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(21) International Application Number: PCT/US96/08980 (22) International Filing Date: 5 June 1996 (05.06.96) (30) Priority Data: 08/496,360 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: PATTERSON, Richard, A.; 3M Austin Center, 6801 River Place Boulevard, Austin, TX 78726-9000 (US). MATHEWS, Alexander, R.; 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: FIBER OPTIC CONNECTOR ELEMENT

(57) Abstract

A device for interconnecting the bare ends of two or more optical fibers (18, 20) uses a common receptacle (12) having a fiber clamping element (66) therein and camming surfaces (70, 72) for actuating the element (66), and at least one plug having a camming finger (74, 76) for engaging one of the camming surfaces (70, 72). The camming surfaces (70, 72) are located such that, when only one of the camming surfaces (70, 72) is actuated, the clamping element (66) rocks to a side of the pocket opposite the one camming surface (70, 72) and remains in the open state, but when both of the camming surfaces (70, 72) are actuated, the clamping element (66) is forced to the closed state. The plug includes a fiber protector (22) free to slide within the plug housing (14, 16), substantially enclosing the bare end of the fiber (18, 20) when the plug housing (14, 16) is removed from the receptacle (12), but retracting when the plug housing (14, 16) is inserted into the receptacle (12) to direct the bare end of the fiber (18, 20) toward said guide tube (64). A fiber collet (26) biases the terminal end of the fiber (18, 20) toward the forward end of the plug to place a preload condition on the bare end of the fiber (18, 20). The connector (10) is particularly suited for cleave-and-bevel installations. The receptacle (12) preferably uses a novel clamping element (90) having two plate members (92, 94) with fiber-contacting surfaces, at least one of said fiber-contacting surfaces having a fiber-receiving groove (108). Edges (96, 98) of the plates (92, 94) are aligned and held together with a split tube spring (112). At least one of the plate members (92, 94) is provided with a wire-receiving groove (100, 102) and a wire (114) therein which acts as a fulcrum to allow the plates (92, 94) to pivot along an axis defined by the wire (114). The split tube spring (112) provides a precisely controlled load along the edges (96, 98) of the plates (92, 94) allowing the opposite ends to be clamped together (within the guide tube (64)) by a force sufficient to overcome the controlled load of the split tube spring (112).

