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Galashiels TD1 1RQ (GB). **STOCKTON, David, John** [GB/GB]; 12 Coppice Close, Woodbridge, Suffolk IP12 1RX (GB). **COCKBURN, Kevin, Thomas** [GB/GB]; Corriemoille, 54 Dounehill, Jedburgh TD8 6LJ (GB). **McILWREATH, Greig, Iain** [GB/GB]; 6 Barony Knoll, Kelso TD5 7JE (GB).

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(74) Agent: **VINSOME, Rex, Martin**; Urquhart-Dykes & Lord, St Nicholas Chambers, Amen Corner, Newcastle-upon-Tyne NE1 1PE (GB).

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(71) Applicant (*for all designated States except US*):  
**EMTELLE UK LIMITED** [GB/GB]; Haughhead, Hawick TD9 8LF (GB).

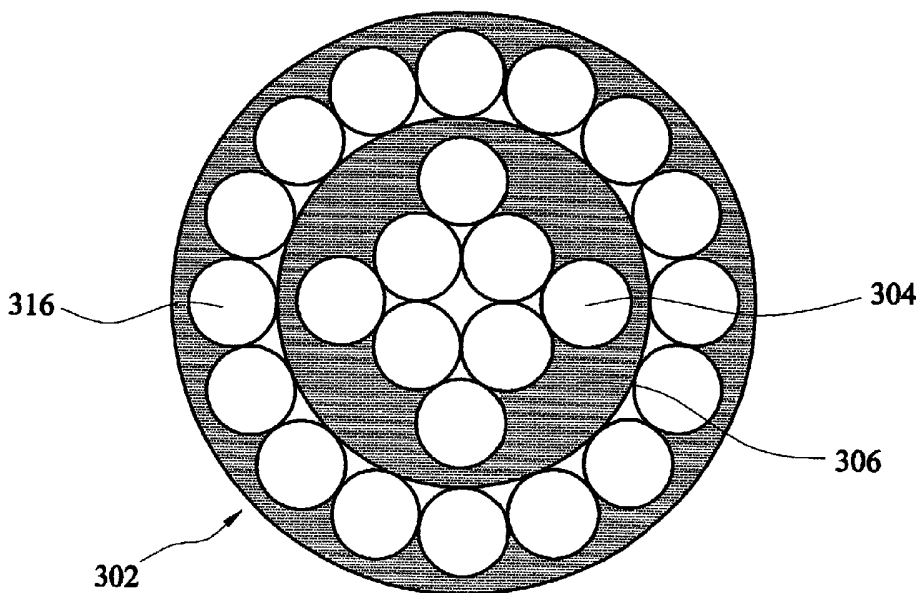
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(72) Inventors; and

(75) Inventors/Applicants (*for US only*): **BROWN, George, Henry, Platt** [GB/GB]; "Braeholm", Windyknowe Road,

[Continued on next page]

(54) Title: COMPACT OPTICAL FIBRE CABLE



(57) Abstract: A cable (302) has (8) fibres (304) are encapsulated by a UV curable layer (306) having a diameter of approximately (1010) microns, and (16) outer fibres (316) arranged in a circular formation around the inner fibres (304). The optical fibres (304) are held in position by means of the UV curable layer (306) so that the UV curable material of the layer (306) does not penetrate into the gaps between the optical fibres (304) and the outermost optical fibres (304) are restrained by the layer from moving axially. It is found that such an arrangement provides surprisingly favourable bending properties, making the cable particularly suitable for installation in a tube by means of blowing.

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ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,  
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<b>A. CLASSIFICATION OF SUBJECT MATTER</b> IPC 7 G02B6/44				
According to International Patent Classification (IPC) or to both national classification and IPC				
<b>B. FIELDS SEARCHED</b>				
Minimum documentation searched (classification system followed by classification symbols) IPC 7 G02B				
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, INSPEC, PAJ				
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>				
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
X	US 6 389 204 B1 (HURLEY WILLIAM C) 14 May 2002 (2002-05-14) abstract; figure 4 column 7, line 34 - line 64 ---	1,10		
P,X	EP 1 310 814 A (CORNING CABLE SYS LLC) 14 May 2003 (2003-05-14) abstract; figure 5 column 13, paragraph 42 -column 14, paragraph 47 ---	1		
X	US 5 787 217 A (TRAUT RICHARD T ET AL) 28 July 1998 (1998-07-28) abstract; figure 4 column 4, line 26 -column 6, line 5 --- -/--	25-27		
<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C.				
<input checked="" type="checkbox"/> Patent family members are listed in annex.				
° Special categories of cited documents :				
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none; vertical-align: top;">                     *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                 </td> <td style="width: 50%; border: none; vertical-align: top;">                     *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.                      *&amp;* document member of the same patent family                 </td> </tr> </table>			*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
*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			
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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		Authorized officer  <h2 style="text-align: center;">Faderl, I</h2>		

## INTERNATIONAL SEARCH REPORT

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 521 710 A (BRITISH TELECOMM) 7 January 1993 (1993-01-07) cited in the application abstract; figure 3 ----	1-27
A	US 6 334 015 B2 (JAMET PATRICK) 25 December 2001 (2001-12-25) abstract; figure 4 ----	1,10
A	DE 42 11 489 A (SIEMENS AG) 7 October 1993 (1993-10-07) abstract; figure 3 column 4, line 21 - line 64 column 3, line 64 -column 4, line 20 ----	2-4, 15-17
A	EP 0 553 990 A (AMERICAN TELEPHONE & TELEGRAPH) 4 August 1993 (1993-08-04) abstract; figure 1 ----	2
A	US 5 274 725 A (BOTTOMS JR JACK ET AL) 28 December 1993 (1993-12-28) figures 3A,3B -----	3,16

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 03/02749

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 6389204	B1	14-05-2002	EP 1262808 A1	04-12-2002
EP 1310814	A	14-05-2003	US 2003091307 A1 EP 1310814 A1	15-05-2003 14-05-2003
US 5787217	A	28-07-1998	WO 9730369 A1	21-08-1997
EP 0521710	A	07-01-1993	AT 153144 T AU 653623 B2 AU 2196192 A BG 61196 B1 BG 98330 A CA 2110800 A1 CZ 9302923 A3 DE 69219680 D1 DE 69219680 T2 DK 521710 T3 EP 0521710 A1 EP 0592505 A1 ES 2102464 T3 FI 935911 A WO 9301512 A1 GB 2271649 A , B GR 3023418 T3 HK 133696 A HU 66090 A2 NO 934907 A NZ 243408 A RO 113909 B1 SK 150593 A3 US 5555335 A US 5557703 A ZA 9204893 A	15-05-1997 06-10-1994 11-02-1993 28-02-1997 30-06-1994 21-01-1993 13-04-1994 19-06-1997 11-09-1997 01-12-1997 07-01-1993 20-04-1994 01-08-1997 29-12-1993 21-01-1993 20-04-1994 29-08-1997 02-08-1996 28-09-1994 01-03-1994 22-12-1994 30-11-1998 11-05-1994 10-09-1996 17-09-1996 28-04-1993
US 6334015	B2	08-11-2001	FR 2785994 A1 AU 6346599 A BR 9914888 A CA 2349921 A1 CN 1326556 T EP 1131661 A1 WO 0029892 A1 HU 0104462 A2 JP 2002530693 T SK 6522001 A3 US 2001038739 A1	19-05-2000 05-06-2000 17-07-2001 25-05-2000 12-12-2001 12-09-2001 25-05-2000 28-03-2002 17-09-2002 03-12-2001 08-11-2001
DE 4211489	A	07-10-1993	DE 4211489 A1	07-10-1993
EP 0553990	A	04-08-1993	US 5345525 A AU 657193 B2 AU 3197793 A CA 2087295 A1 CN 1075009 A , B DE 69312106 D1 DE 69312106 T2 DK 553990 T3 EP 0553990 A1 ES 2104046 T3	06-09-1994 02-03-1995 26-08-1993 29-07-1993 04-08-1993 21-08-1997 05-03-1998 06-10-1997 04-08-1993 01-10-1997

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 03/02749

Patent document cited in search report	A	Publication date	Patent family member(s)	Publication date
EP 0553990	A		JP 6082664 A	25-03-1994
			MX 9300375 A1	01-07-1993
			NO 930230 A	29-07-1993
			NZ 245760 A	28-05-1999
US 5274725	A	28-12-1993	US 5195158 A	16-03-1993
			US 5204926 A	20-04-1993
			AT 151889 T	15-05-1997
			AU 1375192 A	07-09-1992
			BR 9205574 A	11-10-1994
			DE 69218989 D1	22-05-1997
			EP 0498621 A2	12-08-1992
			ES 2103339 T3	16-09-1997
			MX 9200513 A1	01-08-1992
			WO 9214175 A1	20-08-1992
			MX 9201220 A1	01-07-1993