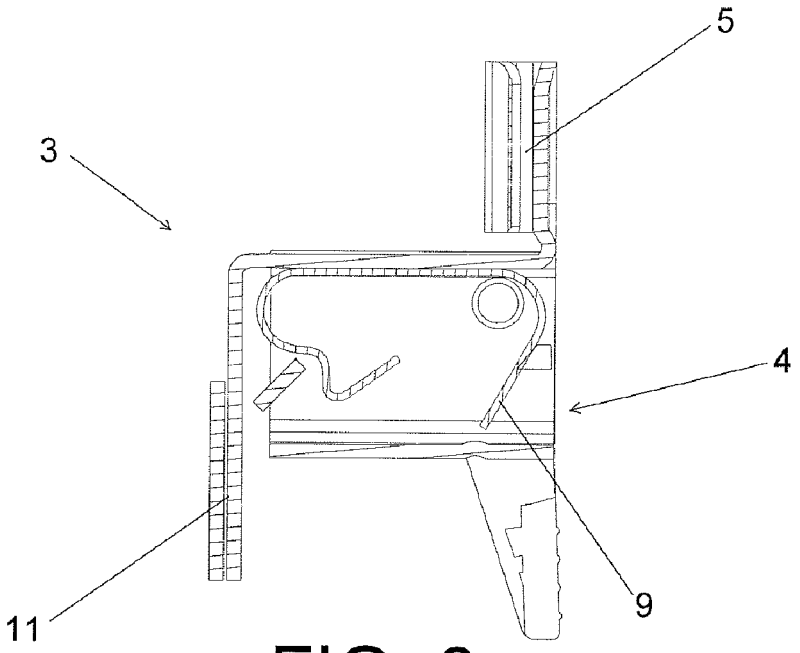


FIG. 6

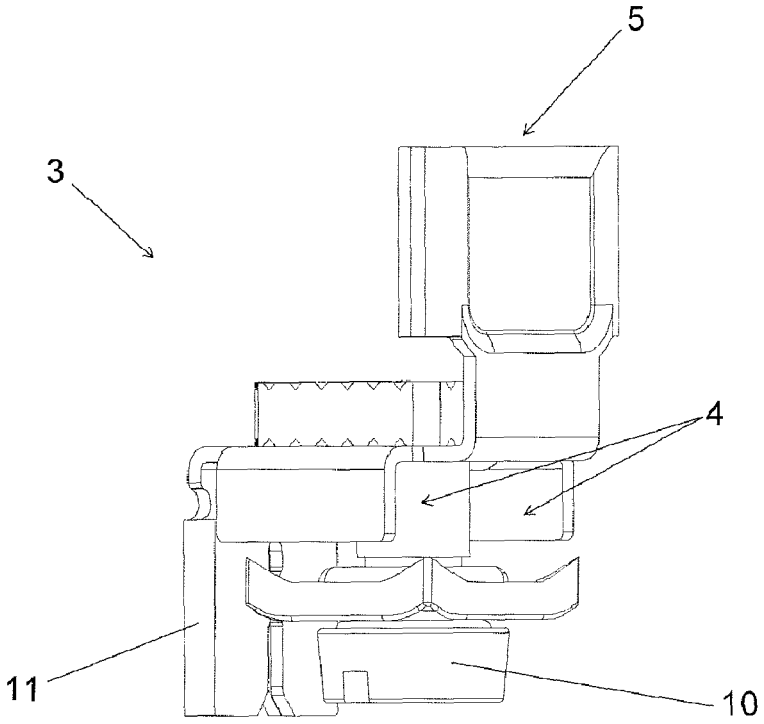


FIG. 7

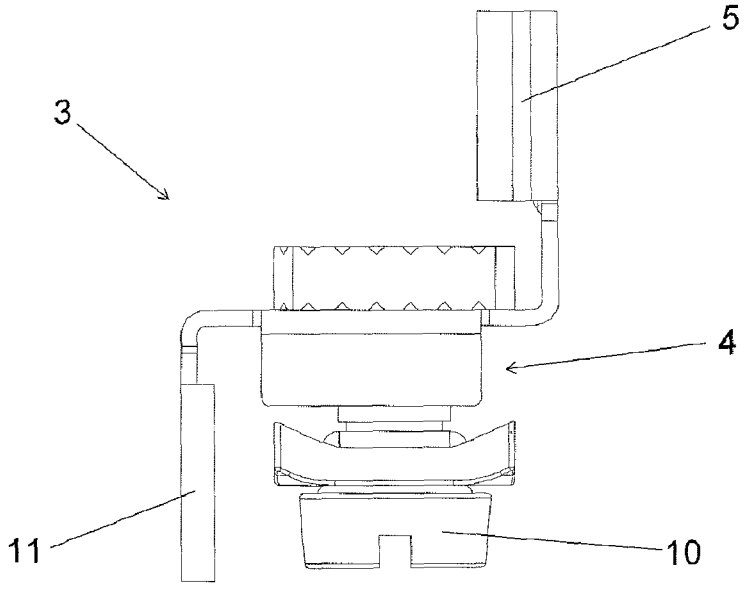


FIG. 8

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EUROPEAN SEARCH REPORT

Application Number
EP 14 17 8421

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	FR 2 928 041 A1 (REHAU SA SA [FR]; EUR OHM [FR] REHAU SA [FR]; EUR OHM [FR]) 28 August 2009 (2009-08-28) * page 6, line 25 - page 11, line 37; figures 1-11 *	1-3	INV. H01R9/26 H01R24/76 H01R25/00 H01R31/08
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X	EP 1 389 816 A1 (ENSTO BUSCH JAEGER OY [FI] ABB OY [FI]) 18 February 2004 (2004-02-18) * paragraph [0006] - paragraph [0015]; claims 1-4; figures 1-4 *	1-3	
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	16 December 2014	Oliveira Braga K., A

CATEGORY OF CITED DOCUMENTS

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