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

(11) **EP 3 790 125 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
10.03.2021 Bulletin 2021/10

(21) Application number: **20194433.7**

(22) Date of filing: **03.09.2020**

(51) Int Cl.:
H01R 13/703 *(2006.01)* *H01R 13/03* *(2006.01)*
H01R 13/648 *(2006.01)* *F42B 3/04* *(2006.01)*

(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
Designated Validation States:
KH MA MD TN

(30) Priority: **05.09.2019 FR 1909791**

(71) Applicant: **Aptiv Technologies Limited**
14004 St. Michael (BB)

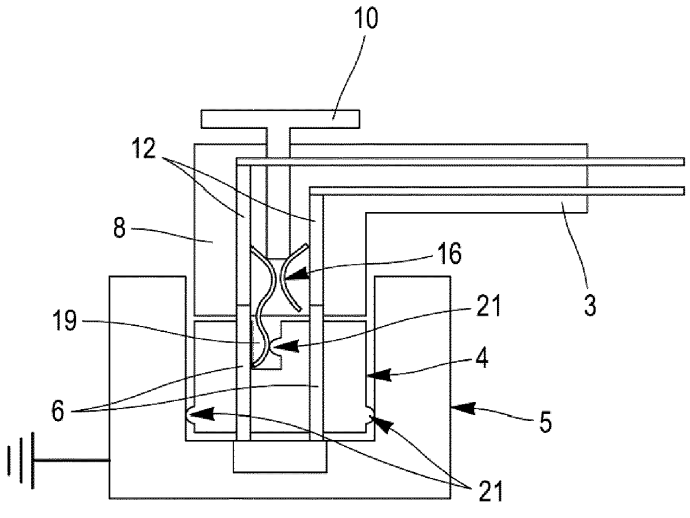
(72) Inventors:
- **BARLERIN, Stéphane**
  72470 FATINES (FR)
- **LEHMANN, René**
  90766 FÛRTH (DE)
- **BOURI, Youssef**
  78180 MONTIGNY LE BRETONNEUX (FR)

(74) Representative: **INNOV-GROUP**
310, avenue Berthelot
69372 Lyon Cedex 08 (FR)

(54) PASSIVE SAFETY-DEVICE CONNECTION ASSEMBLY PROTECTED AGAINST ELECTRICAL DISCHARGES, SOCKET, AIRBAG CONNECTOR AND METHOD FOR MOUNTING A CONNECTION ASSEMBLY

(57) Squib connection assembly for a motor-vehicle safety device. This connection assembly comprises a squib connector and an airbag connector (3). The squib connector comprises a socket (4) intended, on the one hand, to be housed in the squib body (5) and, on the other hand, to be coupled to the airbag connector (3). The socket (4) is passed through by male contacts (6) that are electrically connected to the squib. The airbag connector (3) comprises a casing (8) in which are housed female contacts (12) and at least one other contact (16). At least one of the elements of the list comprising the socket (4) and the casing (8) of the airbag connector (3) comprises an electrically dissipative material in electrical continuity, on the one hand, with one of the contacts (12, 16) of the airbag connector (3) and, on the other hand, with the squib body (5).

[Fig. 12]



EP 3 790 125 A1

Description

Technical field

[0001] The invention relates to the field of automotive connector systems and more particularly to the field of connector systems for passive motor-vehicle safety devices such as airbags, seat-belt pretensioners, etc., such devices also being referred to as safety restraint systems (SRS).

Prior art

[0002] In this field, passive safety devices may comprise gas-generating squibs the ignition of which is electronic. In this case, the squib comprises a squib connector, itself coupled to a connector called the airbag connector. Throughout this document, a connector that is connected, via electrical wires, to a control device for triggering a squib is referred to generically as an "airbag connector", irrespectively of whether the squib is a squib intended to inflate an airbag, pretension a seat belt, or otherwise.

[0003] When a shock exceeds a set deceleration or acceleration threshold, the squib is triggered by the control device, which is programmed to send a signal to the squib to which it is connected, via electrical wires and an airbag connector. The explosion that results therefrom engenders a sudden combustion that induces a high gas pressure in a piston (pretensioner) or an inflatable bag (airbag).

[0004] It is important to ensure that squibs do not trigger unless as a result of a suitable command. In order to avoid untimely triggering, it has already been proposed to filter, for example with ferrites, electrical signals transmitted by the electrical wires connected to a squib and that are not generated by the control device, but by electromagnetic interference. Specifically, electromagnetic interference is generated in frequency ranges that are generally satisfactorily filtered by ferrites placed in an airbag connector connected to the electrical wires and coupled to the connector of the squib.

[0005] The reader may for example refer to document EP1009070A2 for a description of a connector of this type.

[0006] However, a squib could also trigger under the effect of an electrostatic discharge, notably at the moment at which the airbag connector is coupled to the connector of the squib. In order to prevent this, it has been proposed to equip airbag connectors with a device that short-circuits the contacts of the airbag connector provided that the latter is not coupled to the connector of the squib and that opens during the coupling of these connectors. The reader may for example refer to document EP3116075A1 for a description of a connector of this type. Another contribution to the improvement of protection against potential electrostatic discharges of connection assemblies for passive safety devices such as mentioned above is proposed below.

Summary of the invention

[0007] More particularly, a connection assembly for a passive motor-vehicle safety device is provided, said assembly comprising a squib connector and a counter-connector (therefore an airbag connector) coupled to the squib connector. The squib connector is housed in an electrically conductive metal squib body connected to the ground of the vehicle. It comprises a socket mounted in the squib body, and two squib-connector contacts electrically connected to the squib and each respectively coupled to one contact of the counter-connector. Furthermore, in this connection assembly, the socket is passed through by the two contacts of the squib connector, and the counter-connector comprises a casing in which are housed at least two contacts of the counter-connector. In addition, at least one of the elements of the list comprising the socket and the casing of the counter-connector comprises an electrically dissipative material, in electrical continuity, on the one hand, with one of the contacts of the counter-connector and, on the other hand, with the squib body.

[0008] Thus, by virtue of the dissipative material, any electric charge generated, for example, by an electrostatic effect in the wires connecting the control device to the airbag connector may be transmitted to the squib body, which itself is connected to ground. It is therefore evacuated without accumulating and without running the risk of the squib triggering during a discharge. This connection assembly also optionally comprises one or more of the following features, each of which may be implemented independently or in combination with one or more others:

- the electrically dissipative material is a polymer (for example an elastomer) having a surface resistivity comprised between 10^7 and 10^{11} ohms;
- the counter-connector comprises at least one short-circuit contact, actuatable between a closed position, in which two contacts of the counter-connector are short-circuited, and an open position, in which these two contacts of the counter-connector are not short-circuited; furthermore, in open position, the short-circuit contact makes contact with the electrically dissipative material, when the squib connector and the counter-connector are coupled;
- the counter-connector comprises a device for assuring the position of the connectors, which is actuatable between a first position, in which the short-circuit contact is in closed position, and a second position, in which the short-circuit contact is in open position;
- the socket comprises a finger placed between two segments of the short-circuit contact, when the squib connector and the counter-connector are coupled;
- the short-circuit contact makes contact with the finger, when the squib connector and the counter-con-

nector are coupled;

- the socket comprises a cavity in which an end of the short-circuit contact is housed when the squib connector and the counter-connector are coupled, this cavity having a surface with which the short-circuit contact makes contact;
- a metal element is inserted between the socket and the short-circuit contact to improve the electrical continuity between the short-circuit contact and the squib body, when the squib connector and the counter-connector are coupled;
- the socket comprises at least one protuberance formed from the electrically dissipative material and making contact with the squib body;
- a metal element is inserted between the socket and the squib body to improve the electrical continuity between the socket and the squib body, when the squib connector and the counter-connector are coupled;
- the socket is at least partially coated with a layer of metal material, this layer of metal material making contact with the squib body in order to improve the electrical continuity between the socket and the squib body;
- the socket is at least partially coated with a layer of metal material, this layer of metal material making contact with the short-circuit contact, when the squib connector and the counter-connector are coupled, in order to improve the electrical continuity between the short-circuit contact and the socket;
- the socket comprises a segment of electrically dissipative material making contact with one of the contacts of the squib connector;
- the connection assembly comprises a first and a second contact electrically connected to electrical wires, and a third contact in electrical continuity with the squib body and the casing of the counter-connector comprises an electrically dissipative material in electrical continuity with, on the one hand, at least one of the first and second contacts and, on the other hand, the third contact;
- the third contact is in electrical continuity with the squib body, via a metal clip housed in the socket and making contact with the squib body.

[0009] According to another aspect, a socket for a connection assembly such as mentioned above is proposed. This socket then comprises a body comprising an electrically dissipative material, extending between at least a first surface intended to be in electrical continuity with the squib body of a squib, and a second surface intended to be in electrical continuity with at least one contact of the counter-connector.

[0010] According to another aspect, an airbag connector comprising a casing in which are housed at least three contacts is proposed. Two of these three contacts are each respectively connected to one electrical wire. The third contact is not connected in the airbag connector to an electrical wire. In this connector the casing comprises an electrically dissipative material, in electrical continuity with, on the one hand, at least one of the contacts, which is connected to one electrical wire, and, on the other hand, with the contact not connected to an electrical wire.

[0011] According to yet another aspect, a method for mounting a connection assembly for a motor-vehicle safety device is proposed, wherein

- a squib comprising a squib body connected to the ground of the vehicle and equipped with a squib connector is provided, this squib connector comprising a socket; and
- a counter-connector comprising a casing in which at least two contacts of the counter-connector are housed is provided.

[0012] In this method, at least one of the elements comprising the body of the socket and the casing of the counter-connector comprises an electrically dissipative material, and the squib connector and the counter-connector are coupled by placing the electrically dissipative material in electrical continuity, on the one hand, with one of the contacts of the counter-connector and, on the other hand, with the squib body.

Brief description of the figures

[0013] Other features, aims and advantages of the aforementioned connection assembly will become more clearly apparent on reading the following detailed description with reference to the appended drawings, which are given by way of nonlimiting example, and in which:

[Fig. 1] schematically shows in perspective an example of an embodiment of a set of connectors;
[Fig. 2] schematically shows in perspective a pair of contacts of the airbag connector of the set of connectors illustrated in Figure 1;
[Fig. 3] is a schematic representation of the set of connectors illustrated in Figure 1, with a section passing through the contacts of the airbag connector and of the squib connector, the airbag and squib connectors not being coupled;
[Fig. 4] is a schematic representation of the set of connectors illustrated in Figure 3, with a section passing through the short-circuit contacts of the airbag connector, the airbag and squib connectors not being coupled;
[Fig. 5] is a representation similar to that of Figure 3, the airbag and squib connectors being in pre-coupling position;
[Fig. 6] is a representation similar to that of Figure 4, the airbag and squib connectors being in pre-coupling position;
[Fig. 7] is a representation similar to that of Figures 4 and 6, the airbag and squib connectors being in coupled position;

[Fig. 8] is a representation similar to that of Figure 8, of a variant of the set of connectors illustrated in Figures 1 to 7;

[Fig. 9] is a representation similar to that of Figure 5, of another embodiment of a set of connectors;

[Fig. 10] is a representation similar to that of Figure 6, of the embodiment of the set of connectors illustrated in Figure 9;

[Fig. 11] is a representation similar to that of Figure 7, of the embodiment of the set of connectors illustrated in Figures 9 and 10;

[Fig. 12] is a schematic section of yet another embodiment of the set of connectors;

[Fig. 13] is a schematic section of yet another embodiment of the set of connectors;

[Fig. 14] is a schematic section of yet another embodiment of the set of connectors;

[Fig. 15] is a schematic section of another embodiment of a squib connector;

[Fig. 16] is a schematic section of yet another embodiment of the set of connectors; and

[Fig. 17] schematically shows in perspective and partially cut away the set of connectors of Figure 16.

Detailed description

[0014] An example of an embodiment of a set 1 of connectors for a passive motor-vehicle safety device is described below.

[0015] According to this embodiment, the set 1 of connectors comprises a squib connector 2 and an airbag connector 3 forming a counter-connector.

[0016] The squib connector 2 comprises a socket 4 housed in a cavity of a metal squib body 5, and two squib-connector contacts 6 (not shown in Figure 1). These two contacts 6 are male contacts each comprising a pin housed in a cavity 7 provided in the socket 4. The socket 4 is made of an electrically dissipative material. For example, this material is a polymer having a surface resistivity comprised between 10^7 and 10^{11} ohms (of course, the surface resistivity may be chosen depending on the area of contact between the electrically dissipative material and a contact of the airbag connector and/or the squib body 5). The socket 4 makes mechanical and electrical contact with the squib body 5. In contrast, in this embodiment, each of the male contacts 6 is electrically insulated from the socket 4. The airbag connector 3 comprises a casing 8, a cover 9, a device 10 for assuring the position of the connectors (i.e. a CPA device, CPA being the acronym of connector position assurance), a ferrite block 11, and two female contacts 12 that are each respectively suitable for coupling with one male contact 6 of the squib connector 2. The female contacts 12 are each electrically connected to a control circuit, via electrical wires 13. As shown in Figure 2, the contacts 12 of the airbag connector 3 each comprise a contact segment 12 for making an electrical contact with a pin of the squib connector 2, a crimping segment 15 for making an electrical connection with the control circuit and a short-circuit contact 16. The crimping segments 15 of each of the contacts 12 are each respectively inserted into a passage provided in one ferrite block 11. The short-circuit contact 16 of each contact 12 extends, in a direction essentially parallel to the contact segment 14, between the contact segment 14 and the crimping segment 15. The short-circuit contact 16 of each contact 12 is formed from an elastic strip, the respective elastic strips of each of the contacts 12 drawing closer to one another in order to make contact with one another.

[0017] As shown in Figure 3, before the coupling of the squib connector 2 and airbag connector 3, the device 10 for assuring the position of the connectors is in high position, i.e. a position raised with respect to the upper face of the cover 9. As shown in Figure 4, in high position, the device 10 for assuring the position of the connectors does not interact with the short-circuit contacts 16. Thus, the short-circuit contacts 16 are elastically in electrical contact with each other and make a short-circuit between the contacts 12 of the airbag connector 3.

[0018] As shown in Figures 5 and 6, the squib connector 2 and airbag connector 3 are in a pre-coupling position in which the respective contacts 6, 12 of the squib connector 2 and of the airbag connector 3 make electrical contact. However, on the one hand, the squib connector 2 and airbag connector 3 are not completely coupled and, on the other hand, the short-circuit contacts 16 still short-circuit the contacts 12 of the airbag connector 3 (see Figure 6), but also the contacts 6 of the squib connector 2 since they are now in electrical continuity with those of the airbag connector 3, which themselves are short-circuited. Moreover, in this position, the device 10 for assuring the position of the connectors is still blocked in high position and still does not interact with the short-circuit contacts 16. Thus, any electrical charge disperses without creating a potential difference between the contacts 6 of the squib connector.

[0019] As shown in Figure 7, once the squib connector 2 and airbag connector 3 have been coupled, the movement of the device 10 for assuring the position of the connectors is unblocked. The device 10 for assuring the position of the connectors may therefore be lowered to level with the upper face of the cover 9. During this movement, a finger 17 of the device 10 for assuring the position of the connectors becomes inserted between the respective strips of the short-circuit contacts 16. These strips are thus separated from each other, this on the one hand opening the short-circuit between the contacts 6, 12 of the airbag connector 3 and squib connector 2 and on the other hand pushing the free ends 18 of the short-circuit contacts 16 against an internal surface of a cavity 19 provided in the electrically dissipative material from which the socket 4 is made.

[0020] Therefore, even though the contacts 6, 12 are no longer short-circuited, any electric charge may be evacuated through the socket 4, to the squib body 5 and to the ground of the vehicle, without creating a significant

potential difference between the contacts 6 of the squib and ground.

[0021] According to one embodiment, which is shown in Figures 1 to 7, the connection assembly remains identical to a prior-art connection assembly, with the exception that the material from which the socket 4 is made is an electrically dissipative material instead of being an electrically insulating material. This has the advantage of making it possible to continue to manufacture and use all the parts of the prior-art connection assembly, except the socket 4, and to avoid the need to manufacture new ones.

[0022] Optionally, to optimize the interaction between the socket 4 and short-circuit contacts 16, the socket 4, and more particularly its finger 17 for example, is extended toward and/or into the airbag connector.

[0023] Figure 8 shows one variant of the embodiment of the connection assembly shown in Figure 7. According to this variant, the strips of the short-circuit contacts 16 have been lengthened and the cavities 19 in the electrically dissipative material are deeper in order to improve the quality of the mechanical and electrical contact between the short-circuit contacts 16 and the electrically dissipative material of the socket 4.

[0024] Another embodiment of a connection assembly 1 is shown in Figure 9. This embodiment differs from the preceding one essentially in that it does not comprise a device 10 for assuring the position of the connectors. Features that are identical or similar to those of the connection assembly 1 of the preceding embodiment will not be described again.

[0025] Figures 9 and 10 show configurations similar to those shown in Figures 3 and 4, respectively. In contrast, as shown in Figure 11, when the squib connector 2 and airbag connector 3 are coupled, it is a finger 20 of the socket 4 that opens the short-circuit instead of the finger 17 of the device 10 for assuring the position of the connectors. Furthermore, the strips of the short-circuit contacts 16 rest on this finger 20, via which they make electrical and mechanical contact with the electrically dissipative material of the socket 4. Thus, as above, any electrical charge may be evacuated through the socket 4, to the squib body 5 and to the ground of the vehicle, without creating a significant potential difference between the contacts 6 of the squib and ground.

[0026] Figures 12 to 14 show variants of the embodiments described above. A device 10 for assuring the position of the connectors is shown in these figures, but the features described below may also be employed in connection assemblies 1 not comprising a device 10 for assuring the position of the connectors.

[0027] In the variant of Figure 12, protuberances 21 are provided on the socket 4, at the points of contact between, on the one hand, the short-circuit contacts 16 and, on the other hand, the squib body 5. As the electrically dissipative material is advantageously a polymer, or even an elastomer, these protuberances 21 form points of elastic pressure that improve the electrical continuity between the electrically dissipative material and, on the one hand, the short-circuit contacts 16 and, on the other hand, the squib body 5.

[0028] In the variant in Figure 13, an electrically conductive metal element 22 is inserted between the electrically dissipative material of the socket 4 and the squib body 5. This metal element 22 allows the area between the electrically dissipative material and a material that electrically is a good conductor to be increased. In addition, this metal element 22 comprises elastic segments 23 that are placed in contact with the squib body 5. This also allows the electrical continuity between the electrically dissipative material and the squib body 5 to be improved. This metal element 22 may or may not be combined with protuberances 21 such as described with reference to Figure 12.

[0029] In the variant in Figure 14, an electrically conductive metal element 24 is inserted, in the cavity 19 of the socket 4, between the electrically dissipative material and each (or at least one) of the short-circuit contacts 16. As for the variant described above, this metal element 14 allows the area between the electrically dissipative material and a conductive material to be increased. This therefore also allows the electrical continuity between the short-circuit contacts 16 and the squib body 5, via the electrically dissipative material, to be improved. This metal element 24 may or may not be combined with protuberances 21 such as described with reference to Figure 12 and/or a metal element 22 such as described with reference to Figure 13.

[0030] Figure 15 shows a socket 4 compatible with a third embodiment of a connection assembly. According to this third embodiment, one of the pins of the contacts 6 of the squib connector 2 is placed in mechanical and electrical contact with the electrically dissipative material from which the socket 4 is made. The electrically dissipative material is itself in electrical continuity with the squib body 5, which is itself grounded. Therefore, if a potential difference were to arise between the squib contacts 6 and ground, the deficiency or excess of electrical charge on these contacts could be neutralized via the connection to ground.

[0031] Another embodiment of a connector assembly is shown in Figures 16 and 17. In this embodiment the airbag connector 3 comprises a casing 8 made of an electrically dissipative material and a third contact 25. This third contact 25 is not electrically connected on the side of the airbag connector 3 to an electrical wire. In contrast, it makes contact with the electrically dissipative material of the casing 8 that itself makes contact with at least one of the two other contacts 12 (in the illustrated example the electrically dissipative material of the casing 8 makes contact with both other contacts 12). Moreover, the third contact 25 comprises a segment than penetrates into the socket 4 and makes an electrical contact with a metal clip 26 that is integrated into the socket 4. This metal clip 26 is electrically connected to the squib body 5 by elastic tabs 27, and the squib body 5 is itself con-

nected to ground.

[0032] Yet other variants of the embodiments described above are proposed. For example, the electrically dissipative material from which the socket 4 or casing 8 is made is at least partially coated with a layer of electrically conductive metal material. This electrically conductive coating is formed on the socket 4 or casing 8 for example using MID (moulded interconnect device) technology. This electrically conductive coating is placed at least on those regions of the socket or of the casing that are intended to make electrical contact with the squib body 5 and/or a contact 12, 16.

[0033] To mount a connection assembly 1 according to one of the embodiments described above or the variants thereof,

- a squib comprising a squib body 5 equipped with a squib connector 2, this squib connector 2 comprising a socket 4, is provided; and
- an airbag connector 3 comprising a casing 8 in which at least two contacts 12 of the counter-connector are housed is provided.

[0034] Next, the squib connector 2 and the airbag connector 3 are coupled by placing the electrically dissipative material from which the socket 4 or casing 8 is made in electrical continuity on the one hand with one of the contacts of the airbag connector 3 and on the other hand with the squib body 5.

Claims

1. Connection assembly for a passive motor-vehicle safety device, said assembly comprising a squib connector (2) housed in an electrically conductive metal squib body (5) connected to the ground of the vehicle and a counter-connector (3) coupled to the squib connector (2), wherein:

   - the squib connector (2) comprises a socket (4) mounted in the squib body (5), and at least two squib-connector contacts (6) electrically connected to the squib and each respectively coupled to one contact (12) of the counter-connector (3),
   - the socket (4) is passed through by the two contacts (12) of the squib connector (2), and
   - the counter-connector (3) comprises a casing (8) in which are housed at least two contacts (12) of the counter-connector (3),

   characterized in that at least one of the elements of the list comprising the socket (4) and the casing (8) of the counter-connector (3) comprises an electrically dissipative material, in electrical continuity, on the one hand, with one of the contacts (12, 16, 25) of the counter-connector and, on the other hand, with the squib body (5).

2. Connection assembly according to Claim 1, wherein the electrically dissipative material is a polymer having a surface resistivity comprised between 10^7 and 10^{11} ohms.

3. Connection assembly according to one of the preceding claims, wherein

   - the counter-connector (3) comprises at least one short-circuit contact (16, 25), actuatable between a closed position, in which two contacts (12) of the counter-connector (3) are short-circuited, and an open position, in which these two contacts (12) of the counter-connector (3) are not short-circuited, and wherein
   - in open position, the short-circuit contact (16, 25) makes contact with the electrically dissipative material, when the squib connector (2) and the counter-connector (3) are coupled.

4. Connection assembly according to Claim 3, wherein the counter-connector (3) comprises a device (10) for assuring the position of the connectors, which is actuatable between a first position, in which the short-circuit contact (16) is in closed position, and a second position, in which the short-circuit contact (16) is in open position.

5. Connection assembly according to one of Claims 3 and 4, wherein the socket (4) comprises a finger (20) placed between two segments of the short-circuit contact (16), when the squib connector (2) and the counter-connector (3) are coupled.

6. Connection assembly according to Claim 5, wherein the short-circuit contact (16) makes contact with the finger (20), when the squib connector (2) and the counter-connector (3) are coupled.

7. Connection assembly according to one of Claims 3 to 6, wherein the socket (4) comprises a cavity (19) in which an end of the short-circuit contact (16) is housed when the squib connector (2) and the counter-connector (3) are coupled, this cavity (19) having a surface with which the short-circuit contact (16) makes contact.

8. Connection assembly according to one of Claims 3 to 7, wherein a metal element (24) is inserted between the socket (4) and the short-circuit contact (16), to improve the electrical continuity between the short-circuit contact (16) and the squib body (5), when the squib connector (2) and the counter-connector (3) are coupled.

9. Connection assembly according to one of the pre-

ceding claims, wherein the socket (4) comprises at least one protuberance (21) formed from the electrically dissipative material and making contact with the squib body (5).

10. Connection assembly according to one of the preceding claims, wherein a metal element (25) is inserted between the socket (4) and the squib body (5), to improve the electrical continuity between the socket (16) and the squib body (5).

11. Connection assembly according to one of the preceding claims, wherein the socket (4) is at least partially coated with a layer of metal material, this layer of metal material making contact with the squib body (5) in order to improve the electrical continuity between the socket (8) and the squib body (5).

12. Connection assembly according to one of Claims 3 to 11, wherein the socket (4) is at least partially coated with a layer of metal material, this layer of metal material making contact with the short-circuit contact (16), when the squib connector and the counter-connector are coupled, in order to improve the electrical continuity between the short-circuit contact (16) and the socket (4).

13. Connection assembly according to one of the preceding claims, wherein the socket (4) comprises a segment of electrically dissipative material making contact with one of the contacts (6) of the squib connector (2).

14. Connection assembly according to one of Claims 1 and 2, comprising a first and a second contact (12) suitable for being electrically connected to electrical wires (13), and a third contact (25) in electrical continuity with the squib body (5) and wherein the casing (8) of the counter-connector (3) comprises an electrically dissipative material in electrical continuity with, on the one hand, at least one of the first and second contacts (12) and, on the other hand, the third contact (25).

15. Connection assembly according to Claim 14, wherein the third contact (25) is in electrical continuity with the squib body (5), via a metal clip housed in the socket (4) and making contact with the squib body (5).

16. Socket for a connection assembly according to one of the preceding claims, said socket comprising a body comprising an electrically dissipative material, extending between at least a first surface intended to be in electrical continuity with the body (5) of a squib, and a second surface intended to be in electrical continuity with at least one contact (16) of the counter-connector (3).

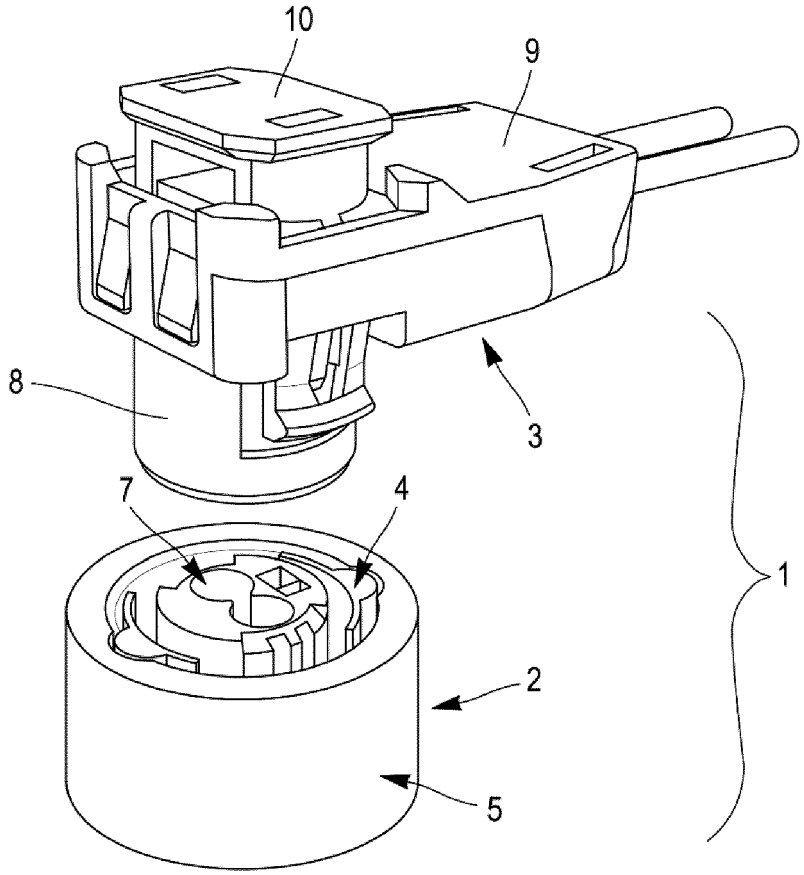
17. Airbag connector comprising a casing (8) in which are housed at least three contacts (12, 25), two of which are suitable for being each respectively connected to one electrical wire, **characterized in that** the casing (8) comprises an electrically dissipative material, in electrical continuity with, on the one hand, at least one of the contacts (12), which is suitable for being connected to one electrical wire, and, on the other hand, with the third contact, the latter not being intended to be connected to an electrical wire.

18. Method for mounting a connection assembly for a motor-vehicle safety device, wherein

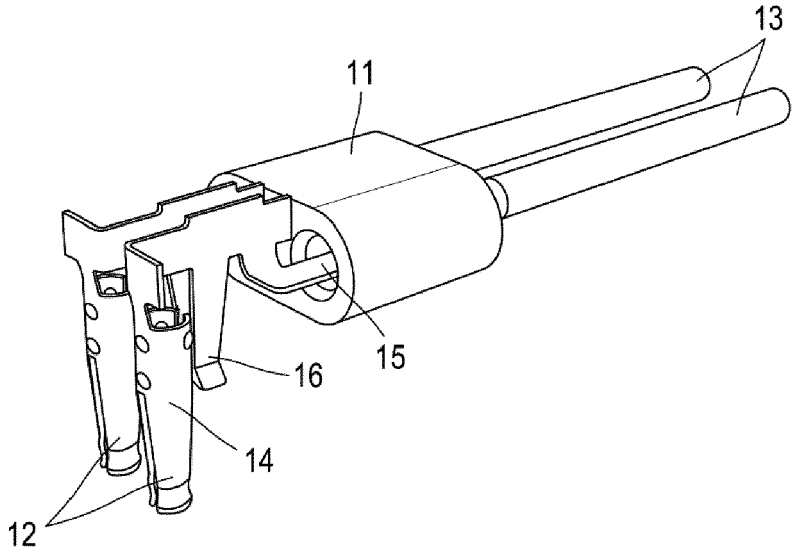
- a squib comprising a squib body (5) equipped with a squib connector (2) is provided, this squib connector (2) comprising a socket (4);
- a counter-connector (3) comprising a casing (8) in which at least two contacts (12, 16, 26) of the counter-connector (3) are housed is provided,

characterized in that at least one of the elements comprising the body of the socket (4) and the casing (8) of the counter-connector (3) comprises an electrically dissipative material, and **in that** the squib connector (2) and the counter-connector (3) are coupled by placing the electrically dissipative material in electrical continuity, on the one hand, with one of the contacts (12, 16, 25) of the counter-connector (3) and, on the other hand, with the squib body (5).

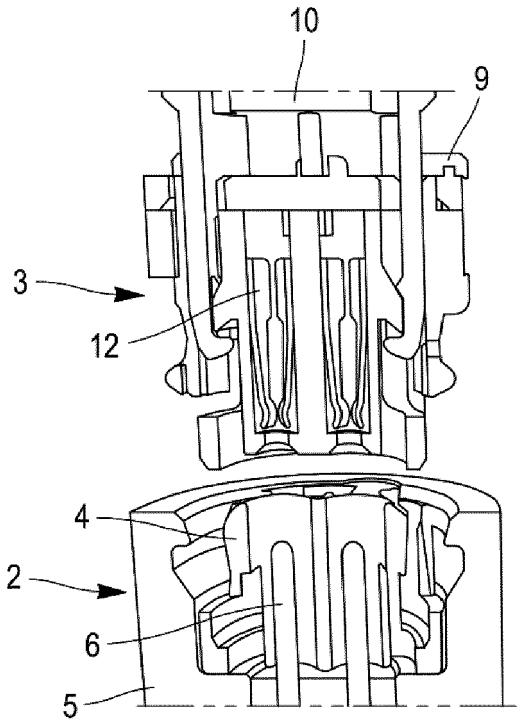
[Fig. 1]



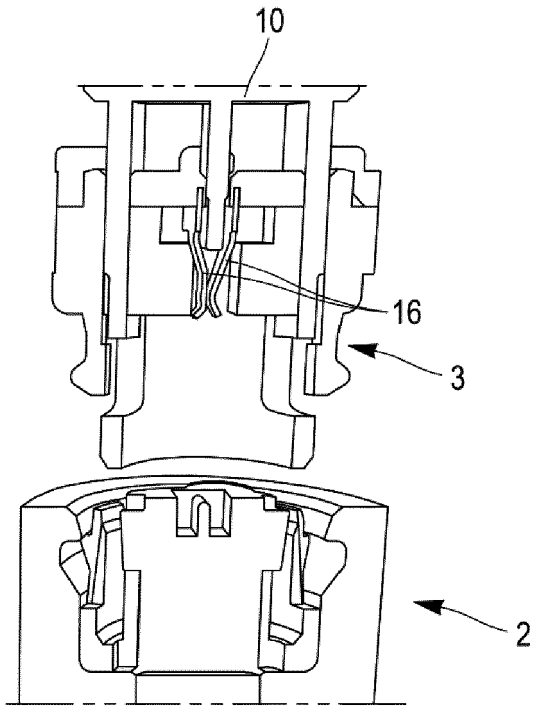
[Fig. 2]



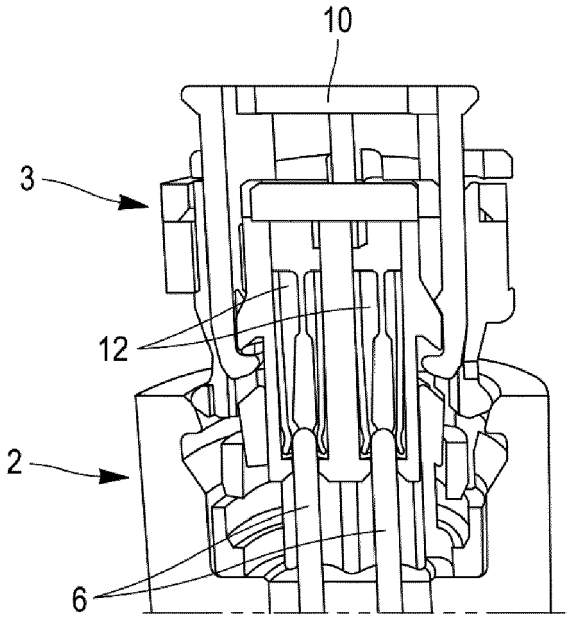
[Fig. 3]



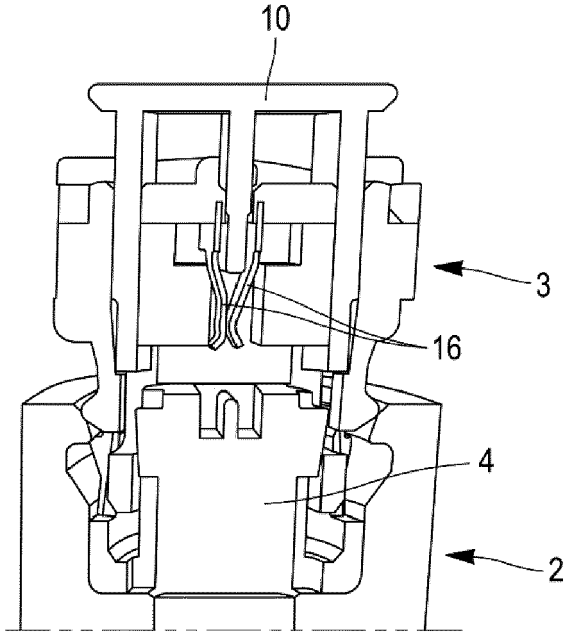
[Fig. 4]



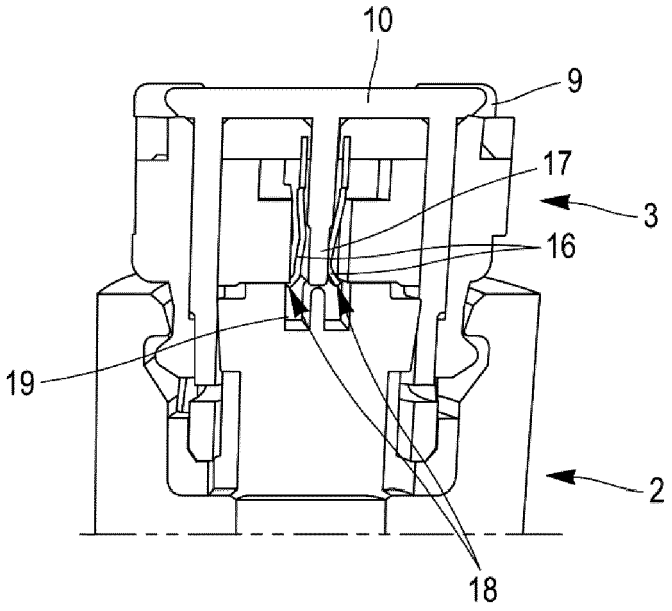
[Fig. 5]



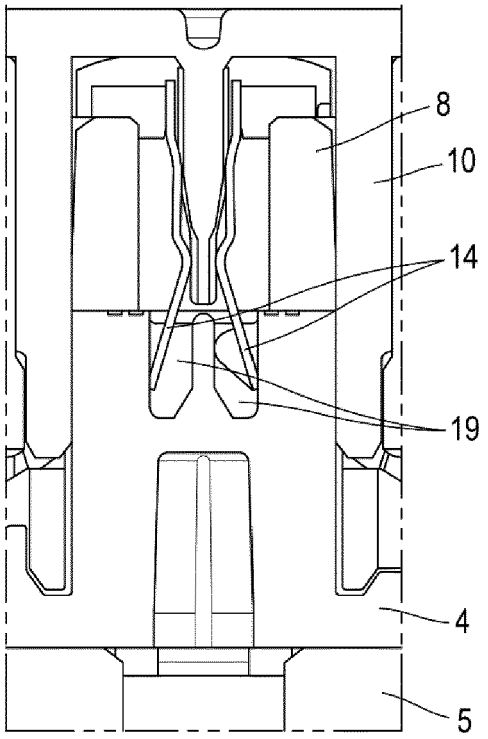
[Fig. 6]



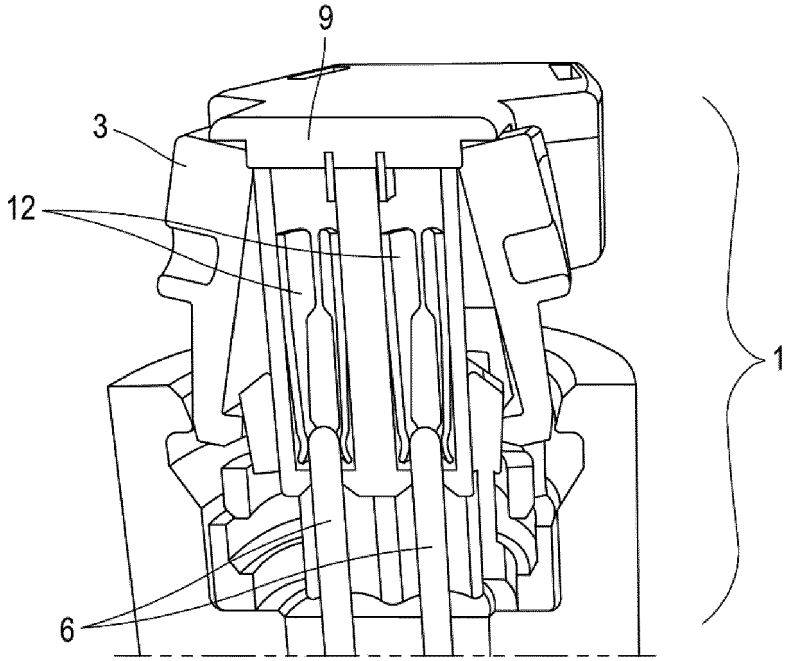
[Fig. 7]



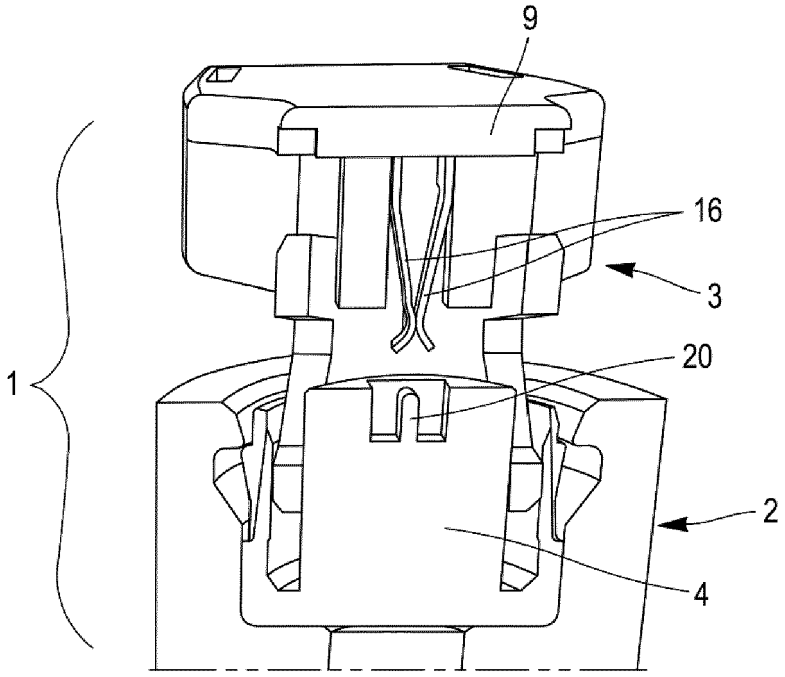
[Fig. 8]



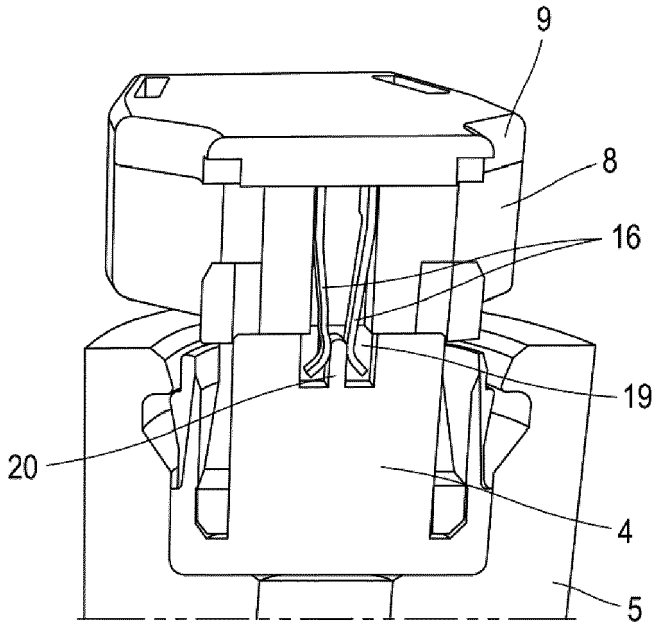
[Fig. 9]



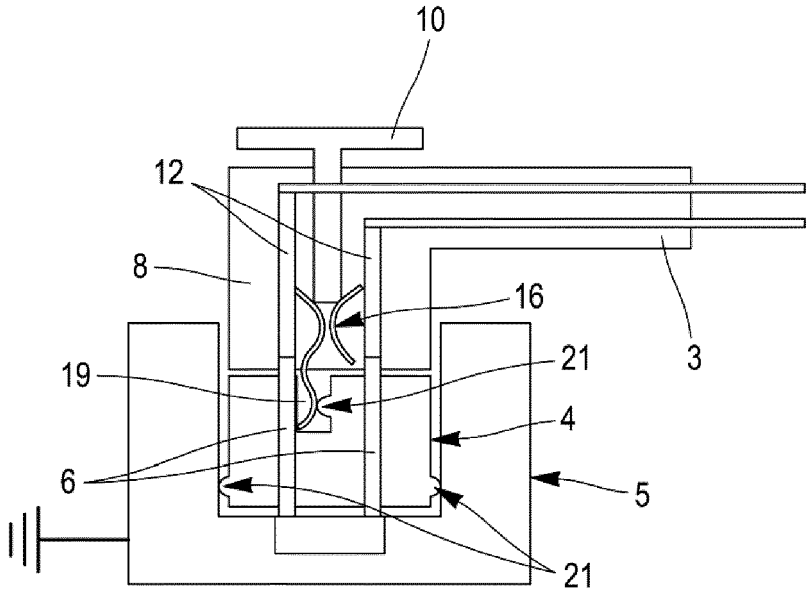
[Fig. 10]



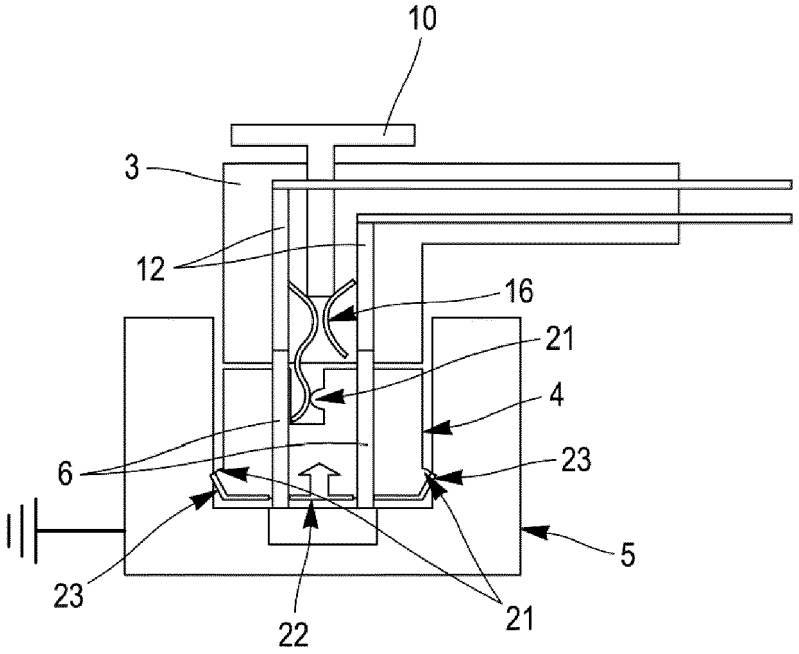
[Fig. 11]



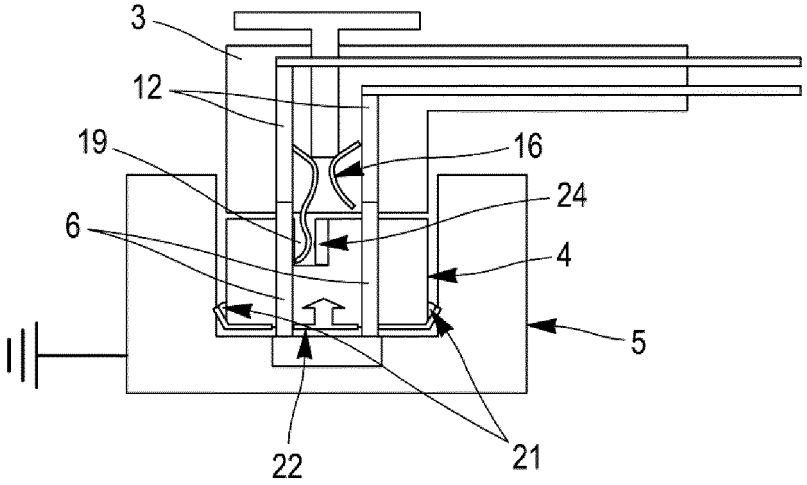
[Fig. 12]



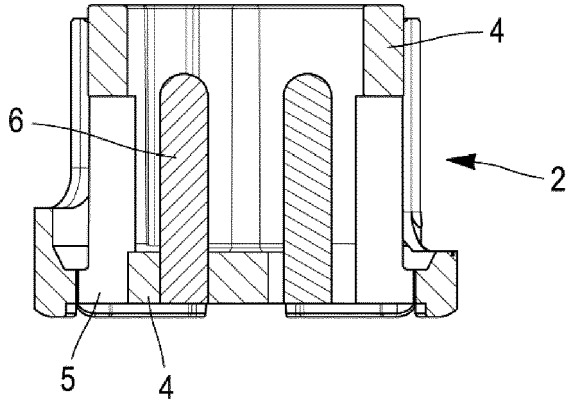
[Fig. 13]



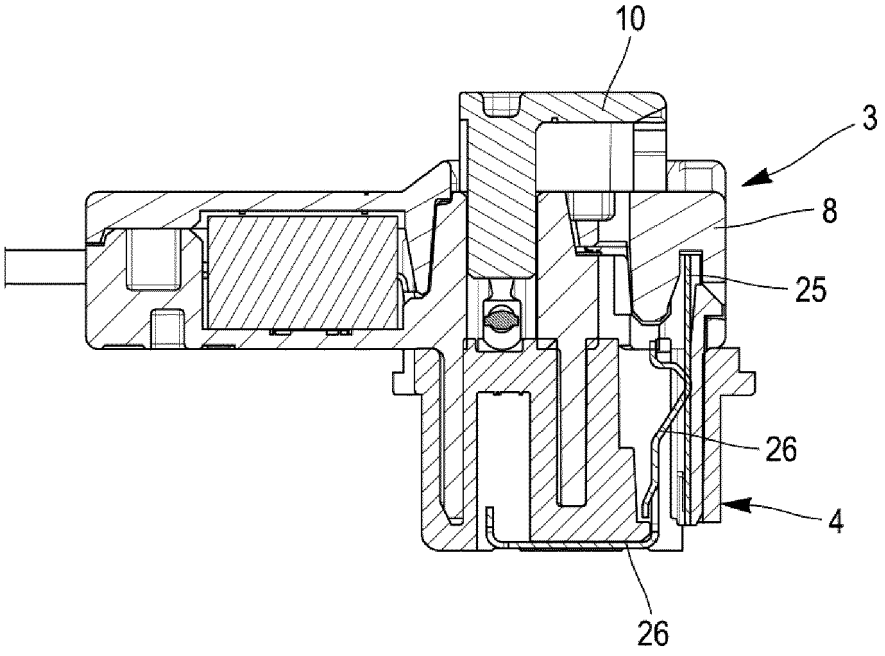
[Fig. 14]



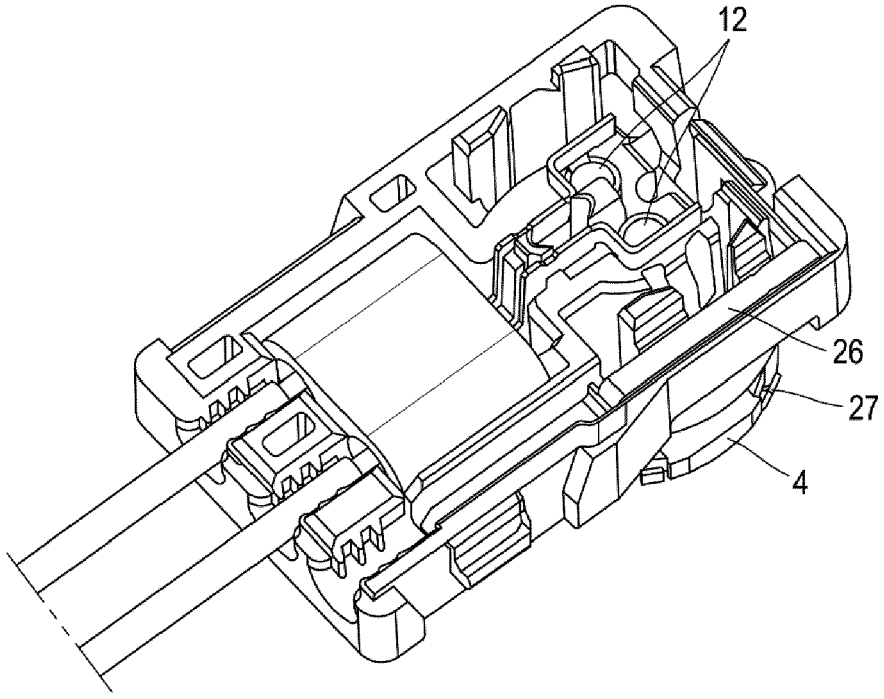
[Fig. 15]



[Fig. 16]



[Fig. 17]



Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 20 19 4433

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 Y	EP 0 745 519 A1 (MORTON INT INC [US]) 4 December 1996 (1996-12-04) * figures 1-2 *	1,9,11, 13,16,18 2,10	INV. H01R13/703 ADD.
Y A	US 2012/256406 A1 (GORDON SCOTT C [US] ET AL) 11 October 2012 (2012-10-11) * paragraph [0034]; claim 15; figures 1,2 *	2 1	H01R13/03 H01R13/648 F42B3/04
Y A	EP 0 802 092 A1 (MORTON INT INC [US]) 22 October 1997 (1997-10-22) * figure 10 *	10 1	
A	US 2013/309884 A1 (PAMART OLIVIER [FR]) 21 November 2013 (2013-11-21) * figure 1 *	17	

TECHNICAL FIELDS SEARCHED (IPC)

H01R
F42D
F42B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	19 January 2021	Esmiol, Marc-Olivier

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 20 19 4433

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.

19-01-2021

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0745519 A1	04-12-1996	EP 0745519 A1	04-12-1996
		JP 3031808 U	03-12-1996
		US 5616881 A	01-04-1997
US 2012256406 A1	11-10-2012	CN 104080660 A	01-10-2014
		EP 2699402 A2	26-02-2014
		JP 6040221 B2	07-12-2016
		JP 2014527147 A	09-10-2014
		US 2012256406 A1	11-10-2012
		US 2014026774 A1	30-01-2014
		WO 2012138580 A2	11-10-2012
EP 0802092 A1	22-10-1997	AR 006642 A1	08-09-1999
		AU 700900 B2	14-01-1999
		BR 9701787 A	10-11-1998
		CA 2201699 A1	15-10-1997
		CN 1168466 A	24-12-1997
		EP 0802092 A1	22-10-1997
		JP 3058511 U	18-06-1999
		JP H1035400 A	10-02-1998
		KR 970069648 A	07-11-1997
		PL 319476 A1	27-10-1997
		US 5932832 A	03-08-1999
		ZA 972948 B	03-11-1997
US 2013309884 A1	21-11-2013	BR 112013019206 A2	11-10-2016
		CN 103444015 A	11-12-2013
		EP 2671292 A1	11-12-2013
		FR 2971095 A1	03-08-2012
		JP 5871955 B2	01-03-2016
		JP 2014504790 A	24-02-2014
		US 2013309884 A1	21-11-2013
		WO 2012104171 A1	09-08-2012

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

- EP 1009070 A2 **[0005]**
- EP 3116075 A1 **[0006]**