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(11) **EP 1 143 566 A2**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
10.10.2001 Bulletin 2001/41

(51) Int Cl.7: **H01R 13/436**

(21) Application number: **01500080.5**

(22) Date of filing: **27.03.2001**

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE TR**
Designated Extension States:
AL LT LV MK RO SI

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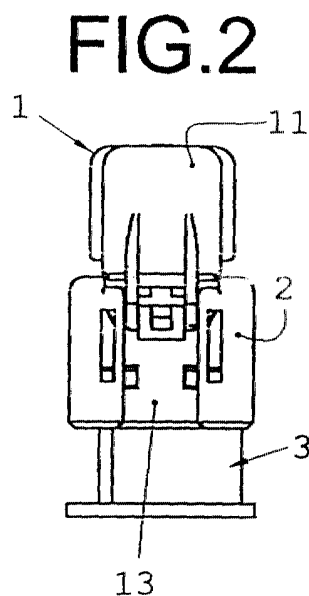
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(30) Priority: **04.04.2000 ES 200000906 U**

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(54) **An electrical connector with a pre-assembly retention system**

(57) An electrical connector with a pre-assembly retention system comprising a sliding element (5) provided with two parallel arms (7) adapted to be introduced by sliding inside the electrical connector (1), each arm (7) of said sliding element (5) being provided with a series of parallel guides (10), inclined downwards, between which pivots slide, which are joined to a counterpart (3) in which said connector (1) couples after said sliding element (5) is operated.



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Description

[0001] An electrical connector with a pre-assembly retention system.

[0002] The present Utility Model application consists, as its title indicates, of "An electrical connector with a pre-assembly retention system", whose new characteristics of construction, shape and design fulfill the object for which it has specifically been planned, with maximum safety and effectiveness.

[0003] The invention refers particularly, but not exclusively, to an electrical connector of the runner or lever type provided with a pre-assembly system which allows the connector to be transported from the factory to the place of assembly with its parts previously mounted so that only minimal action is required on the part of the operator to assemble the connector.

[0004] The connector of the present invention comprises a housing inside which electrical terminals are housed and where a sliding element may move provided with two parallel arms which, when introduced by sliding, push an operating element that joins the outer end of both arms and cause the connector to couple in a counterpart in the connector box of the electrical installation of, for example, a vehicle.

[0005] Each arm of the sliding element includes guides that are parallel to each other and inclined downwards. Between said guides, pivots slide which are joined to the counterpart in which said connector couples after said sliding element is operated. There are connectors of the type described that are provided with an operating element in the form of a lever to make said sliding element move inside the electrical connector.

[0006] In practice, during the cabling of these connectors in electrical installations such as those of cars, it has been found that the cables that reach the connector may pull on the sliding element and cause the connector to uncouple from the counterpart in which the latter is coupled. This means a great loss of time, since the operator has to mount the connector again in said counterpart, with the risk that it may come out of the latter once more.

[0007] The connector of the invention is of the type described above, that is, it consists of a sliding element provided with two parallel arms adapted to be introduced by sliding inside the electrical connector. Each of said two arms is provided with a series of parallel guides, inclined downwards, between which pivots slide that are joined to a counterpart in which said connector couples after said sliding element is actuated.

[0008] The main feature of said connector is that it is provided with a pre-assembly retention system. Said pre-assembly system is intended to allow the electrical connector to be transported to the cabling plant and handled in such a way that it does not come out of the counterpart due to the effect of the forces of traction and torsion of the cables inserted with their corresponding terminals inside the cavities of the connector. This pre-as-

sembly system is made up of the combination of at least one aperture situated adjacent to the entry area of said arms and of at least one projection in the area corresponding to said counterpart, said projection being adapted to be housed in said at least one aperture. In this way, coupling of the projection or projections in the window or windows of the connector of the invention allows said connector to be advantageously held in an intermediate position with respect to the counterpart so as to be coupled later in the final connection position determined by the complete insertion of said arms in the connector.

[0009] With an electrical connector such as that described, it is possible to effectively ensure the stability of the pre-assembly position, preventing the operator from operating said sliding element without the connector being properly positioned on the counterpart.

[0010] The features and advantages of the electrical connector that is the object of the present invention will be clearer from the detailed description of a preferred embodiment of the same. Said description will, from here on, be given by way of non-restrictive example, with reference to the drawings which accompany it, in which:

[0011] Figure 1 is an elevation view of a connector in accordance with the present invention, which has been illustrated with the sliding element partially outside the connector.

[0012] Figure 2 is a front elevation view of the connector of figure 1, without the sliding element.

[0013] Figure 3 is a cross-sectioned elevation view of the connector of the invention.

[0014] Figure 4 is an enlarged partial view of the connector of figure 3.

[0015] Figure 5 is a plan view of the electrical connector of the embodiment of the foregoing drawings.

[0016] Figure 6 is a perspective view of an electrical connector with pre-assembly system in accordance with the present invention.

[0017] The elements appearing in the drawings attached to the present report are the following: (1) electrical connector, (2) housing of the electrical connector, (3) counterpart, (4) walls of the counterpart, (5) sliding element of the electrical connector, (6) coupling direction of the sliding element, (7) arms of the sliding element, (8) end of the arms of the sliding element, (9) operating element, (10) guides of the arms of the sliding element, (11) connector cover, (12) aperture of the connector, (13) front part of the connector, (14) projection of the counterpart, (15) front area of the counterpart, and (16) lower step of the projection of the counterpart.

[0018] Figures 1 to 6 represent an embodiment of a connector of the type used in electrical installations of cars. It is a connector (1) made up of a plastic housing (2) that can be coupled inside a counterpart (3) of a service box, through the outer part of the walls (4) of the same.

[0019] Inside the housing (2) of the connector (1) a

sliding element (5) may be inserted which, in turn, may be introduced inside said counterpart (3), causing the connector (1) to couple in the latter. This occurs when said sliding element (5) is made to move towards the connector (1) according to the direction of the arrow (6) shown in figure 3 of the attached drawings.

[0020] The sliding element (5) is made up of two parallel arms (7) joined together at their ends (8) by means of an operating element (9) adapted so that the operator applies the force needed to move the sliding element (5) towards the connector (1) in the direction of said arrow (6) of figure 2, causing it to couple in the counterpart (3). The movement of the sliding element (5) forces the connector (1) to couple in the counterpart (3) thanks to the arrangement of guides (10) in each one of said arms (7) of the sliding element (5). Said guides (10) are arranged parallel to each other and inclined downwards to cause the connector (1) to couple in the counterpart (3). Moreover, inside the guides (10) of said arms (7), pivots run which are joined to the counterpart (3), which extend perpendicularly with respect to the inner part of each side wall (4) of the counterpart (3).

[0021] With special reference to the enlarged partial view of figure 4, the connector (1) is provided, in accordance with the present invention, with a pre-assembly retention system which serves to prevent the connector (1) coming out of the counterpart (3) due to the effect of the traction and torsion forces of the cables which pass through the cover (11) of the connector (1).

[0022] The pre-assembly system of the embodiment illustrated in the drawings comprises an aperture (12) in the front part (13) of the body or housing (2) of the connector (1) and a projection (14) in the corresponding front area (15) of said counterpart (3). The projection has a horizontal lower step (16) which prevents the front part (13) of the housing (2) of the connector (1) from separating from the counterpart (3) when the projection (14) is housed in said aperture (12). The coupling of the projection (14) of the counterpart (3) in the aperture (12) of the connector (1) holds said connector in an intermediate position with respect to the counterpart (3) until it is coupled in a final position or connection position when the arms (7) of the sliding element (5) have been completely introduced into the housing (2) of the connector (1).

[0023] The materials of the elements which make up the electrical connector described in the present report, as well as the shapes, dimensions and other accessory elements may conveniently be replaced by others that are technically equivalent, provided that they do not depart from the essential nature of the present invention, nor from the inventive concept of the same, as defined in the claims included below.

tion system comprising a sliding element (5) provided with two parallel arms (7) adapted to be introduced by sliding inside the electrical connector (1), each arm (7) of said sliding element (5) being provided with a series of parallel guides (10), inclined downwards, between which pivots slide, which are joined to a counterpart (3) in which said connector (1) couples after said sliding element (5) is operated, **characterised in that** said connector (1) is provided with a pre-assembly retention system which comprises at least one aperture (12) situated adjacent to the entry area (13) of said arms (7), adapted to house, by pressure, at least one projection (14) in the corresponding area (15) of said counterpart (3), in such a way that the coupling of said at least one projection (14) in the aperture (12) or apertures of the connector (1) allows said connector (1) to be held in an intermediate position with respect to the counterpart (3) so as to be coupled later in a final connection position determined by complete insertion of said arms (7) in the connector (1).

Claims

1. An electrical connector with a pre-assembly reten-

FIG.1

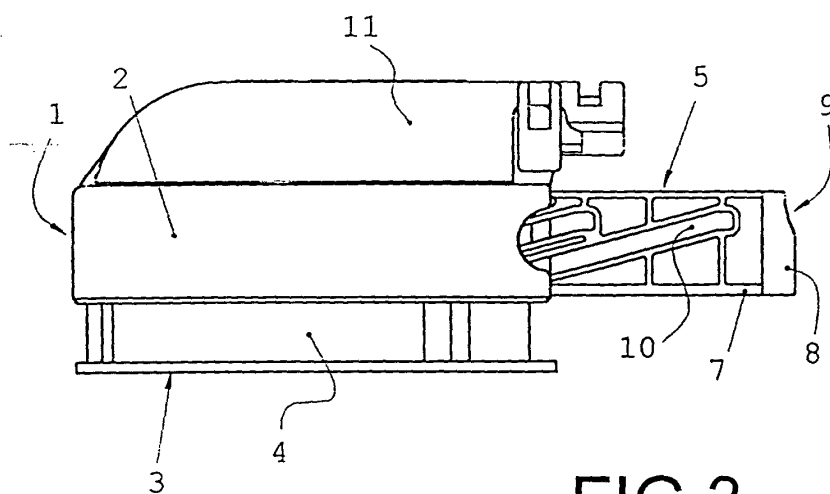


FIG.2

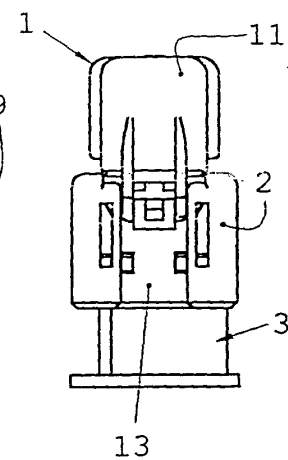


FIG.3

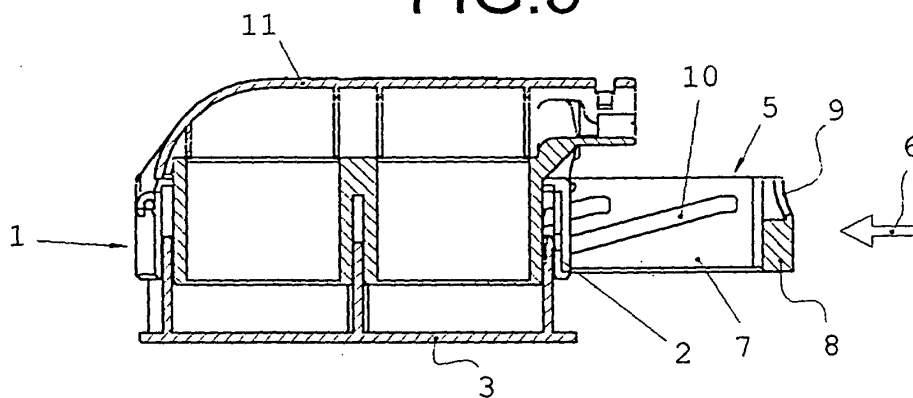


FIG.4

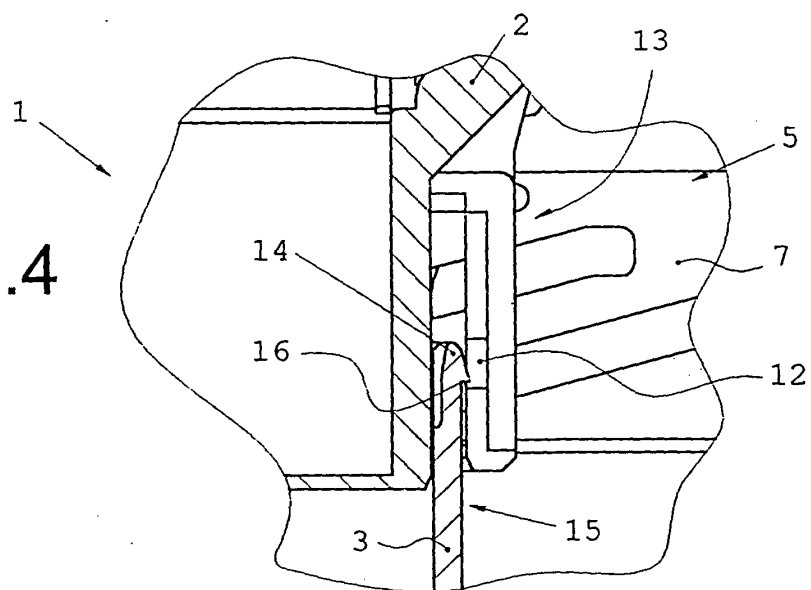


FIG.5

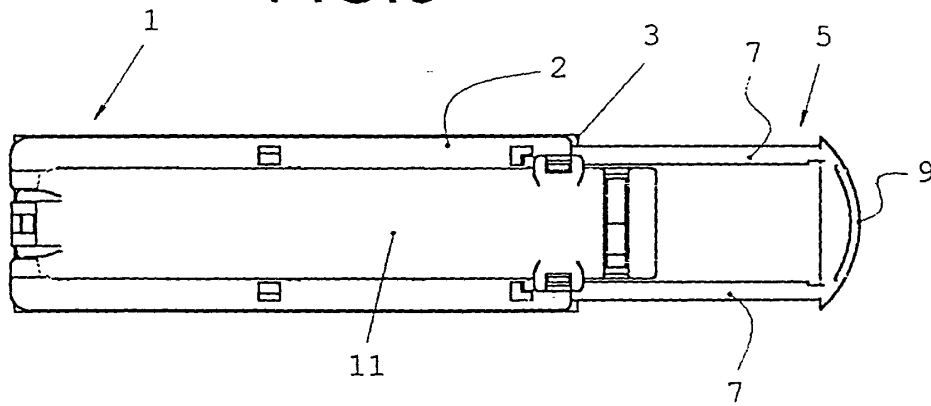


FIG.6

