we forgot to explain that we only used a quasi-isotropic approximation theory for the problem [2]. Though the exact field analysis requires hybrid modes in this case, the field expansion in the above mentioned paper employs pure TE-modes, which are valid approximately. This was done in order to allow the efficient use of the developed field expansion method for isotropic fin lines [1].

The error introduced by neglecting the hybrid character of the higher order modes is relatively small, since the main determinant of the field expansion of fin-line structures is known to be the fundamental mode $n=0$, which, admittedly, has been treated correctly in the paper. As we mentioned in our paper, our contribution was intended to trigger further work, especially in the field-theoretical area of ferrite loaded fin lines. We are happy to hear that Mr. Lange apparently will present a full-wave hybrid theory of this problem in the future.

REFERENCES

[1] A. Beyer and I. Wolff, "The solution of the earthed finline with finite metallization thickness," *IEEE MTT-S Symp. Dig.*, 1980, pp. 258–260.
[2] I. Wolff, *Felder und Wellen in gyrotropen Mikrowellenstrukturen*. Braunschweig, Vieweg, 1973, pp. 91–92.

Corrections to "A More Accurate Model of the TE_{10}-Type Waveguide Mode in Suspended Substrate"

SEYMOUR B. COHN AND GORDON D. OSTERHUES

The following corrections should be made to the above paper[1]. On page 293, (1) should read

$$Z_2 \tan \phi_2 - Z_1 \cot \phi_1 = 0.$$

On page 293, column one, six lines below (1) the definition of ϵ_1 is

$$\epsilon_1 = \left[1 - \frac{b_3}{b_1} \left(\frac{\epsilon_r - 1}{\epsilon_r} \right) \right]^{-1}.$$

Manuscript received April 6, 1982.
S. B. Cohn is with S. B. Cohn Associates, Inc., Los Angeles, CA 90049.
G. D. Osterhues is with the Ford Aerospace & Communications Corp., Aeronutronic Division, Newport Beach, CA 92660.

[1] S. B. Cohn and G. D. Osterhues, *IEEE Trans. Microwave Theory Tech*, vol. MTT-30, pp. 293–294, Mar. 1982.

Patent Abstracts

These Patent Abstracts of recently issued patents are intended to provide the minimum information necessary for readers to determine if they are interested in examining the patent in more detail. Complete copies of patents are available for a small fee by writing: U.S. Patent and Trademark Office, Box 9, Washington, DC, 20231.

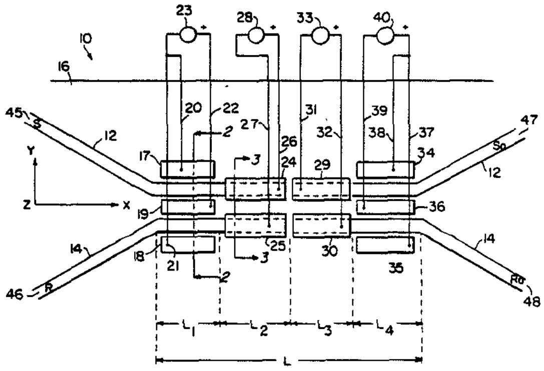
4,291,939 Sept. 29, 1981

Polarization-Independent Optical Switches/Modulators

Inventors: Thomas G. Giallorenzi; Richard A. Steinberg.
Assignee: The United States of America as represented by the Secretary of the Navy.
Filed: Mar. 24, 1978.

Abstract—Optical channel waveguide switches/modulators having polarization-independent operation are disclosed. Electrodes are disposed in proximity to the waveguide channels to provide an electric field that is primarily horizontally directed in at least one channel and an electric field that is primarily vertically directed in at least one channel. Since the different electric-field orientations electrooptically induce difference changes in the index of refraction for waves of different polarization in the guides, this permits improved electrooptic control over both TM-like and TE-like modes. Embodiments of both modal interference switches/modulators and branching waveguide switches/modulators are disclosed.

16 Claims, 17 Drawing Figures



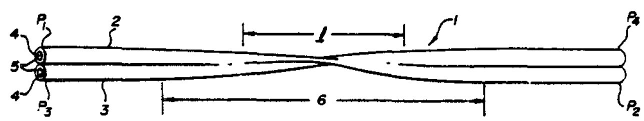
4,291,940 Sept. 29, 1981

Low-Loss Access Coupler for Multimode Optical Fiber Distribution Systems

Inventors: Brian S. Kawasaki;
Kenneth O. Hill;
Derwyn C. Johnson.
Assignee: Canadian Patents & Development Ltd.
Filed: Jun. 13, 1977

Abstract—The low loss access coupler includes two multimode optic fibers, each having a biconical taper section. The biconical taper sections of the fibers are fused together to provide optical coupling between the fibers. The fused fibers may also be twisted around one another to enhance mode mixing. The access couplers may be produced by fusing two fibers together along a small length, then heating the fused length and pulling the fibers to form the biconical tapers; or by twisting a portion of each of the fibers around one another, applying a tensile force to the twisted portions of the fibers and heating a region of the twisted fibers to soften and fuse a predetermined length of twisted fibers. If the fibers already have biconical taper sections, the access coupler may be produced by twisting the fibers together along the taper sections and heating a region of the taper sections to fuse them together.

9 Claims, 1 Drawing Figure



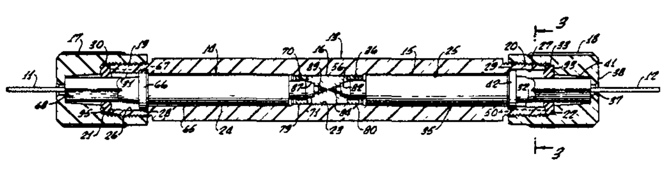
4,291,941 Sept. 29, 1981

Optical Fiber Connector

Inventor: Erich G. Melzer.
Assignee: The Deutsch Company Electronic Components Division.
Filed: Feb 4, 1980.

Abstract—This invention provides an optical fiber connector that includes a tubular receptable with a lens at its central portion and fiber termination units extending into its opposite ends. Each of the fiber termination units includes two elements, one telescopingly received in the other and resiliently biased toward the lens. A nut engages either end of the receptacle and the outer element of the fiber termination unit, biasing the latter element against a positive stop which limits its axial travel toward the lens. A single seal at each nut engages the receptacle and the fiber termination unit to preclude entry of foreign matter. The fibers are gripped by resilient members compressed around the fibers by crimped portions of the fiber holding units. An elongated tool, with spaced shoulders, positions the lens and its retention springs at the center of the receptacle.

14 Claims, 9 Drawing Figures



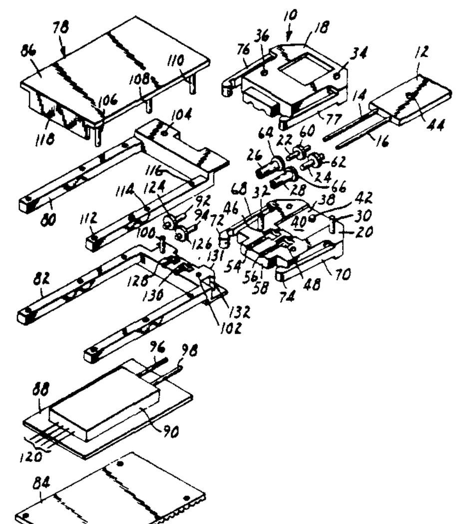
4,291,943 Sept. 29, 1981

Connector for Optical Fiber Cables

Inventors: Paul H. Binek;
Thomas M. Cherney;
John M. Magnusson;
Bryon J. Cronk.
Assignee: Minnesota Mining and Manufacturing Company.
Filed: Feb. 21, 1980.

Abstract—A connector for use with a cable containing a plurality of optical fibers supported in a flexible matrix and disposed parallel to each other, such as in a flat ribbon configuration The connector includes a substantially flat housing member having a rear opening corresponding in size and shape to a cable to be received. The opening has associated therewith means for anchoring the cable. Passageways through the housing are provided for the individual fibers to be received and anchored within fiber retaining members such that the fiber ends are accessible at the front of the housing to be coupled to fibers within a mated connector The fiber retaining members are in turn adapted to be received into an abutting relationship within an alignment means which maintains the mated fibers in axial alignment when the connectors are mated. The housing also has associated therewith a latching means on both sides of the flat housing adapted to corresponding members of the mated connector to align the respective members and to maintain the abutting relationship when the respective connectors are mated.

17 Claims, 7 Drawing Figures



4,299,434 Nov. 10, 1981

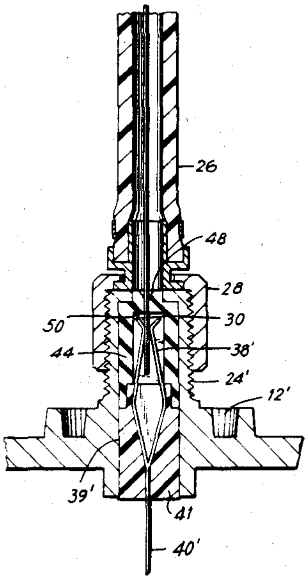
Watertight RF Connector

Inventor: Asao Ishikawa.
Filed: Jan. 22, 1979

Abstract—A watertight RF coaxial jack connector is provided which includes an elastomeric layer disposed in sealing relationship with its upper opening. The layer is formed so as to guide the center pin of a mating coaxial plug connector to puncture the layer and engage a split pin provided within the jack connector body A watertight seal is thereby effected for preventing moisture from entering inside the jack connector through the upper opening. A

second elastomeric layer is mounted within the jack body beneath the first layer. The second layer both supports the split pin and exerts an upward compressive force on the first elastomeric layer.

9 Claims, 7 Drawing Figures



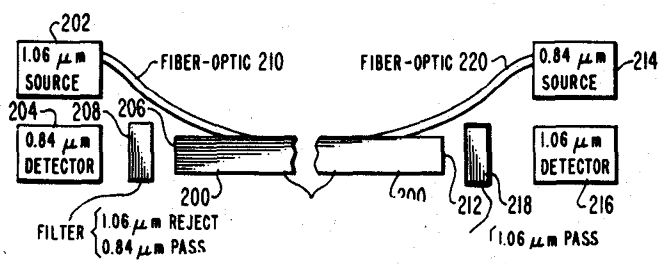
4,300,811 Nov. 17, 1981

III-V Direct-Bandgap Semiconductor Optical Filter

Inventors: Michael Ettenberg; Charles J. Nuese.
Assignee: RCA Corporation.
Filed: Oct. 18, 1979.

Abstract—A thin plate of III-V direct-bandgap semiconductor, preferably with anti-reflective coatings, operates as superior optical filter for light having a wavelength which exceeds a given wavelength in the visible or infra-red spectrum. Such a filter is particularly suitable for use in a duplex optical communication system employing a fiber-optic transmission line.

5 Claims, 3 Drawing Figures



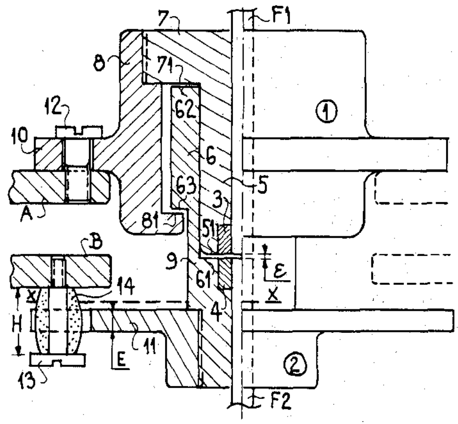
4,303,300 Dec. 1, 1981

Rotary-Joint Device Providing for An Optical Waveguide Transmission

Inventors: Robert Pressiat; Guy de Corlieu; Marcel Malard; Luigi d' Auria.
Assignee: Thomson-CSF.
Filed: Feb. 4, 1980.

Abstract—The rotary-joint device has the design function of maintaining accurate positioning of the ends of optical fiber conductors during relative rotation of external bodies to which the joint is coupled. The device comprises a male ferrule and a female ferrule so arranged as to form a shaft rotatably mounted within a sleeve with a close but compliant fit, an abutment device for limiting the axial displacement of the sleeve, means for centering the ends of the conductors, and means for securing said ferrules to external connector bodies so as to form a rigid coupling and a semi-rigid coupling respectively.

7 Claims, 8 Drawing Figures



4,303,302 Dec. 1, 1981

Piezoelectric Optical Switch

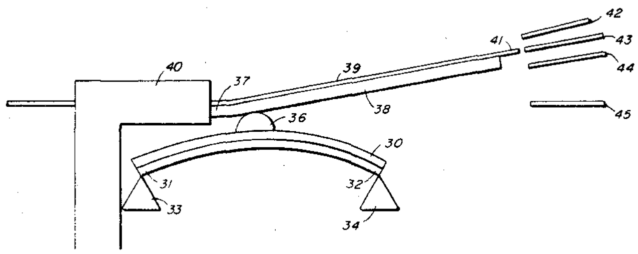
Inventors: Hubert J. Ramsey; Mark L. Dakss.
Assignee: GTE Laboratories Incorporated.
Filed: Oct. 30, 1979.

Abstract—A piezoelectric optical switch includes a piezoelectrical element having an optical fiber affixed thereto. A second optical fiber is placed in general proximity to the first optical fiber so that, upon application of a first voltage to the piezoelectric element, the optical fibers are caused to be aligned, and wherein upon application of a different voltage to the element, the optical fibers are caused to be nonaligned.

The switch can include a nonpiezoelectric cantilever beam having a fixed end and a free end and adapted to be bent along an axis adjoining the two ends. One optical fiber is affixed to the beam. A plurality of optical fibers, each in general proximity to and each adapted to be selectively aligned with the one optical fiber, is provided. A piezoelectric bending element, having opposite ends coupled to fixed supports, has a medial portion coupled to the cantilever beam near the fixed end. Thus, upon applications of a first voltage to the bending element, the first optical fiber is caused to be aligned with a specific

one of the plurality of optical fibers. Upon application of a different voltage to the bending element, the first optical fiber is caused to be aligned with a specific different one of the plurality of optical fibers.

9 Claims, 3 Drawing Figures



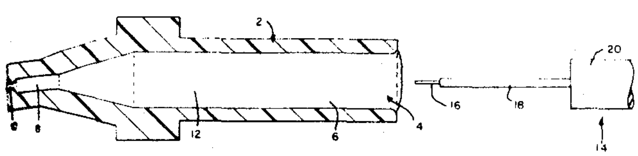
4,303,304 Dec. 1, 1981

Universal Optical Waveguide Alignment Ferrule

Inventor: Frank A. Ruiz.
Assignee: AMP Incorporated.
Filed: Nov. 30, 1979.

Abstract—Connector ferrule and method for terminating an optical waveguide cable. The ferrule, of generally truncated conical profile, is configured having a profiled passageway therethrough from a rearward cable receiving portion to a forward bore critically located centrally of a forward ferrule face and sized to allow only the passage of an unclad waveguide portion therethrough. The waveguide cable is secured within the ferrule by adhesive means, with an unclad waveguide portion protruding through the forward ferrule bore and a clad waveguide portion within an intermediate region of the passageway. Thereafter, the forward nose of the ferrule and the unclad waveguide portion therethrough are removed to present a clad waveguide face centrally of a forward face of the ferrule.

5 Claims, 4 Drawing Figures



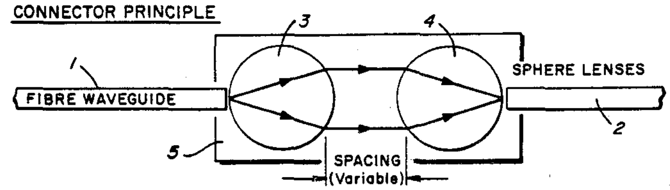
4,304,461 Dec. 8, 1981

Optical Fiber Connectors

Inventors: William J. Stewart;
John P. Dakin.
Assignee: Plessey Handel und Investments AG.
Filed: Dec. 19, 1979.

Abstract—An optical fibre connector comprising in respect of each of the optical fibres to be connected, a connector body part formed at one end with a recess which accurately locates a sphere lens relative to an optical fibre receiving hole extending through the body part and terminating at the center of the recess whereby the axis of the optical fibre received by the hole and preferably bonded to the surface of the sphere lens. Connecting means is provided for connecting together in axial alignment two of the body parts with the sphere lenses of the parts arranged in opposed relationship.

4 Claims, 4 Drawing Figures



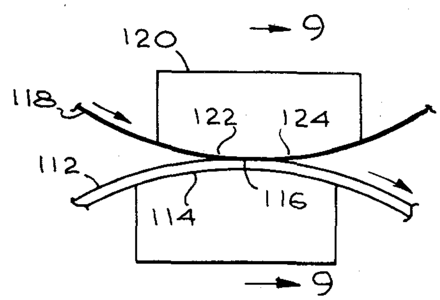
4,307,933 Dec. 29, 1981

Optical Fiber Launch Coupler

Inventors: John P. Palmer;
Phillip B. Ward, Jr.
Assignee: General Dynamics, Pomona Division.
Filed: Feb. 20, 1980.

Abstract—A low-loss unidirectional optical coupler utilizing clad monofilament fibers of different diameters is provided by mounting each fiber on a curved surface, lapping the smaller (launch) fibers substantially tangentially to the curved surface until the core of the launch fiber has been lapped through to produce two elliptical flat surfaces, independently lapping the other (throughput) fiber tangentially to its surface to produce a fiber surface of substantially the same size as one of those produced on the launch fiber, aligning the throughput fiber surface with one of the launch fiber surfaces, and bonding them together.

26 Claims, 9 Drawing Figures



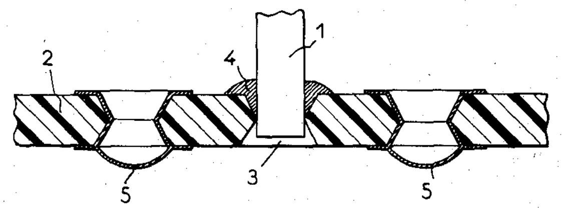
4,307,935 Dec. 2, 1981

Coupling Device Between Optical Fibers and Electro-Optical Elements

Inventor: Michel J. C. Monnier.
Assignee: U.S. Philips Corporation.
Filed: Oct. 31, 1979.

Abstract—The invention relates to a coupler for connecting optical fibers and electro-optical elements by means of a flexible polyimide substrate which is provided with a hole for positioning the fiber. The substrate is also provided with small metallized holes, covered with a metal bump, for connection of the electro-optical element.

4 Claims, 4 Drawing Figures



4,309,677 Jan. 5, 1982

Microstrip "T" Type Attenuator Network

Inventor: Mark Goldman.
Assignee: Alpha Industries, Inc.
Filed: May, 5, 1980.

Abstract—Several strips of resistive material are deposited on a top surface of a dielectric substrate having an opposite bottom surface substantially covered by a conducting material. A strip of conducting material is also deposited on the top substrate surface in electrical contact with the strips of resistive material. At least one of the strips of resistive material is electrically connected to the conducting material on the bottom substrate surface.

3 Claims, 4 Drawing Figures