RTMP COPY + IPER

9705936-4

PCT WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : G02B 6/38 — A1

(11) International Publication Number: WO 97/01783

(43) International Publication Date: 16 January 1997 (16.01.97)

(21) International Application Number: PCT/US96/08940

(22) International Filing Date: 5 June 1996 (05.06.96)

(30) Priority Data:
08/496,328 29 June 1995 (29.06.95) US

(71) Applicant: MINNESOTA MINING AND MANUFACTURING COMPANY [US/US]; 3M Center, P.O. Box 33427, Saint Paul, MN 55133-3427 (US).

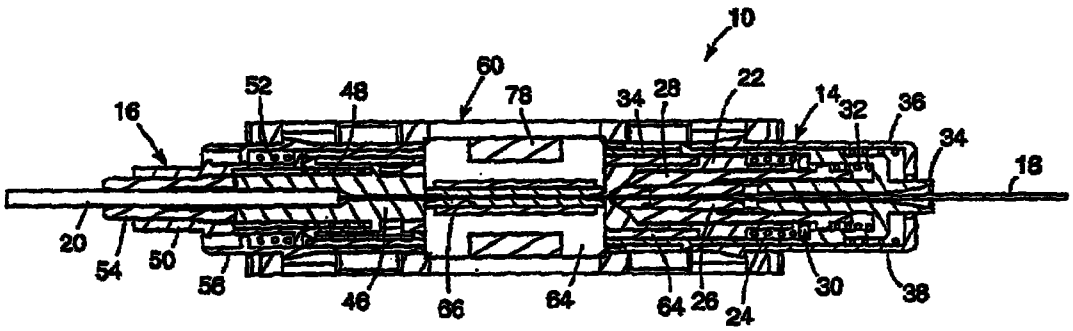
(72) Inventors: CARPENTER, James, B.; 3M Austin Center, 6801 River Place Boulevard, Austin, TX 78726-9000 (US). PATTERSON, Richard, A.; 3M Austin Center, 6801 River Place Boulevard, Austin, TX 78726-9000 (US). PEPIN, Ronald, P.; 3M Austin Center, 6801 River Place Boulevard, Austin, TX 78726-9000 (US).

(74) Agents: MUSGROVE, Jack, V. et al.; Minnesota Mining and Manufacturing Company, Office of Intellectual Property Counsel, P.O. Box 33427, Saint Paul, MN 55133-3427 (US).

(81) Designated States: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN, ARIPO patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).

Published
With international search report.

(54) Title: OPTICAL FIBRE CONNECTOR FOR FIBRES WITH CLEAVED AND BEVELED ENDS



(57) Abstract

A device for interconnecting the bare ends of two or more optical fibers uses a common receptacle having a fiber clamping element therein and camming surfaces for actuating the element, and at least one plug having a camming finger for engaging one of the camming surfaces. The camming surfaces are located such that, when only one of the camming surfaces is actuated, the clamping element rocks to a side of the pocket opposite the one camming surface and remains in the open state, but when both of the camming surfaces are actuated, the clamping element is forced to the closed state. The plug includes a fiber protector free to slide within the plug housing, substantially enclosing the bare end of the fiber when the plug housing is removed from the receptacle, but retracting when the plug housing is inserted into the receptacle to direct the bare end of the fiber toward said guide tube. A fiber collet biases the terminal end of the fiber toward the forward end of the plug to place a preload condition on the bare end of the fiber. The connector is particularly suited for cleave-and-bevel installations. The receptacle preferably uses a novel clamping element having two plate members with fiber-contacting surfaces, at least one of said fiber-contacting surfaces having a fiber-receiving groove. Edges of the plates are aligned and held together with a split tube spring. At least one of the plate members is provided with a wire-receiving groove and a wire therein which acts as a fulcrum to allow the plates to pivot along an axis defined by the wire. The split tube spring provides a precisely controlled load along the edges of the plates, allowing the opposite ends to be clamped together (within the guide tube) by a force sufficient to overcome the controlled load of the split tube spring.