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

(11) EP 1 139 516 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
04.10.2001 Bulletin 2001/40

(51) Int Cl.[7]: **H01R 43/22**, H01R 13/436

(21) Application number: **01500082.1**

(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

(30) Priority: **28.03.2000 ES 200000823**

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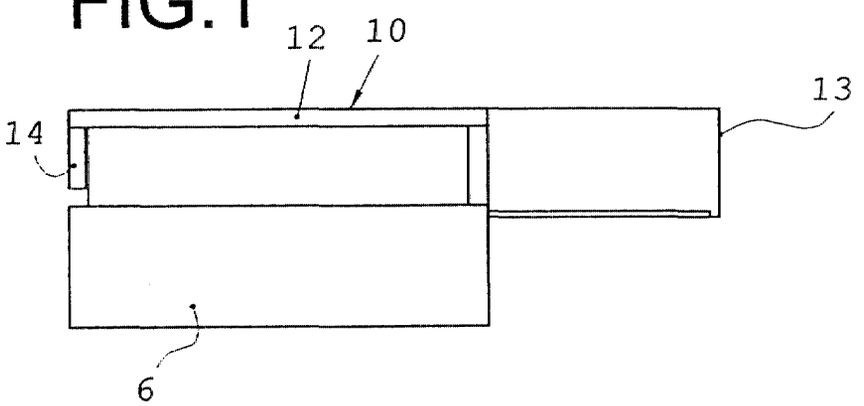
(54) A tool for mounting electrical connectors in their final position

(57) A tool for mounting electrical connectors in their final position, said electrical connectors (1) consisting of a body (2) adapted to be housed in a connector-holding module (6), the body (2) of the connector (1) being provided with a plurality of cavities (3) for housing terminals and a blocking element (8) of said terminals.

FIG.1



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Description

[0001] A tool for mounting electrical connectors in their final position.

[0002] The present Utility Model application consists, as its title indicates, of "A tool for mounting electrical connectors in their final position", 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 main object of the present invention is to provide a tool to facilitate the assembly of terminals in the electrical connectors of cars. Another object of the invention is to provide a tool with which transport of the different parts that make up electrical connectors of the type used in the electrical installation of cars is effective.

[0004] In this sense, the invention, as described below, is an attempt to reduce the operations of assembling the body of the connector, the blocking element and other elements which make up the electrical connector. Conventionally, these parts are transported separately, either loose in bags or grouped into templates. Subsequently, the operator must assemble them to mount the connector and then begin the cabling operation. There are means of transport that consist of presenting the electrical connector with the parts which make it up previously mounted and very tightly fitted, that is, with very little play among them to prevent coupling in the final position during transport or pre-assembly.

[0005] These means of transporting and mounting the connector have different drawbacks. The main one is that assembly of the connector means a longer time for the complete mounting of the installation, above all in electrical connectors which include a large number of components. The pre-assembly method with tight fitting is not an improvement, since the force the operator must use is excessive, especially when we take into account that many parts must be mounted in the process of mounting connectors and also that there is a standard maximum value for the admissible force an operator may use.

[0006] In order to resolve the above-mentioned drawbacks, a tool has been developed for mounting the parts which make up the electrical connector in its final position in accordance with the present invention, which is designed to allow the transport of connectors with their different parts pre-assembled and, at the same time, facilitate the mounting of the same in the installation, without requiring skilled labour.

[0007] In general terms, the tool of the present invention is intended to be used for mounting electrical connectors in their final position, said electrical connectors being of the type used in the car sector for subsequently mounting electrical terminals. Said connectors are made up of a body adapted to be housed in a connector-holding module of, for example, a service box which centralises all the connections of the vehicle. The body of the connector is provided with a plurality of cavities for housing terminals and includes a blocking element of said terminals.

[0008] The peculiarity of the apparatus that is the object of the present invention lies in the fact that it is made up of a hollow body designed to be capable of sliding inside the said connector-holder, containing the body of the electrical connector inside. The apparatus described is provided, on one of its walls, with an inner projection adapted to act upon said blocking element of the terminals, making it move from an unblocked position to its blocked position when the body of the tool is moved by the operator, thus concealing the ribs of the blocking element behind the ribs of the electrical connector and providing the necessary space for housing the terminals.

[0009] More specifically, the body of the tool of the present invention is made up of two parallel larger rectangular walls separated by two parallel smaller walls arranged perpendicularly to the first ones. This structure defines an essentially hollow prismatic shape adapted so as to slide inside the connector-holder and contains between said walls of the tool said body of the connector; said sliding causes the movement of the blocking element to the unblocked position to allow the operator to carry out the appropriate cabling operations.

[0010] In this way, the electrical connector can easily be transported from the factory to the cabling plant with the blocking element housed in the connector, in such a way that the operator simply has to slide the tool in the direction in which the projection of said wall of the body of the apparatus causes the blocking element to move to the unblocked position of the same to enable the operator to carry out the cabling of the connector.

[0011] The features and advantages of the tool for mounting electrical connectors in their final position 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 be given, from here on, by way of non-restrictive example, with reference to the drawings which accompany it, in which:

Figure 1 is a side elevation view of the apparatus of the present invention partially inserted into a connector-holder module.

Figure 2 is a plan view of the embodiment of the apparatus of figure 1, in which one may also observe the electrical connector with the blocking element still in the terminal blocking position.

Figure 3 is a perspective view of an electrical connector with the blocking element inserted inside it.

Figure 4 is a perspective view of the apparatus of the present invention illustrated according to the position of figure 1.

Figure 5 is a perspective view of the apparatus of figure 4, but with the electrical connector housed inside it.

[0012] The elements appearing in the attached drawings are the following: (1) electrical connector, (2) body of the connector, (3) cavities of the connector, (4, 5) outer projections of the connector, (6) connector-holding module, (7) aperture of the body of the connector, (8) blocking element, (9) ribs of the blocking element, (10) tool for mounting the connector in its final position, (11, 12) larger walls, (13, 14) smaller walls, (15) inside of the apparatus, and (16) projection of the apparatus.

[0013] The drawings illustrate a tool (10) designed to facilitate mounting of the terminals in an electrical connector (1), by means of which transport of the different parts which make up the connector (1) is comfortable and effective, and also allows the assembly operations of the unit to be reduced.

[0014] In figure 3 an electrical connector (1) may be observed, provided with a body (2) with prismatic cavities (3) adapted to house terminals with their corresponding electrical cables (not shown). On the outer part of the body (2) of the connector (1) there are projections (4, 5) which serve to hold the body (2) of the connector (1) inside the connector-holding module (6) of figures 1, 4 and 5. The connector-holding module (6) is mounted in a service box of the type used to centralise the connections of a car (not shown in the drawings).

[0015] With reference again to figure 3 of the drawings attached to the present specification, the body (2) of the connector (1) has an aperture (7) through which the blocking element (8) is introduced. The blocking element (8) can slide inside the body (2) of the connector (1) until it is arranged in the blocking position shown in figure 2, that is, with the ribs (9) coinciding with the cavities (3) of the body (2) of the connector (1). During the mounting operation, the ribs (9) of the blocking element (8) are concealed behind the ribs of the electrical connector.

[0016] The tool (10) of the present invention is made up of a body defined by two larger rectangular walls (11, 12) arranged parallel and separated by two smaller walls (13, 14) which define a body with a hollow prismatic shape, adapted to slide inside the connector-holding body (6). Inside (15) the tool (10) which is defined by the walls (11, 12, 13, 14) the electrical connector (1) is housed, as shown in figures 2 and 5 of the drawings.

[0017] With special reference to figure 2, the wall (13) of the tool (10) is provided with a projection (16) which extends perpendicularly to the same and towards the inside (15) of the tool (10). In this way, the operator introduces the tool with the connector (1) previously housed inside (15) the same vertically into the connector-holding module (6). Next, the operator makes it slide so that the projection (16) of the apparatus makes contact with the end of the blocking element (8) in order to cause it to slide and partially exit through the aperture (7) of the body (2) of the connector (1). At this point, the operator has the cavities (3) free for cabling. Once the cabling operation is completed, the operator couples the blocking element (8) again and then extracts the apparatus (10).

[0018] The materials of the elements which make up the apparatus of the present invention, 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.

Claims

1. A tool for mounting electrical connectors in their final position, said electrical connectors (1) consisting of a body (2) adapted to be housed in a connector-holding module (6), the body (2) of the connector (1) being provided with a plurality of cavities (3) for housing terminals and a blocking element (8) of said terminals, **characterised in that** said tool (10) is made up of a hollow body that is capable of sliding inside the connector-holder (6) and which contains the body (2) of the electrical connector (1) inside, said tool (10) being provided with an inner projection (16) adapted so as to act on said blocking element (8), making it move from its blocked position to its unblocked position when the operator makes the tool (10) slide.

2. A tool for mounting electrical connectors in their final position in accordance with claim 1, **characterised in that** it substantially consists of a body made up of two parallel larger rectangular walls (11, 12) separated by two parallel smaller walls (13, 14) arranged perpendicularly to the first ones, which give said body an essentially hollow rectangular prismatic shape, adapted so as to slide inside said connector-holder (6); the said body (2) of the connector (1) is contained between said walls (11, 12, 13, 14) of the tool and one of the smaller walls (13) of said tool (10) is provided with a projection (16) which causes, in said sliding, the blocking element (8) to move, thus enabling the latter to adopt the unblocked position and making it possible for cables to be inserted.

FIG.1

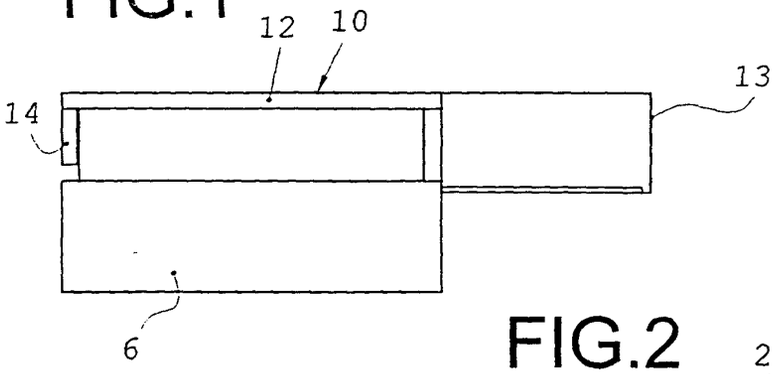


FIG.2

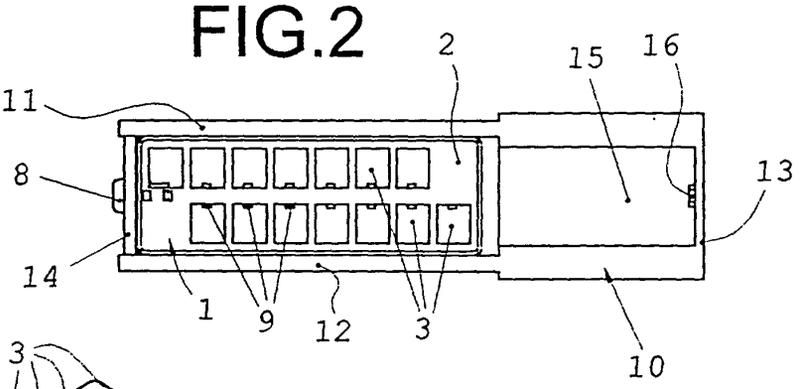


FIG.3

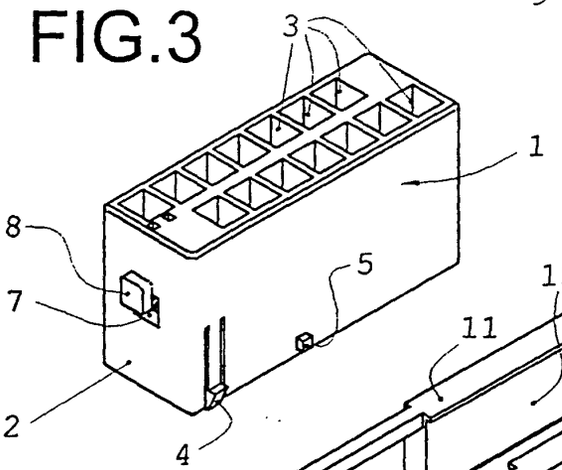


FIG.4

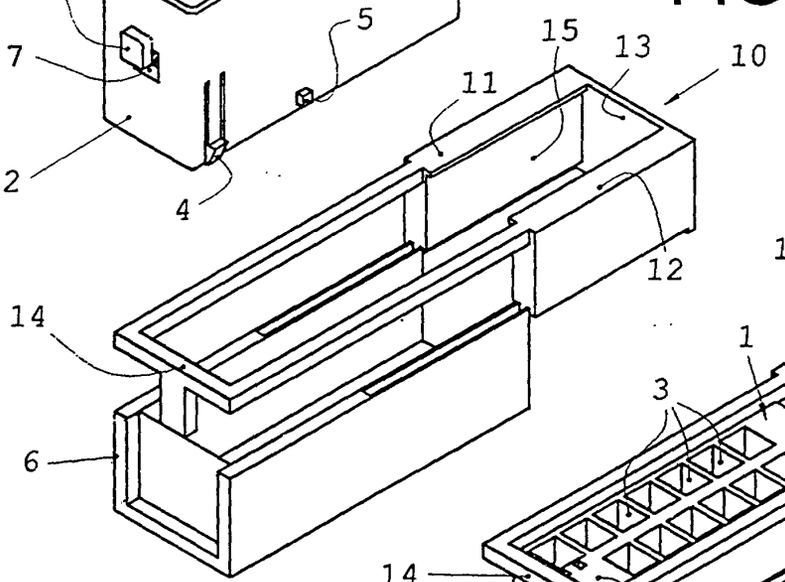
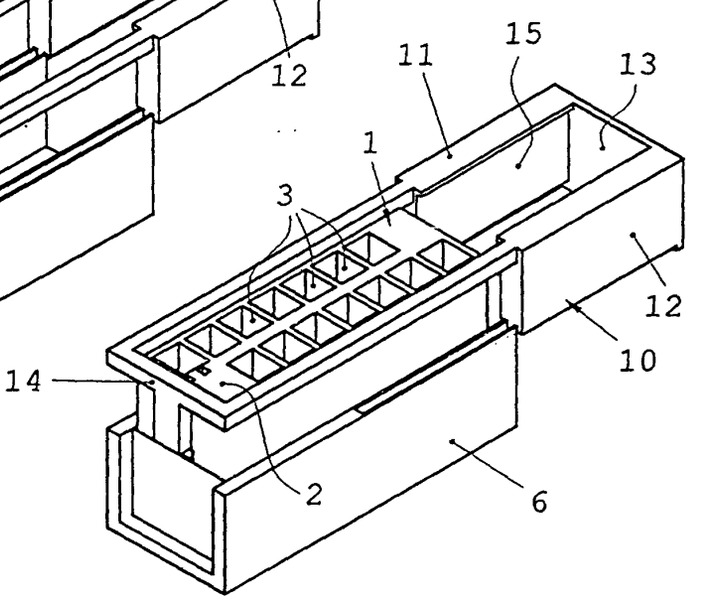


FIG.5



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EUROPEAN SEARCH REPORT

Application Number
EP 01 50 0082

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	US 5 438 748 A (S.MATZUZAWA) 8 August 1995 (1995-08-08) * column 4, line 16 - line 37 * * column 4, line 52 - column 5, line 21; figures 1-5 * -----	1	H01R43/22 H01R13/436

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

H01R

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
BERLIN	7 June 2001	Alexatos, G

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
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T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
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EPO FORM 1503 03.82 (P04C01)

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07-06-2001

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5438748 A	08-08-1995	US 5528821 A	25-06-1996

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82