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(71) Applicant:
Lear Automotive (EEDS) Spain, S.L.
43800 Valls, Tarragona (ES)

(72) Inventor:
CALAVERA ALVAREZ, Andreu
E-43800 Valls (ES)

(74) Representative:
Primo de Rivera y Urquijo, Jose Antonio
General Martinez Campos, 51
28010 Madrid (ES)

(54) **IMPROVED LATERAL INSERTION CONNECTOR**

(57) Said connector type is specifically designed to incorporate male terminals into the cavities intended for said purpose inside the connector but in a fully lateral manner, e.g. by positioning them in a manner that differs completely from the way in which they were traditionally positioned, whereby the male and the female terminals are introduced into the body of the connector by the top part and bottom part of the connector through the holes corresponding to said cavities and are then mechanically and electrically connected inside the connector and retained in the cavities by corresponding means if said means are provided.

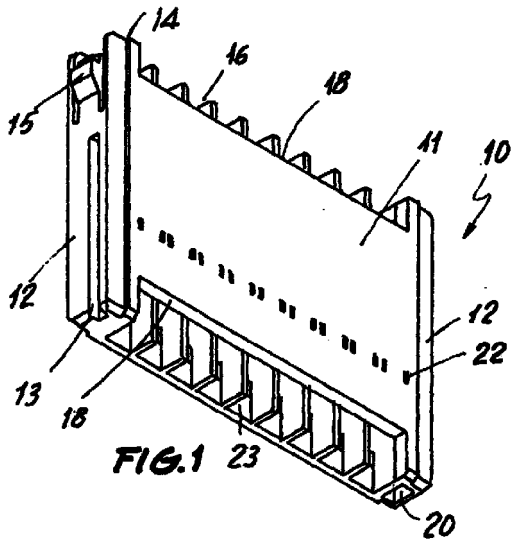

FIG.1

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Description

[0001] The present Invention Patent application consists, as its title indicates, of an improved connector for lateral insertion, whose new characteristics of construction, shape and design fulfil the purpose for which it has been specifically planned, with maximum safety and effectiveness.

[0002] More specifically, the invention refers to improvements introduced into the connectors which are the object of Spanish utility model No. 9503317 of the same applicant. This type of connector is specially designed to incorporate the male terminals in the inner cavities intended for this purpose, but in a totally lateral way, that is, positioning them in a totally different way to how they are conventionally placed, in which the male terminal and the female terminal are introduced into the body of the connector at the upper part and the lower part of the same through the entrances corresponding to the said cavities, being connected mechanically and electrically inside both and remaining held in the cavities by the corresponding means, if these exist.

[0003] In utility model No. 9503317 of the same applicant, a completely open connector was introduced, that is, with an appreciably prismatic shape but lacking one of its larger bases, which made possible the connection of the male terminal and the female terminal by lateral insertion of one of these in the cavity specially provided inside the connector, which, in turn, and in one of their lateral sides or in the dividing partitions of the inner body of the connector making up the said cavities, had holding means for the terminals introduced inside the connector.

[0004] The object of the present invention is a modification of the means provided in the previous utility model No. 9503317 to hold the terminals introduced inside the corresponding cavities, in such a way that, in a preferred embodiment of the present invention, the said cavities which are arranged regularly inside the body of the connector and which are delimited by a single larger base and the corresponding lateral separating partitions, are provided with upper means of holding and guiding the cables, which are made up of tabs which protrude from the opposing sides of the cavity; and they are also provided with means of holding the terminals in their middle area and also means to hold the said terminals at their lower end and which make it possible, even though the connector body has only one of the larger lateral bases, that once the terminals are mechanically and electrically connected, they cannot move in a vertical direction, nor can they move laterally because they have only one lateral base as described above, but do not have the base opposite to the same.

[0005] Other details and characteristics of the present Invention Patent application will be made clear in the description given below, in which reference is made to the drawings which accompany this report. In the said drawings, in a somewhat diagrammatic way, the preferred details are represented. These details are given by way of example, with reference to a possible example of practical embodiment, but the invention is not limited to the details given in the description, therefore this description is to be considered as illustrative and without limitations of any kind.

[0006] In what follows we shall describe the different elements which are numbered in the drawings attached to the present application: (10) connector, (11) larger lateral base, (12) protruding lateral body, (13) slot, (14) smaller lateral base, (14a) step, (15) holder, (16) partitions, (17) tabs, (18) incut, (19) lugs, (20) cavity, (21) spur, (22) windows, (23) brace, (24) cavity.

Figure 1 is a perspective view of the connector (10) in which one may observe the outer shape of its body.

Figure 2 is a frontal elevation of the connector (10) showing its only larger lateral base, in which (11) one may observe the incuts (18) and the incuts (18) and the tabs (17), which project from the partitions (16).

Figure 3 is a front elevation of the connector (10).

Figure 4 is a cross-section elevation through 4-4', in accordance with figure 2.

Figure 5 is a cross-section elevation through 5-5', in accordance with figure 2.

[0007] In one of the preferred embodiments of the object of the present Invention Patent application, and as may be observed in the drawings which accompany it, the connector (10), see figure 1, has an appreciably prismatic body, provided with two smaller lateral bases (14) joined by means of a single larger lateral base (11) and on the opposite side of (11) there is a kind of brace (23).

[0008] The larger lateral base has, near its lower and upper parts, incuts (18) which leave partly uncovered the partitions (16) and the cavities (24) where the corresponding male and female terminals (not shown in the drawings) are housed.

[0009] From the smaller lateral bases (14), see figures 1, 2 and 3, bodies protrude, whose visible side has a holder in the upper part (15) and vertically a slot (13) which goes from the lower base of the connector to the vicinity of the holder (15).

[0010] The limits of the protruding body (12) with the smaller base (14) form the step (14a), see figure 3.

[0011] The elements present in the said smaller lateral base (14) ensure the introduction of the connector (10) into a containing element (not shown in the drawings), which has longitudinal and vertical projections which fit into the slot (13) in the said lateral bases (14). All the foregoing is complemented by a cavity (20) in the lower base of (10), see figure 1, whose purpose is to position the connector itself (10) when the same is introduced into a containing element that is not shown in the drawings, in such a way that it can only be fitted in a sin-

gle position, thus preventing any possible error in the connection of the same with other elements, in such a way that on one side (10) a projection (not shown in the drawings) fits into the slot (13) and on the opposite side into a lug or the like in the said cavity (20).

[0012] The inside of the connector (10) is divided into cavities (24) which are appreciably prismatic and of the same size, delimited by the partitions (16) whose length extends from the smaller base (14) and which emerge perpendicularly from the sole larger base (11) up to the brace (23).

[0013] The larger lateral base (11) has incuts (18) in its lower and upper edges, which facilitate handling and the inclusion of the male and female terminals joined by the appropriate means to the corresponding conducting cables in the cavities (24).

[0014] Inside the cavities (24) delimited by the partitions (16), in the upper part and perpendicular to the said partitions, there are tabs (18), see figure 2, and lugs (19) in the middle area of the said cavities, as well as the spurs (21) situated in the lower part of the said cavity.

[0015] The insertion and securing both of the conductor and the mechanical and electrical connection of the male and female terminals (not shown in the drawings), is delimited by three levels:

- The first is made up of the tabs (17) situated opposite to each other in the upper part of the partitions (16) delimiting the cavities (24). The function of the said tabs (17) is to prevent the conductors, at whose ends the corresponding terminals are made, from coming out of the said cavities (24) and at the same time to facilitate lateral insertion without being an obstacle to the same.

[0016] In the middle area of (24) the said lugs (19) are located, which hold and prevent the vertical upward or downward movement of the connection of both terminals, once they are joined inside the connector (10).

[0017] All the foregoing is complemented by the spurs (21) which prevent the connection between both terminals from moving in the lower part of the connector (10), all of which combines with the brace (23) upon which the said spurs (21) emerge.

[0018] In order to facilitate all the foregoing, the connector (10) lacks one of the smaller lateral bases, the one opposite to the base (11), which has been replaced by the brace (23) which joins the two smaller lateral bases (14), thus facilitating lateral insertion of terminals inside the cavities (24).

[0019] To facilitate viewing of the mechanical and electrical connection between the terminals situated inside the cavity (24) a group of parallel windows (22) is provided in the sole larger base (11). The said windows coincide with the holding point (19) in such a way that through the said windows (22) the operator may, without needing to turn the connector, check that the same is perfectly joined and held in place by the lugs (19).

[0020] Having sufficiently described what the present Invention Patent consists of, in conjunction with the attached drawings, it will be understood that any minor amendments in its details deemed appropriate may be introduced into the same, providing that the essential nature of the patent is not altered, which is summarised in the following claims.

Claims

1. "AN IMPROVED CONNECTOR FOR LATERAL INSERTION", of the type which is provided with an appreciably prismatic body, whose inner volume is divided into a series of equal cavities (23) delimited by a set of partitions or walls (16) which are parallel with each other and cover the entire length of the smaller base (14), characterised in that the body of the connector (10) is made up of the union of two smaller lateral bases (14) by means of a larger lateral base (11) which joins them, with incuts in their upper and lower part (18) and a lower brace opposite to the said larger base (11) and parallel to the same (23), with a set of cavities (24) inside, delimited by the said larger base (11) and the partitions,(16).whereas in the smaller lateral bases (14) there are means to immobilise the connector (10) to a containing element, and inside the said cavities (24) there are aligning and holding elements for the electrical conductors, inner holding means for the terminals and lower means for immobilising the same.

2. "AN IMPROVED CONNECTOR FOR LATERAL INSERTION", as set forth in Claim 1, characterised in that the means of immobilisation of the connector (10) in a containing element are made up of the protruding bodies (12) which project from the smaller base (14) in the shape of prisms in whose upper part and in their sole visible side there is a holder (15) in the form of an abutment, while in the middle area of the said side there is a vertical slot (13) which goes from the lower base of (10) to the vicinity of the holder (15), while in the lower part of the smaller and opposite lateral base, a cavity (20) is provided.

3. "AN IMPROVED CONNECTOR FOR LATERAL INSERTION", as set forth in the foregoing claims, characterised in that inside the cavities (24) and in its middle part there are opposing lugs (19) as means for holding the terminals located inside the said cavities (24).

4. "AN IMPROVED CONNECTOR FOR LATERAL INSERTION", as set forth in Claim 1, characterised in that the lower means of immobilisation of the terminals inside the cavities (24) are made up of the

spurs (21) which protrude from the middle area of the brace (23).

5. "AN IMPROVED CONNECTOR FOR LATERAL INSERTION", as set forth in Claim 1, characterised in that the means of alignment of the terminals and their electrical conductors inside the cavities (24) are made up of the tabs (17) which protrude perpendicularly from the upper part of the partitions (16).

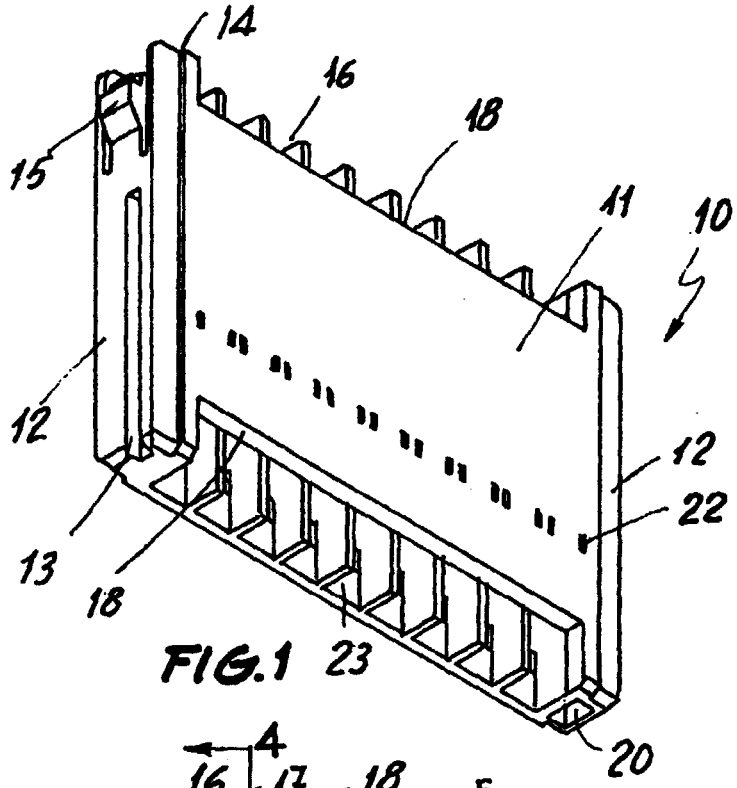

FIG.1

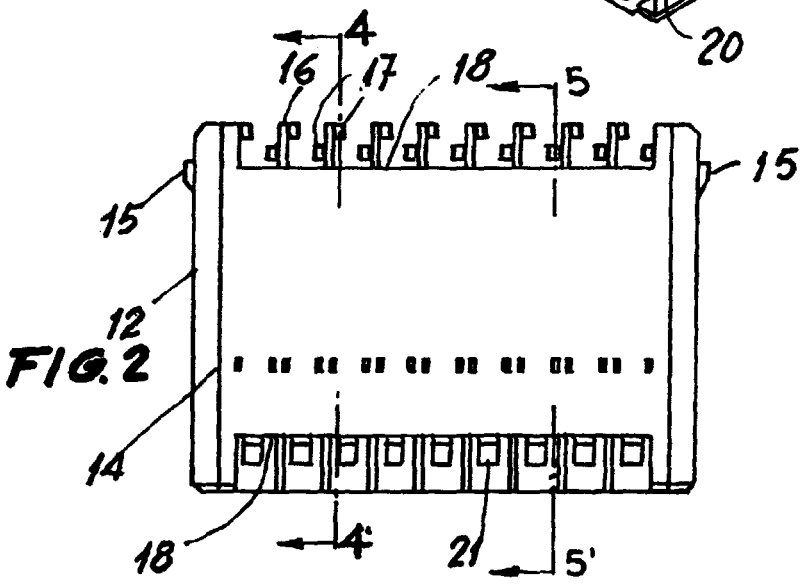

FIG.2

FIG.4

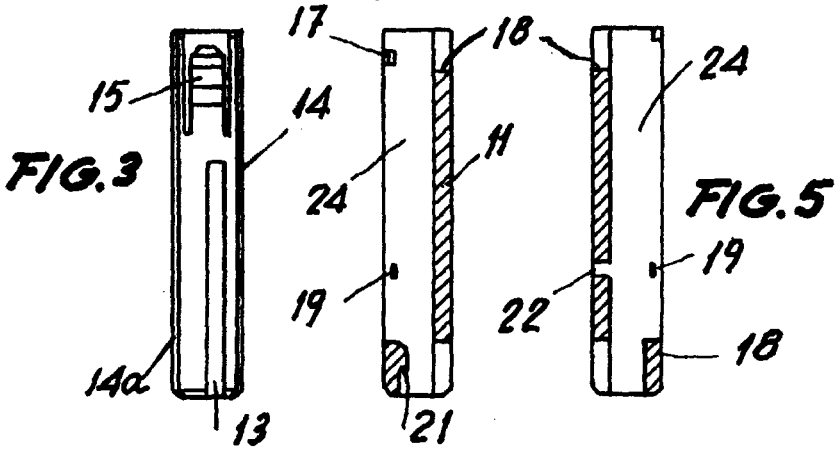

FIG.3

FIG.5

INTERNATIONAL SEARCH REPORT

International application No.
PCT/ ES 99/0085

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 H01R 13/422 ; 13/62
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 H01R 13/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPODOC, WPI, PAJ, CIBEPAT

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A		2
Y	ES 1036293 U (MECANISMOS AUXILIARES INDUSTRIALES) 16 July 1997 (16.07.97), See the whole document	1,3,4,5
A		2
Y	ES 1037977 U (MECANISMOS AUXILIARES INDUSTRIALES) 01 May 1998 (01.05.98), See the whole document	1,3,4,5
A		2
Y	US 5201674 A (OKURA) 13 April 1993 (13.04.93) Column 5, Line 14 – Column 6, Line 22 ; Figures 1, 2	1,3,5,5
A		2

☒ Further documents are listed in the continuation of box C. ☒ Patent family members are listed in annex.

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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
2 June 1999 (02.06.99)	15 June 1999 (15.06.99)
Name and mailing address of the ISA/ SPTO	Authorized officer Telephone No.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/ ES 99/00085

C. (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
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