



(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
31.05.2017 Bulletin 2017/22

(51) Int Cl.:
H01R 9/03 (2006.01) H01R 13/6593 (2011.01)
H01R 13/595 (2006.01)

(43) Date of publication A2:
22.03.2017 Bulletin 2017/12

(21) Application number: **16185800.6**

(22) Date of filing: **26.08.2016**

(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:
MA MD

(72) Inventors:
• **ECKEL, Markus**
68642 Bürstadt (DE)
• **STOKOWSKI, Alexander**
75443 Ötisheim (DE)
• **KOSMALSKI, Christoph**
64291 Darmstadt (DE)
• **SPATARU, Florin**
67547 Worms (DE)

(30) Priority: **28.08.2015 DE 102015216545**

(71) Applicant: **TE Connectivity Germany GmbH**
64625 Bensheim (DE)

(74) Representative: **Grünecker Patent- und Rechtsanwälte**
PartG mbB
Leopoldstraße 4
80802 München (DE)

(54) **HOUSING ARRANGEMENT, ELECTRICAL CONNECTOR COMPRISING A HOUSING ARRANGEMENT AND ELECTRICAL CONNECTION ARRANGEMENT COMPRISING AN ELECTRICAL CONNECTOR**

(57) The invention relates to a housing arrangement (1) for attaching at least one cable (4) with a shielding (43) arranged around a conductor (41) as well as an electrical connector (100) comprising at least one such housing arrangement (1) and an electrical connection arrangement comprising an electrical connector. Housing arrangements (1) usually comprise a housing body (2) for receiving a cable end (3). In order to facilitate a permanently good connection between the shielding (43) and the housing body (2), the housing arrangement (1) comprises a pressing member (6) for producing an electrical connection to the shielding (43), wherein, in a pressing position (P), the pressing member (6) is configured to exert a pressing force onto the shielding (43) or onto a contact element (5) that is electrically connected to the shielding (43). The pressing force created by the pressing member (6) ensures a good electrical connection with a low transition resistance, whereby through the pressing force the shielding (43) or the contact element (5) connected with the shielding (43) is retained. The occurring vibrations thus cannot deteriorate the connection to the shielding (43).

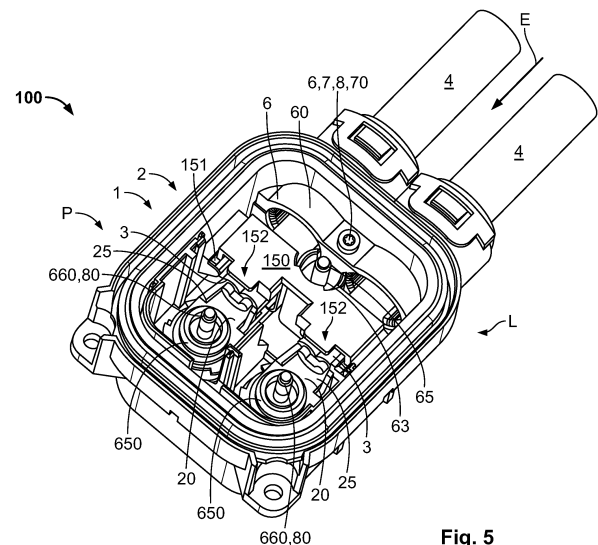


Fig. 5



EUROPEAN SEARCH REPORT

 Application Number
EP 16 18 5800

5

10

15

20

25

30

35

40

45

50

55

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	US 6 663 415 B1 (WU JERRY [US]) 16 December 2003 (2003-12-16)	1-10,12,15	INV. H01R9/03
Y	* column 2, lines 49-67, column 3, lines 1-5, figures 1, 2 *	11,13,14	H01R13/6593 H01R13/595
X	DE 10 2011 009929 A1 (SEW EURODRIVE GMBH & CO [DE]) 4 August 2011 (2011-08-04)	1-8,12,15	
Y	* paragraphs [0036], [0045]; figures 1-4 *	11,13,14	
X	DE 20 2013 006412 U1 (LEONI BORDNETZ SYS GMBH [DE]) 22 October 2014 (2014-10-22)	1-8,12,15	
Y	* paragraphs [0031] - [0036], [0043] - [0045] *	11,13,14	
X	DE 198 53 927 A1 (METZ ALBERT BLUMBERGER TEL [DE]) 31 May 2000 (2000-05-31)	1-8,12,15	
Y	* column 2, lines 62-69, column 3, lines 1-37, column 4, lines 42-68, column 5, lines 1, 2, figures 1-6 *	11,13,14	
X	DE 197 13 241 A1 (HARTING KGAA [DE]) 2 April 1998 (1998-04-02)	1-8,12,15	TECHNICAL FIELDS SEARCHED (IPC) H01R
Y	* column 2, lines 14-36, figures 1-3 *	11,13,14	
X	DE 22 23 112 A1 (HIRSCHMANN RADIOTECHNIK) 22 November 1973 (1973-11-22)	1-8,12,15	
Y	* page 3; figures 1-3 *	11,13,14	
X	DE 23 48 882 A1 (SIEMENS AG) 17 April 1975 (1975-04-17)	1-8,12,15	
Y	* pages 5, 6, 8; figures 1-7 *	11,13,14	
Y	US 2014/377990 A1 (SALLER ROBERT [DE] ET AL) 25 December 2014 (2014-12-25)	11,13,14	
	* paragraphs [0072], [0075], [0080]; figures 2, 3, 6d *		
	----- -/--		
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 21 April 2017	Examiner López García, Raquel
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)



EUROPEAN SEARCH REPORT

Application Number
EP 16 18 5800

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	EP 0 975 063 A1 (FRAMATOME CONNECTORS INT [FR]) 26 January 2000 (2000-01-26) * the whole document * -----	11	
			TECHNICAL FIELDS SEARCHED (IPC)
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 21 April 2017	Examiner López García, Raquel
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)



Application Number

EP 16 18 5800

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

☐ The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).



LACK OF UNITY OF INVENTION
SHEET B

Application Number

EP 16 18 5800

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 2-10, 15(completely); 1, 12(partially)

Claims 2-10, 15, and partially 1 and 12, disclose a housing arrangement for attaching at least one cable with a shielding arranged around a conductor, the housing arrangement comprising a housing body for receiving a cable end and a pressing member for producing an electrical connection to the shielding or to a contact electrically connected to the shield, the pressing member being configured for exerting a pressing force onto the shielding in a pressing position, the pressing member being a separate member of the housing and being arranged in the housing, the pressing member having a mating contact surface for the shielding of a contact element, and in a pressing position, the contact surface of the pressing member and a contact surface of the housing body enclosing a substantially circular surface, the pressing member having a force-generating member and affixing elements and comprising a spring sleeve to be attached to the shield and an electrical connector comprising the shielded cable and the housing arrangement.

2. claims: 11(completely); 1(partially)

Claim 11, and partially 1, disclose a housing arrangement for attaching at least one cable with a shielding arranged around a conductor, the housing arrangement comprising a housing body for receiving a cable end and a pressing member for producing an electrical connection to the shielding or to a contact electrically connected to the shield, the pressing member being configured for exerting a pressing force onto the shielding in a pressing position, the housing arrangement having a securing device for form-fittingly securing the housing arrangement to a mating element, wherein the securing device (150) is arranged at the housing body (2) such that it is movable from a releasing position (L) into a securing position.

3. claims: 13, 14(completely); 1, 12(partially)

Claims 13, 14, and partially 1 and 12, disclose an electrical connector comprising a housing arrangement for attaching at least one cable with a shielding arranged around a conductor and the cable attached, the housing arrangement comprising a housing body for receiving a cable end and a pressing member for producing an electrical connection to the shielding or to a contact electrically connected to the shield, the pressing member being configured for exerting a pressing force onto the shielding

**LACK OF UNITY OF INVENTION
SHEET B**

Application Number

EP 16 18 5800

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

in a pressing position, wherein a connection element attached to the inner conductor of the cable has a bar-contacting sleeve configured to overcome a contact protection, said bar-contacting sleeve being pressed into the connection element.

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 16 18 5800

5

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.

21-04-2017

10

15

20

25

30

35

40

45

50

55

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6663415 B1	16-12-2003	CN 2596600 Y TW 547824 U US 6663415 B1	31-12-2003 11-08-2003 16-12-2003
DE 102011009929 A1	04-08-2011	NONE	
DE 202013006412 U1	22-10-2014	CN 105612667 A DE 202013006412 U1 EP 3022806 A1 WO 2015007836 A1	25-05-2016 22-10-2014 25-05-2016 22-01-2015
DE 19853927 A1	31-05-2000	NONE	
DE 19713241 A1	02-04-1998	NONE	
DE 2223112 A1	22-11-1973	AT 332471 B BE 799154 A1 DE 2223112 A1 FR 2191296 A1 IT 987172 B NL 7306207 A	27-09-1976 31-08-1973 22-11-1973 01-02-1974 20-02-1975 14-11-1973
DE 2348882 A1	17-04-1975	NONE	
US 2014377990 A1	25-12-2014	CN 104081590 A DE 102012201123 B3 US 2014377990 A1 WO 2013110490 A1	01-10-2014 21-03-2013 25-12-2014 01-08-2013
EP 0975063 A1	26-01-2000	AT 203632 T AT 237188 T CA 2252768 A1 EP 0896754 A1 EP 0975063 A1 JP 3974181 B2 JP 2000509194 A JP 2006318934 A US 6341972 B1 WO 9741623 A1	15-08-2001 15-04-2003 06-11-1997 17-02-1999 26-01-2000 12-09-2007 18-07-2000 24-11-2006 29-01-2002 06-11-1997

EPO FORM P0459

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