

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
22 December 2005 (22.12.2005)

PCT

(10) International Publication Number  
**WO 2005/121452 A3**

(51) International Patent Classification<sup>7</sup>: **E01B 9/54**, 9/58

(21) International Application Number:  
PCT/GB2005/002316

(22) International Filing Date: 10 June 2005 (10.06.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
0413093.6 11 June 2004 (11.06.2004) GB

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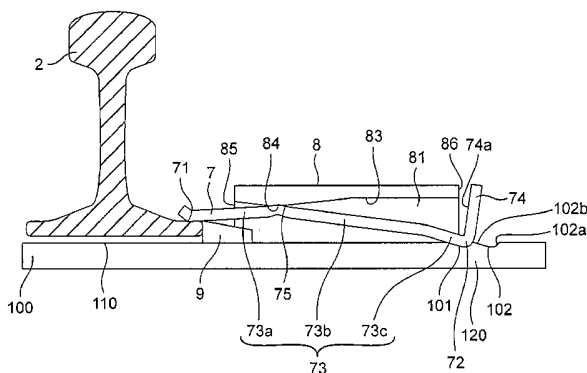
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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: FASTENING RAIL IN RAILWAY SLIDE CHAIR ASSEMBLY



(57) Abstract: A rail fastening apparatus for fastening an inner stock rail (2) in a railway slide chair assembly comprises a baseplate (100) having on one face thereof a rail seat region (110) on which the inner stock rail (2) sits when the slide chair assembly is in use, a resilient rail fastening clip (7) for restraining such an inner stock rail (2), the clip (7) comprising an elongate member having at one end a toe portion (71) for bearing on the rail (2) and at its other end a heel portion (72), first locating means (101) for locating the rail fastening clip (7) in the apparatus in a first position, which means (101) comprise a first abutment surface (101a), positioned on the baseplate (100) in a second region (120) spaced from the rail seat region (110), against which surface the heel portion (72) of the clip (7) abuts when the apparatus is in use to inhibit withdrawal of the clip (7) from the rail (2), and loading means (9) for vertically deflecting the clip (7) so as to produce a load in the toe portion (71). The loading means (9) comprise a ramp (9) provided adjacent to the rail seat region (110), whereby the clip (7) can be installed in the apparatus by hammer-driving the heel portion (72) of the clip (7) towards the rail seat region (110) until the toe portion (71) slides up the ramp (9) onto the rail (2) and the heel portion (72) comes into contact with the first abutment surface (101a). Second locating means (102) are provided for locating the rail fastening clip (7) in the apparatus in a second position, different from the first, into which the clip can be driven such that the toe portion of the clip sits on the ramp (9) in a pre-load condition in which the clip does not bear on the rail.

WO 2005/121452 A3



**Published:**

— *with international search report*

**(88) Date of publication of the international search report:**

20 April 2006

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

INTERNATIONAL SEARCH REPORT

International Application No  
PCT/GB2005/002316

<p><b>A. CLASSIFICATION OF SUBJECT MATTER</b> E01B9/54 E01B9/58</p> <p>According to International Patent Classification (IPC) or to both national classification and IPC</p>																	
<p><b>B. FIELDS SEARCHED</b></p> <p>Minimum documentation searched (classification system followed by classification symbols) E01B</p> <p>Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched</p> <p>Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal</p>																	
<p><b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b></p> <table border="1"> <thead> <tr> <th>Category °</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>CA 2 144 018 A1 (IGWEMEZIE, JUDE O) 7 September 1996 (1996-09-07) page 2, line 19 - page 7, line 3; figures 1,14,15,17</td> <td>1-35</td> </tr> <tr> <td>X</td> <td>US 4 312 477 A (HIXSON ET AL) 26 January 1982 (1982-01-26) column 1, line 67 - column 5, line 20; figures 1,3,7</td> <td>1-4,6-9, 15,16</td> </tr> <tr> <td>A</td> <td>GB 2 351 515 A (* PANDROL LIMITED) 3 January 2001 (2001-01-03) page 8, line 22 - page 16, line 20; figure 1</td> <td>1-35</td> </tr> <tr> <td>A</td> <td>WO 94/28245 A (IGWEMEZIE, JUDE, ODIHACHUKWUNMA) 8 December 1994 (1994-12-08) the whole document</td> <td>1-35</td> </tr> </tbody> </table>			Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	A	CA 2 144 018 A1 (IGWEMEZIE, JUDE O) 7 September 1996 (1996-09-07) page 2, line 19 - page 7, line 3; figures 1,14,15,17	1-35	X	US 4 312 477 A (HIXSON ET AL) 26 January 1982 (1982-01-26) column 1, line 67 - column 5, line 20; figures 1,3,7	1-4,6-9, 15,16	A	GB 2 351 515 A (* PANDROL LIMITED) 3 January 2001 (2001-01-03) page 8, line 22 - page 16, line 20; figure 1	1-35	A	WO 94/28245 A (IGWEMEZIE, JUDE, ODIHACHUKWUNMA) 8 December 1994 (1994-12-08) the whole document	1-35
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<p>Date of the actual completion of the international search 6 September 2005</p>		<p>Date of mailing of the international search report 08/12/2005</p>															
<p>Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016</p>		<p>Authorized officer Geiger, H</p>															

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

/GB2005/002316

Patent document cited in search report	Publication date	Publication date	Patent family member(s)	Publication date
CA 2144018	A1	07-09-1996	AU 713004 B2	18-11-1999
			AU 4382096 A	14-08-1996
			BR 9607185 A	11-11-1997
			CA 2210395 A1	01-08-1996
			WO 9623107 A1	01-08-1996
			CN 1175987 A	11-03-1998
			EP 0803013 A1	29-10-1997
			US 2002011526 A1	31-01-2002
			<hr/>	
US 4312477	A	26-01-1982	AU 516589 B2	11-06-1981
			AU 4733379 A	06-12-1979
			BR 7903307 A	11-12-1979
			CA 1104540 A1	07-07-1981
			DE 2921720 A1	20-12-1979
			FR 2427428 A1	28-12-1979
			GB 2022659 A	19-12-1979
			JP 54157910 A	13-12-1979
			<hr/>	
GB 2351515	A	03-01-2001	AU 5237500 A	31-01-2001
			DE 60019286 D1	12-05-2005
			DE 60019286 T2	01-09-2005
			EP 1190142 A1	27-03-2002
			WO 0100930 A1	04-01-2001
			HK 1030033 A1	13-12-2002
			JP 2003503608 T	28-01-2003
			TW 517128 B	11-01-2003
<hr/>				
WO 9428245	A	08-12-1994	AT 187785 T	15-01-2000
			AU 685812 B2	29-01-1998
			AU 6922294 A	20-12-1994
			BR 9406732 A	30-01-1996
			CA 2164115 A1	08-12-1994
			WO 9428245 A1	08-12-1994
			CN 1125967 A	03-07-1996
			DE 69422170 D1	20-01-2000
			EP 0701642 A1	20-03-1996
			JP 8510304 T	29-10-1996
			RU 2159305 C2	20-11-2000
			US 5782406 A	21-07-1998
			ZA 9403859 A	11-05-1995