(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
16 February 2006 (16.02.2006)

PCT

(10) International Publication Number
WO 2006/016131 A3

(51) International Patent Classification:
E01D 19/06 (2006.01) *C04B 26/10* (2006.01)
E01C 11/10 (2006.01) *E04B 1/68* (2006.01)

(21) International Application Number:
PCT/GB2005/003089

(22) International Filing Date: 5 August 2005 (05.08.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
0417660.8 7 August 2004 (07.08.2004) GB

(71) Applicant *(for all designated States except US)*: **STIRLING LLOYD POLYCHEM LIMITED** [GB/GB]; Union Bank, 127 King Street, Knutsford, Cheshire WA16 6EF (GB).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **HELLIWELL, David, John** [GB/GB]; 14 Rowton Grange Road, Chapel-en-le-Frith, High Peak SK23 0LD (GB). **HARPER, Michael, David** [GB/GB]; 12 King Edward Close, Kingsmead, Northwich CW9 8XQ (GB).

(74) Agent: **DAUNCEY, Mark, Peter**; Marks & Clerk, Sussex House, 83-85 Mosley Street, Manchester M2 3LG (GB).

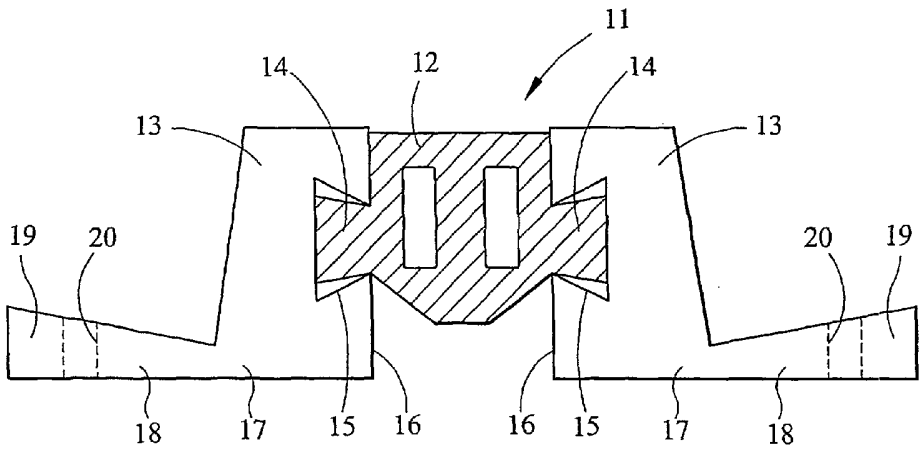
(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, 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, LV, 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).

Declaration under Rule 4.17:
— *of inventorship (Rule 4.17(iv))*

[Continued on next page]

(54) **Title:** AN EXPANSION JOINT ASSEMBLY



(57) **Abstract:** An expansion joint assembly for location in a gap defined between first and second structural members, such as sections of a road and/or bridge structure. Failure of the connection between the rail and reinforcing bars of a conventional joint is overcome by integrally forming these components as a single part. Problems relating to physical and/or chemical incompatibility between components of a conventional joint are surmounted by forming all these components from organic polymer resin based materials, which also bestows the inventive joint with improved resistance to potentially harmful environmental conditions. The joint of the present invention is formed by locating an assembly comprised of an elastomeric sealing member and at least one anchor member in a gap defined between two structural members and casting mortar into said gap. During casting the mortar, a part of the anchor member chemically bonds to the mortar, thereby providing a significantly stronger and more uniform connection than that in prior art joints employing steel rails and reinforcing bars. A layer of a skid resistant material comprising an organic polymer resin may be provided on an exposed upper surface of the anchor and/or cast mortar.

WO 2006/016131 A3

Published:

— *with international search report*

— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

(88) Date of publication of the international search report:
1 June 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

tional application No
PCT/GB2005/003089

A. CLASSIFICATION OF SUBJECT MATTER
INV. E01D19/06 E01C11/10 C04B26/10 E04B1/68

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)
E01D E01C C04B E04B

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)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 570 611 A (FRIEDRICH MAURER SOEHNE GMBH & CO. KG; FRIEDRICH MAURER SOEHNE GMBH &) 24 November 1993 (1993-11-24)	1-7, 10-16, 19-28, 30,32, 34-49,53
Y	the whole document	8,9,17, 18,31, 33, 50-52, 71-79
X	FR 2 241 217 A (SINMAST FRANCE,FR) 14 March 1975 (1975-03-14) page 1, line 28 - page 2, line 14; figures 1,2	1,30

-/--

[X] Further documents are listed in the continuation of Box C. [X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"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

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
24 October 2005	19.04.2006

Name and mailing address of the ISA/	Authorized officer
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	Movadat, R

Form PCT/ISA/210 (second sheet) (April 2005)

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 4 279 532 A (MILLER, DECEASED ET AL) 21 July 1981 (1981-07-21) column 4, line 14 - line 21; figure 1	8,9,17, 18,31, 33, 50-52, 71-79
A	US 4 362 430 A (CEINTREY ET AL) 7 December 1982 (1982-12-07) cited in the application the whole document	1,30
A	DE 21 19 249 A1 (FRIEDRICH MAURER SOEHNE, 8000 MUENCHEN) 9 November 1972 (1972-11-09) page 7, last paragraph - page 8, paragraph 2; figures	1,30
A	EP 0 373 243 A (SCHLUTER, WERNER) 20 June 1990 (1990-06-20)	

INTERNATIONAL SEARCH REPORT

rnational application No.
PCT/GB2005/003089

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☒ Claims Nos.: 29,63
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
see FURTHER INFORMATION sheet PCT/ISA/210

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
1-28, 30-53, 71-79

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.2

Claims Nos.: 29,63

Rule 6.2 (a) PCT

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.5), should the problems which led to the Article 17(2) declaration be overcome.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-28,30-53,71-79

1.1. claims: 1-28,30-33

Expansion joint assembly with an integrally formed anchor member and method for forming said expansion joint

1.2. claims: 34-53,71-79

Method for forming an expansion joint by chemically bonding the anchor member to the mortar

---

2. claims: 54-62,64-70

Expansion joint assembly with a layer of skid resistant material and method for forming said expansion joint.

INTERNATIONAL SEARCH REPORT

Information on patent family members

Ir tional application No
PCT/GB2005/003089

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0570611 A	24-11-1993	AT 134599 T	15-03-1996
		CZ 9203324 A3	15-12-1993
		DE 59205504 D1	04-04-1996
		HU 69332 A2	28-09-1995
		PL 296571 A1	29-11-1993
FR 2241217 A	14-03-1975	BE 818887 A1	02-12-1974
		DE 2438054 A1	03-04-1975
		ES 223905 Y	01-05-1977
		IT 1016819 B	20-06-1977
		LU 70710 A1	10-12-1974
		NL 7410602 A	18-02-1975
US 4279532 A	21-07-1981	NONE	
US 4362430 A	07-12-1982	AU 530704 B2	28-07-1983
		AU 6132980 A	19-02-1981
		BE 884837 A1	19-02-1981
		BR 8005051 A	24-02-1981
		CA 1160493 A1	17-01-1984
		DE 3031271 A1	26-03-1981
		DK 356580 A	21-02-1981
		FR 2463834 A1	27-02-1981
		GB 2060734 A	07-05-1981
		IT 1127540 B	21-05-1986
		JP 1472108 C	27-12-1988
		JP 56052203 A	11-05-1981
		JP 63017963 B	15-04-1988
		JP 1497132 C	16-05-1989
		JP 61179904 A	12-08-1986
		JP 63046201 B	14-09-1988
		LU 82723 A1	24-03-1981
		MX 152196 A	07-06-1985
		NL 8004684 A	24-02-1981
		NO 802463 A	23-02-1981
		NZ 194659 A	24-08-1984
		SE 441019 B	02-09-1985
		SE 8005835 A	21-02-1981
		US 4456398 A	26-06-1984
DE 2119249 A1	09-11-1972	DE 2046400 A1	23-03-1972
EP 0373243 A	20-06-1990	NONE	