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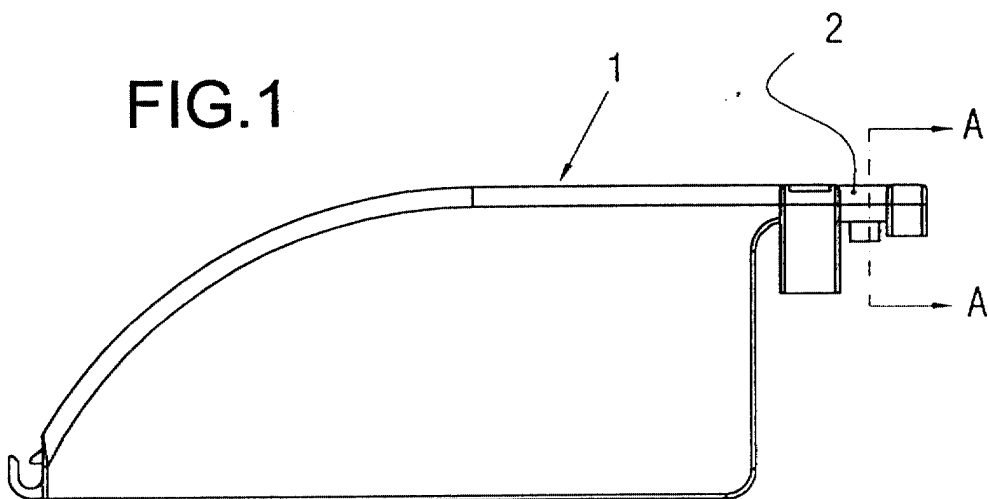
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(54) **Connector cover with compression element**

(57) Locking element for electrical connectors made up of a body which fits into the electrical connector in-

tended to protect the cables inside it, which has a flexible element inside which compresses the cables in the locked position.

FIG.1



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Description

[0001] The present Patent of Invention application consists, as its title indicates, of a "LOCKING ELEMENT FOR ELECTRICAL CONNECTORS", whose features of construction, shape and design fulfil the object for which they have specifically been planned, with maximum safety and effectiveness.

[0002] Electrical connectors are known which are provided inside with the corresponding terminals connected to the different electrical cables. It frequently occurs that a great number of cables arrive at said connectors, which are housed in the respective connector boxes. These cables are grouped by rubber tubes and, in the vicinity of the connector, the wires are tightly clamped so that they do not move.

[0003] This configuration gives rise to many problems of noise due to the vibrations arising from the movement of the cables, above all in electrical installations of vehicles and the like.

[0004] In order to solve this drawback and others which appear in electrical installations with high cable density, the locking element for electrical connectors of the present invention has been developed.

[0005] It is, in general terms, a cover or locking element for electrical connectors made up of a body which fits into the upper part of the electrical connector and is intended to protect the cables which run inside it.

[0006] The peculiarity of said locking element lies in the fact that, in the inner part of its upper side, it is provided with a compression element which consists of a flexible laminar body for compressing the cables in the locked position, preventing them from moving and causing unwanted vibrations and noises in the electrical connection area. Moreover, good connection conditions are ensured as the cables are firmly held in the electrical connector. The configuration of the locking element which is the object of the present invention avoids the use of bands or the arrangement of clamps for holding the cables. Moreover, the described locking element allows the cables to be extracted, when necessary, in a very simple way.

[0007] In accordance with other feature of the locking element of the invention, the flexible laminar body has a concave transverse section adapted to apply pressure on the cables arranged inside in the locking position. This configuration reduces the transmission of vibrations from the cabling produced by micro-movements of the same. It is preferable that said concave element is made of elastomer or in any other suitable material which is capable of absorbing the vibrations and holding the cables without damaging them. Also, it should be emphasised that the transverse section of the compression element has side extensions which are immobilised in the inner area of the side walls of the locking element, so that said compression element is perfectly integrated into the connector cover.

[0008] The features and advantages of the locking el-

ement for electrical connectors which is the object of the present invention will be clearer from the detailed description of a preferred embodiment of the same which will be given, hereinafter, by way of non-restrictive example, with reference to the drawings which accompany it, in which:

Figure 1 is an elevational view of a locking element for electrical connectors according to the invention. Figure 2 is an elevational view of said locking element, cross-sectioned according to the plane A-A' of figure 1.

[0009] The elements which appear in the attached drawings are the following: (1) locking element or cover of an electrical connector, (2) extension of the locking element, (3) side walls of the locking element, (4) upper wall of the locking element, (5) inner area of the locking element, (6) flexible laminar body, and (7, 8) side extensions of the flexible laminar body.

[0010] Figure 1 illustrates an embodiment of a locking element (1) or cover which is used in an electrical connector for cars (not shown). The locking element (1) has an extension (2) which is conveniently adapted for the outlet of the electrical cables. Said extension (2) has been illustrated with greater detail in the frontal section of figure 2 of the drawings included in the present report.

[0011] The extension (2) of the locking element (1) has, as a whole, a transverse section which is, essentially, in the shape of an inverted U, defined by side walls (3) and an upper wall (4). Said walls (3, 4) form an inner area (5) for the passage of the electrical cables (not shown). The locking element or cover (1), which serves to protect the cables which run through the connector, advantageously incorporates, in the inner part of its upper side (4), a compression element (6) made up of a flexible laminar body made of, for example, elastomer, which compresses the cables when the cover (1) is in the locking position. In said position, which is that illustrated in figure 1, the cables (not shown) are tightly compressed inside (5) the cover (1) of the connector. In this way the vibrations in the electrical connection area are reduced and, moreover, good connection conditions are ensured, without the need to clamp the cables.

[0012] With special reference to figure 2 of the drawings, it may be observed how the flexible laminar body (6) has a concave transverse section with the purpose of applying appropriate pressure on the cables arranged inside (5) the cover (1) of the connector in the locking position. In this sense, the transverse section of the compression element (6) has side extensions (7, 8) joined rigidly in the inner area of the side walls (3) of the extension (2) of the locking element or cover (1), whereby the compression element (6) is perfectly integrated into the cover (1) of the electrical connector.

[0013] The compression element (6) serves as a wiring centerer and prevent the vibrations of the same caused by the micro-movements of the assembly ar-

ranged in the vehicle. In accordance with the former description, it is evident that the locking element for electrical connectors which is the object of the present invention is mainly destined to high density connectors supporting a high number of cables.

[0014] The materials of the elements which make up the described locking element, and also the shapes, dimensions and other accessory elements may conveniently be replaced by others which 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 which are included below.

Claims

1. "A LOCKING ELEMENT FOR ELECTRICAL CONNECTORS", made up of a body which fits into the upper part of the electrical connector intended to protect the cables which run inside (5), characterised in that said locking element (1) comprises, in the inner part (5), a compression element which consists of a flexible laminar body (6) for compressing the cables in the locking position.
2. "A LOCKING ELEMENT FOR ELECTRICAL CONNECTORS" in accordance with claim 1, characterised in that said flexible laminar body (6) has a concave transverse section adapted to apply pressure on the cables arranged inside (5) in the locking position.
3. "A LOCKING ELEMENT FOR ELECTRICAL CONNECTORS" in accordance with any of the foregoing claims, characterised in that the transverse section of the compression element (6) has side extensions (7) which are immobilised in the inner area of the side walls (3) of the locking element (1).

FIG.1

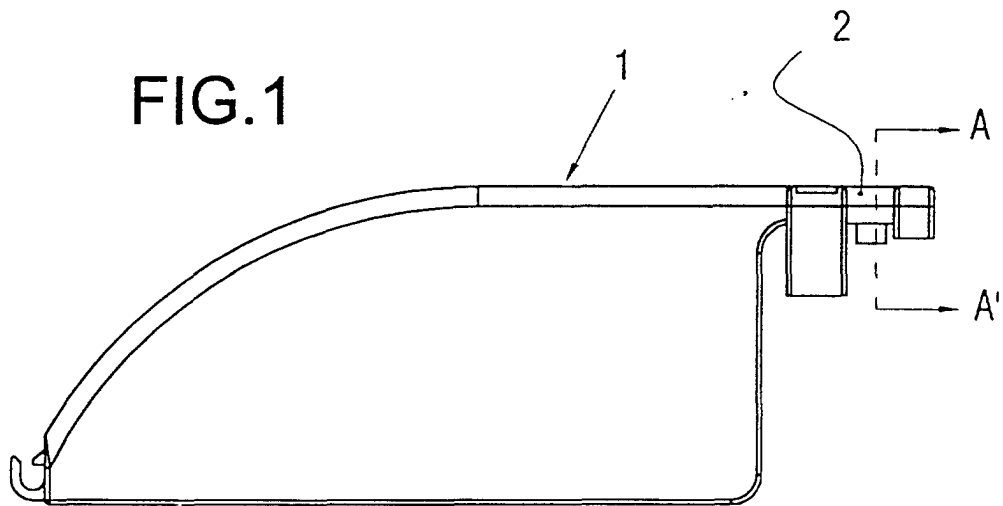
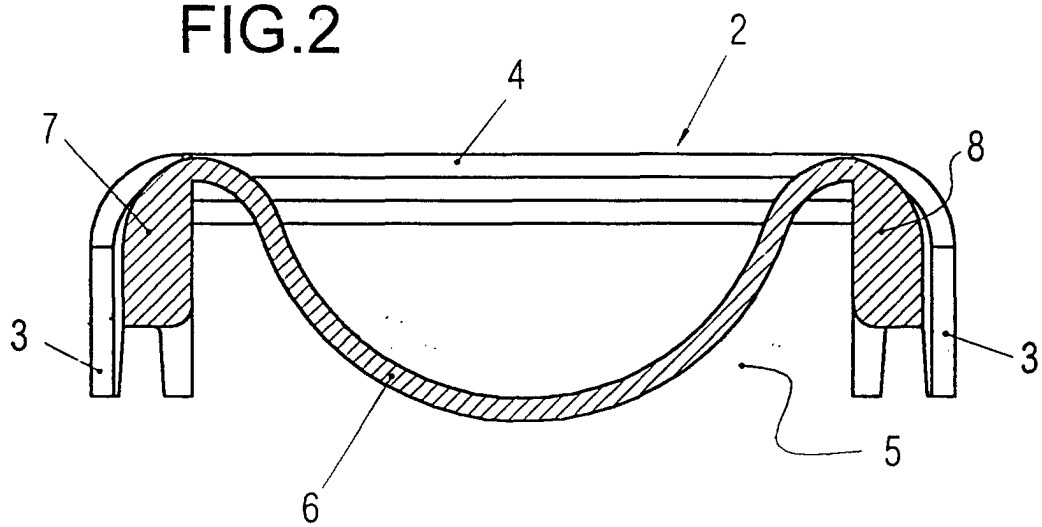


FIG.2





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EUROPEAN SEARCH REPORT

Application Number
EP 01 50 0011

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	FR 2 779 012 A (FRAMATOME) 26 November 1999 (1999-11-26)	1	H01R13/533
A	* page 1, line 35 - page 2, line 15 * * page 3, line 29 - line 34; figures 5,6 *	3	
A	--- US 5 597 330 A (Y.HATAGISHI) 28 January 1997 (1997-01-28) * column 4, line 35 - line 63; figures 1,3-4B *	1	
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The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			H01R
Place of search		Date of completion of the search	Examiner
BERLIN		6 April 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 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			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 01 50 0011

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