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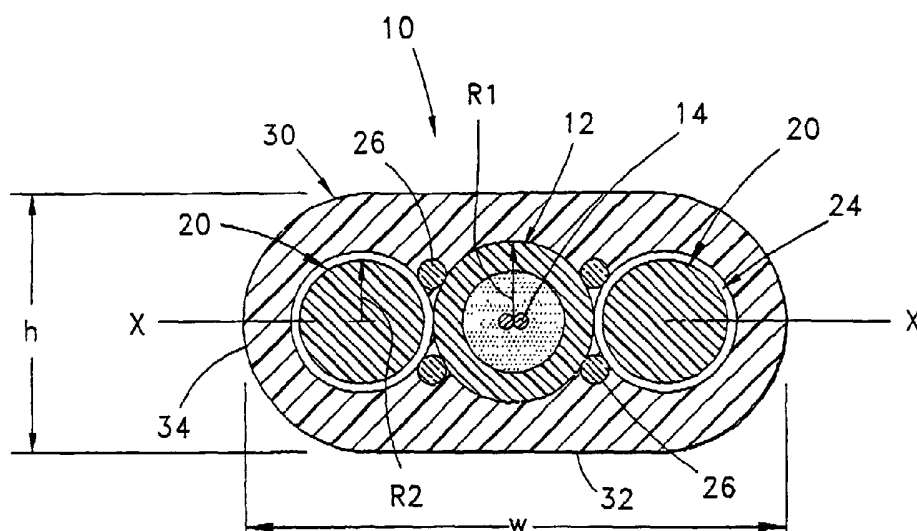
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(54) Title: FIBER OPTIC CABLES WITH STRENGTH MEMBERS



(57) Abstract: A fiber optic cable having at least two strength components (20), an optical transmission component (12), and at least one tensile strength member (26) disposed generally adjacent at least one of the strength components (20), a strength member (26) to strength component (20) tensile strength ratio being about 0.1 to about 0.3. In another aspect, a fiber optic cable having at least two strength components (20), an optical transmission component (12), and at least one tensile strength member (26) being generally interposed between the optical transmission component (12) and at least one of the strength components (20), the tensile strength member (26) being multi-functional in that it preferably provides tensile strength and waterblocking. And in another aspect, a fiber optic cable with strength members (20) and strength components (26) comprising respective tensile strength ratings and defining an overall tensile strength rating ratio of about 0.25 to about 0.5.



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A. CLASSIFICATION OF SUBJECT MATTER
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B. FIELDS SEARCHED

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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, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|-----------------------|
| X | EP 0 985 946 A (SIECOR OPERATIONS LLC) 15 March 2000 (2000-03-15) paragraph '0018! - paragraph '0020!; figures 2-4 | 1-9 |
| A | --- | 10,13 |
| X | EP 0 351 100 A (AMERICAN TELEPHONE & TELEGRAPH) 17 January 1990 (1990-01-17) column 4, line 29 - column 5, line 27 column 7, line 2 - line 21; figures 1,2 | 1-4,6,9 |
| A | --- | 10,13 |
| X | US 4 836 640 A (GARTSIDE III CHARLES H ET AL) 6 June 1989 (1989-06-06) column 11, line 45 - line 58; figures 2,8,9 column 12, line 39 - line 55 | 1,2,4,5, 7 |
| A | --- | 10,13 |
| | --- -/-- | |

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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 | US 3 887 265 A (MARGOLIS DAVID SAUL ET AL) 3 June 1975 (1975-06-03) column 4, line 33 - line 58; figure 6 ----- | 1,10,13 |

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 01/26355

| Patent document cited in search report | | Publication date | Patent family member(s) | Publication date |
|---|---|---------------------|----------------------------|---------------------|
| EP 0985946 | A | 15-03-2000 | US 6259844 B1 | 10-07-2001 |
| | | | EP 0985946 A1 | 15-03-2000 |
| | | | JP 2000089068 A | 31-03-2000 |
| | | | US 2002044751 A1 | 18-04-2002 |
| EP 0351100 | A | 17-01-1990 | US 4913517 A | 03-04-1990 |
| | | | CA 1323672 A1 | 26-10-1993 |
| | | | DK 339889 A | 12-01-1990 |
| | | | EP 0351100 A2 | 17-01-1990 |
| | | | JP 2061909 A | 01-03-1990 |
| | | | JP 2618485 B2 | 11-06-1997 |
| | | | US 5389442 A | 14-02-1995 |
| US 4836640 | A | 06-06-1989 | CA 1293878 A1 | 07-01-1992 |
| | | | CN 87104422 A , B | 20-01-1988 |
| | | | DE 3789259 D1 | 14-04-1994 |
| | | | DE 3789259 T2 | 11-08-1994 |
| | | | DK 328287 A | 28-12-1987 |
| | | | EP 0256248 A2 | 24-02-1988 |
| | | | ES 2049722 T3 | 01-05-1994 |
| | | | JP 2622380 B2 | 18-06-1997 |
| | | | JP 63010113 A | 16-01-1988 |
| | | | KR 9408674 B1 | 24-09-1994 |
| US 3887265 | A | 03-06-1975 | GB 1436319 A | 19-05-1976 |
| | | | DE 2355853 A1 | 16-05-1974 |
| | | | JP 49135640 A | 27-12-1974 |