

Patent Abstracts

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4,296,996

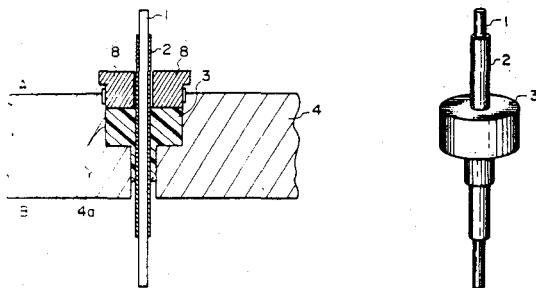
Oct. 27, 1981

Feedthrough for Optical Fiber

Inventors: Yasuhiko Niiro; Kahei Furusawa; Akira Okada.
Assignee: Kokusai Denshin Denwa Kabushiki Kaisha.
Filed: July 17, 1979.

Abstract—An optical fiber feedthrough for an optical submerged repeater for use in an optical fiber submarine cable, in which a metal film is coated on the outer peripheral surface of an optical fiber to be introduced into the repeater, and in which a thermoplastic material, such as polyethylene or the like, is filled between the inner wall of a hole made in an end face plate of a pressure resisting container of the repeater and the metal film.

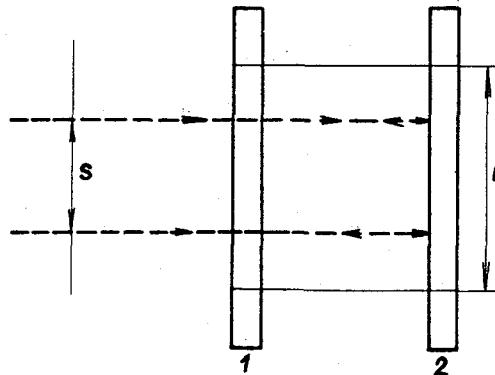
3 Claims, 6 Drawing Figures



said reflectors or at least one of them being an arrangement of metallic conductors and to said conductors being connected one or more Josephson junctions. Said conductors are equipped with external contacts situated on the circumference of the converter and used to interconnect the Josephson junctions.

The converter finds applications as a detector of electromagnetic waves of the millimetric and submillimetric band and/or as a mixer of waves of different wavelength.

4 Claims, 3 Drawing Figures



4,298,990

Nov. 3, 1981

Frequency Converter of Electromagnetic Radiation in Millimeter and Submillimeter Wavelength Range

Inventors: Halina Bielska-Lewandowska; Natalija Irisova; Grzegorz Jung; Stanislaw J. Lewandowski; Aleksandr Prohorov; Roman Sobolewski; Eugenij Vinogradov.
Assignee: Polska Akademia Nauk Instytut Fizyki.
Filed: Nov. 19, 1979.

Abstract—A frequency converter for electromagnetic waves of the millimetric and submillimetric band comprising an open resonator whose reflectors are of diameter larger than the dimensions of the cross-section of radiation beam,

4,286,135

Aug. 25, 1981

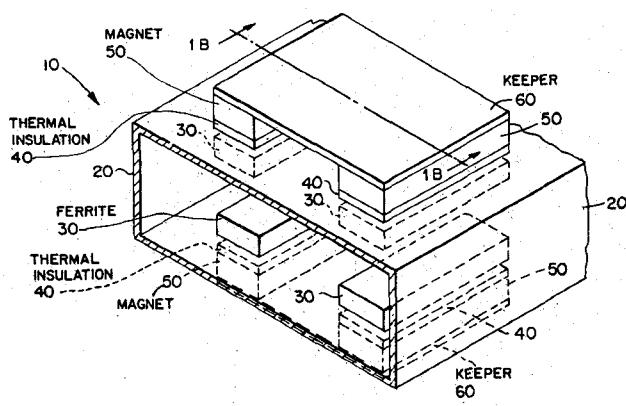
Compact Microwave Isolator

Inventors: Jerome J. Green; Daniel J. Masse.
Assignee: Raytheon Company.
Filed: Oct. 9, 1979.

Abstract—A resonance isolator in which microwave ferrite bars are positioned in and in contact with a waveguide to achieve unilateral absorption and in which ceramic permanent magnet bars are positioned on the outside of the waveguide adjacent to the ferrite bars and are insulated by a thin sheet of thermally insulating material that also acts as a spacer to adjust the magnetic field. The waveguide may be made with nonmagnetic sheet metal and the ferrite bars may be used as extruded. The isolator is adapted to connect between a microwave generator, such as a magnetron, and a microwave load, such as a heating chamber, and forms an integral feed unit. The isolator effectively reduces the peaks of the standing wave caused by the power reflected by a load and protects the generator against premature degradation.

and extends its useful life time. Preferably, the isolator structure is mounted on the heating chamber which forms a wall of the waveguide and a set of permanent magnets may be on the inside of the heating chamber and coated with a conductive layer to prevent absorption of energy. Magnetron cooling air may also be drawn through a waveguide for cooling and additionally for driving a mode stirrer in the heating chamber.

8 Claims, 4 Drawing Figures



4,296,355

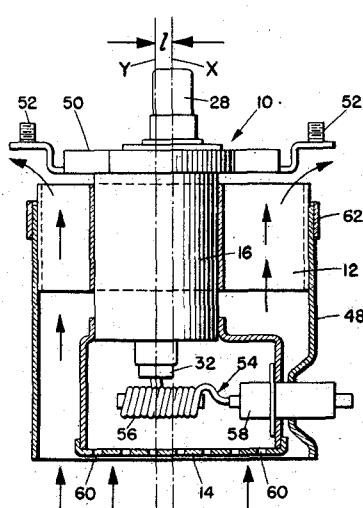
Oct. 20, 1981

Magnetron with Cooling Means

Inventors: Akihiro Fukatsu; Isao Tada.
Assignee: Toshiba Corporation.
Filed: Nov. 13, 1979.

Abstract—A magnetron comprises an anode with an anode axis and an antenna terminal disposed along an antenna axis. The antenna axis is offset from and parallel to the anode axis. A cooling element surrounds the anode for cooling the anode. The outermost periphery of the cooling element which forms the overall shape of the magnetron has a longitudinal center axis disposed coaxially along the antenna axis to permit the adaptability of the magnetron to substantially all types of oven waveguides.

5 Claims, 6 Drawing Figures



4,296,999 Oct. 27, 1981

4,296,999

Oct. 27, 1981

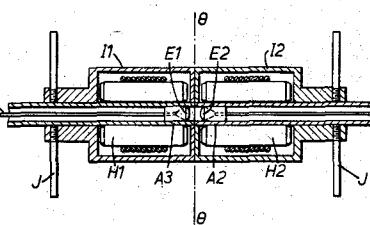
Optical Fiber Connectors

Inventor: John F. Mead.
Assignee: Plessey Handel und Investments AG.
Filed: Oct. 23, 1979.

Abstract—Connection between optical fibers must be very precise to avoid light loss across the connection and it is an object of this invention to provide a connector which can be used to connect fibers accurately, in poor lighting conditions and in the minimum of time.

This is achieved by providing a connector consisting of two identical couplers each having a probe over which is slidably mounted a probe-gripping collet. The two couplers are aligned with the probes of the couplers aligned and abutting, and one of the collets of one of the couplers is moved along to span the abutment between the two probes, thus holding the probes in precise alignment.

12 Claims, 21 Drawing Figures



4,296,995 Oct. 27, 1981

4,296,995

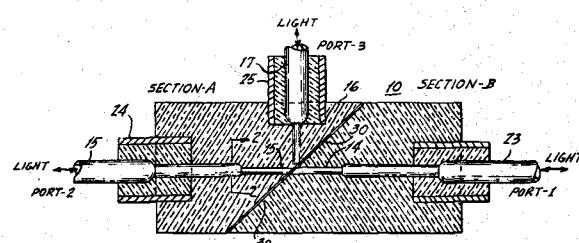
Oct. 27, 1981

Optical Fiber Beam Splitter Couplers Employing Coatings with Dichroic Properties

Inventor: Gary W. Bickel.
Assignee: International Telephone and Telegraph Corporation.
Filed: Feb. 1, 1980.

Abstract—A single fiber of any glass type is cut at a suitable angle and both halves are then polished at the end surfaces. A layer of material having dichroic properties or multiple layers are then deposited on one coupler half and the two halves are rejoined with the angular faces in alignment. Each of the cut fibers are supported in a potting compound. A third fiber is added relatively transverse to the original fibers in order to receive light from the deposited layer. This fiber is associated with one port, while the other fibers are associated with two other ports, thus providing a three port coupler device.

10 Claims, 4 Drawing Figures



4,302,072

Nov. 24, 1981

Device for Tapping Scattered Light From a Joint in an Adjustable Connector for Two Optical Fiber Waveguides

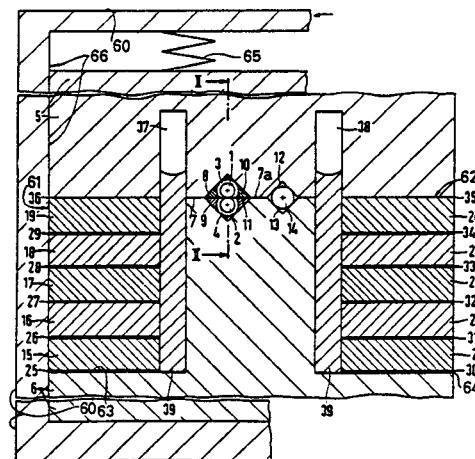
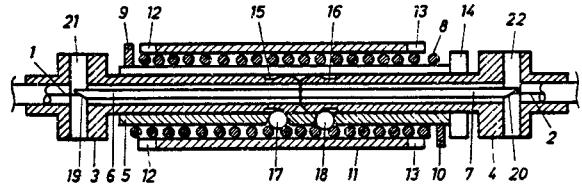
Inventor: Viesturs J. Vucins.

Assignee: Telefonaktiebolaget L M Ericsson.

Filed: Sept. 21, 1979.

Abstract—A device for tapping scattered light from a joint in an adjustable connector for two optical fibre waveguides having a first and a second cylindrical jointing tube for the fibre waveguides and a jointing sleeve for the jointing tube, at least one of the fibre waveguides being, inside its jointing tube, enclosed by a capillary tube of a transparent material.

8 Claims, 1 Drawing Figure



the waveguides when in the second position or moves the members apart to separate the waveguides.

9 Claims, 5 Drawing Figures

4,302,071

Nov. 24, 1981

Adjustable Directional Coupler for Light Waveguides

Inventor: Gerhard Winzer.

Assignee: Siemens Aktiengesellschaft.

Filed: Nov. 23, 1979.

Abstract—A coupler for coupling a light signal traveling in a light conducting core of one light waveguide into the light conducting core of a second waveguide with an adjustable ratio of the amount of coupling therebetween characterized by a pair of support members for mounting the waveguides in a fixed position along a coupling segment with the waveguides substantially parallel and being embedded in a medium with an index of refraction which is lower in comparison to the index of refraction of the cores, each of the support members being mounted for relative movement to each other from a first position with the waveguides in alignment with each other to a second position with the waveguides separated and displaced from each other and a device for moving the support members between the positions in the prescribed amounts to change the ratio of the light signal coupled from one waveguide to the other waveguide. Preferably the waveguides, which may be either optical fibers or strip waveguides, are disposed adjacent flat planar surfaces of the support and the device for moving may be a piezoelectric device that either shifts the support members between the first and second positions in a direction extending parallel to the plane of the surfaces so that a lateral offset occurs between

4,303,923

Dec. 1, 1981

Probe Loop Feed for Transverse Edge Waveguide Slot Radiator

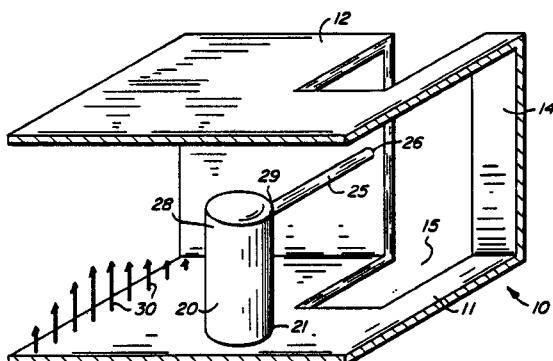
Inventors: Charles R. Bitter, Jr; Terry D. Hafer.

Assignee: Motorola Inc.

Filed: Aug. 9, 1979.

Abstract—A transverse edge slot defined in the narrow wall of a rectangular waveguide with a first elongated conductor portion having one end attached to the narrow wall adjacent the slot and the second end extending inwardly generally perpendicular to the narrow wall and a second elongated conductor with one end connected to a broad wall and the free ends connected together to form a probe-loop feed.

6 Claims, 2 Drawing Figures



4,301,430

Nov. 17, 1981

U-Shaped Iris Design Exhibiting Capacitive Reactance in Heavily Loaded Rectangular Waveguide

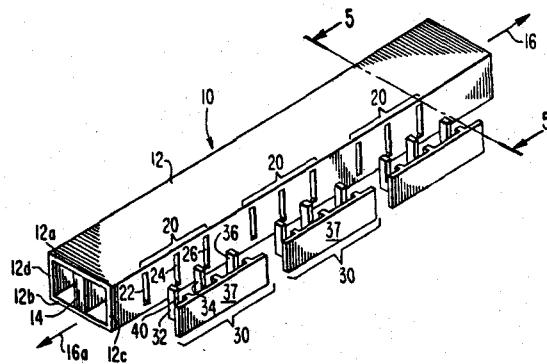
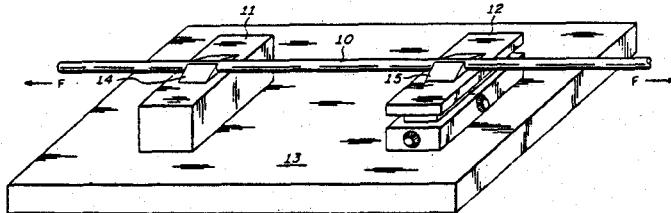
Inventor: Vitaly Stachejko.
 Assignee: RCA Corporation.
 Filed: Sept. 12, 1980.

Abstract—Irides which exhibit capacitive reactance in a heavily loaded rectangular waveguide comprise generally U-shaped conductive vanes positioned in the waveguide perpendicular to the length of the waveguide with the opening of the "U" toward a broad wall of the waveguide but spaced therefrom. These irises are effective for increasing the electrical length of ferrite rectangular waveguide phase shifters. These irises may be added to the completed phase shifter to adjust its length by inserting them through previously formed apertures in one of the narrow walls of the waveguide.

9 Claims, 9 Drawing Figures

that created by an incident acoustic wave, the coupled optical signal will be amplitude modulated in accordance with the pressure variations.

1 Claim, 3 Drawing Figures



4,300,813

Nov. 17, 1981

Fiber Optic Transducer and Method of Manufacture Therefor

Inventor: Robert L. Gravel.
 Assignee: Sperry Corporation.
 Filed: Sept. 4, 1979.

Abstract—An optical transducer for converting pressure variations to variations in amplitude of an optical signal. A first optical transmission line is positioned above a base in a manner to maintain its end face stationary while a second optical transmission line is positioned above the base in a manner to permit the axis to be displaced from the axis of the optical fiber with the stationary end face in accordance with variations of pressure applied thereto. Optical signals propagating in one of the optical transmission lines will couple to the other with a coupling factor dependent upon the axial displacement of the optical fibers. Under conditions of continuous pressure variations, such as

4,300,814

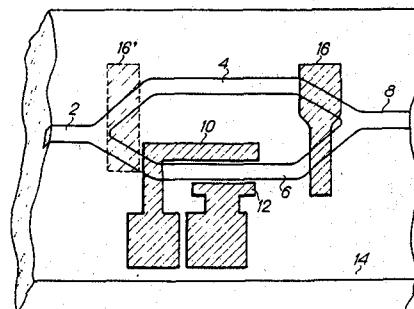
Nov. 17, 1981

Method for Balancing an Integrated Optical Device and a Device Obtained by Means of Said Method

Inventor: Alain Carenco.
 Filed: Feb. 6, 1980.

Abstract—A method for balancing an integrated optical device having at least two similar arms each constituted by a light guide consists in depositing a thin metal film on at least one of the two guides, in measuring the unbalance between the light intensities transmitted by the two arms and then in adjusting the dimensions of the thin metal film in order to cancel the unbalance.

7 Claims, 2 Drawing Figures



4,302,739

Nov. 24, 1981

Balun Filter Apparatus

Inventor: Ben R. Hallford.
 Assignee: Rockwell International Corporation.
 Filed: Oct. 12, 1979.

Abstract—The present invention uses two interconnected baluns with the balanced output of one feeding a balanced input of the other. When this filter is used in conjunction with a signal frequency converter, the balun pair not

only provides extremely effective bandpass filtering so as to pass the RF frequencies and not the IF frequencies but, in addition, provides a condition which appears to the IF as a nearly open circuit and thus provides a large amount of reflection or return of the IF signals to the signal converter so that the overall signal converter operation is more efficient in combination with the present invention than with any comparable known prior art signal isolating device.

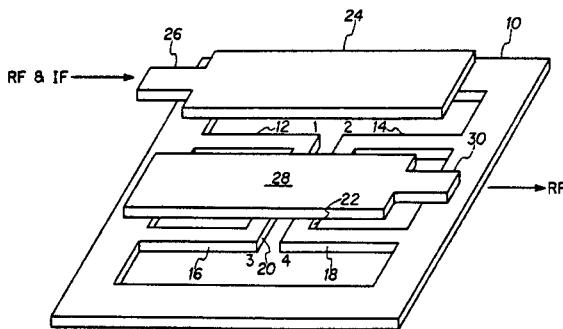
4,302,734

Nov. 24, 1981

Microwave Switching Power Divider

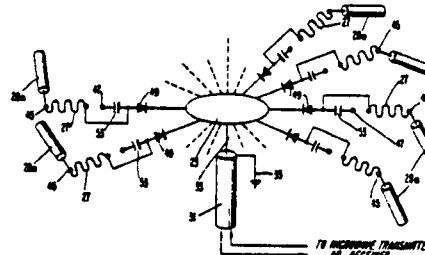
Inventors: Robert A. Frosch; Ronald J. Stockton; Russel W. Johnson.
Filed: Mar. 12, 1980

10 Claims, 5 Drawing Figures



Abstract—A microwave switching power divider for selectively dividing and switching microwave energy among a plurality of outputs to other microwave devices includes a pair of parallel, spaced-apart circular ground planes defining a microwave cavity with multi-port microwave power distributing switching circuitry formed on opposite sides of a thin circular dielectric substrate disposed between the ground planes. The power distributing circuitry includes a conductive disk located at the center of the substrate and connected to a source of microwave energy. A plurality of tapered radial power dividing transmission lines for intercepting the standing waves are symmetrically disposed about and connected to the conductive disk. Within each line, a high speed, low insertion loss switching diode and a DC blocking capacitor are connected in series between the outer end of a transmission line and an output port. A high impedance, microwave blocking DC bias choke is connected between each switching diode and a source of switching current. The switching source forward biases the diodes to couple microwave energy from the conductive disk to selected output ports and, to associated antenna elements connected to the output ports to form a synthesized antenna pattern. Output port impedance is held within a desired range by choice of cavity and power distribution circuitry dimensions.

14 Claims, 7 Drawing Figures



4,302,733

Nov. 24, 1981

Microwave Hybrid Couplers

Inventor Edward Salzberg.
Filed: Feb. 25, 1980.

Abstract—Microwave hybrid coupler combinations using magic tees in which the symmetrical arms are used for output ports in power combining and the nonsymmetrical arms are used for output ports in power dividing.

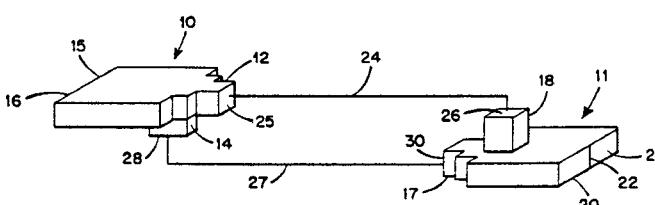
4 303 892

Dec. 1, 1981

Unconditionally Stabilized Microwave Transistor Amplifier

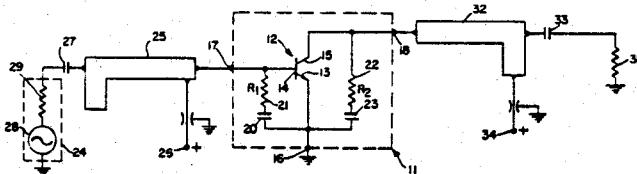
Inventors: Carroll E. Weller; Thomas J. Woodruff.
Assignee: Cincinnati Electronics Corporation.
Filed: Oct. 2, 1979.

Abstract—Input and output electrodes of a microwave, active semiconductor amplifying element are shunted to ground by resistive means having values selected to assure unconditional stability of the semiconductor amplifying element. The resistive means and active element are located in a common semiconductor package having three output terminals respectively connected to input, output and common electrodes of the amplifying element. The resistive means includes, in certain embodiments, first and second resistors respectively



shunting the input and common electrodes and output and common electrodes, with values respectively selected to provide relatively high efficiency and low noise characteristics for the amplifying element.

21 Claims, 6 Drawing Figures



4,303,899

Dec. 1, 1981

Matched High Q, High Frequency Resonators

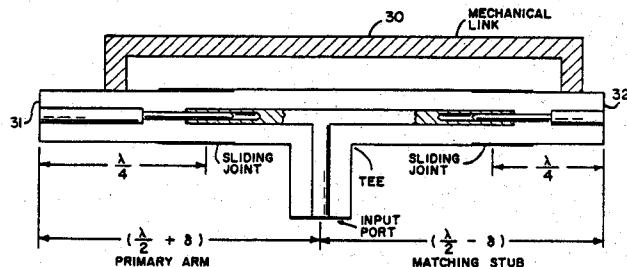
Inventors: Thomas A. Barley; Gustaf J. Rast, Jr.; James R. Ashley.

Assignee: The United States of America as represented by the Secretary of the Army.

Filed: May 5, 1980.

Abstract — The resonator is formed with a primary line which is slightly less than a multiple of a half wavelength long, a tee, and a matching stub. The primary line and the stub are adjustable to make the total length a multiple of one half wavelength. A mechanical link can be connected across the two adjustable lengths so as to maintain a total length of a multiple integral of one half wavelength.

4 Claims, 3 Drawing Figures



4,303,898

Dec. 1, 1981

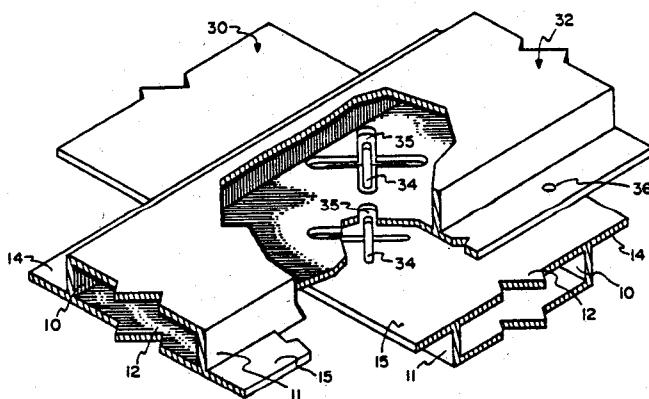
Longitudinally Flanged Waveguide

Inventors: Richard R. Kinsey; George W. Halbritter; David L. Binsley; Allan E. Rasmussen; Howard Q. Totten.

Assignee: General Electric Company.
Filed: Aug. 15, 1980.

Abstract — Rectangular waveguides adapted for combination as cross-guide couplers are disclosed. Each waveguide includes opposing sidewalls, a coupling wall and flanges extending from the sidewalls. Each flange has a contact surface in parallel with the coupling wall and is positioned relative to the coupling wall so that the contact surface thereof contacts the coupling wall of the waveguide with which it is combined to form the cross-guide coupler. The coupling wall of one of the waveguides in each coupler includes a coupling aperture. The coupling wall of the other waveguide includes an opening sufficiently larger than the coupling aperture to leave a substantial margin therebetween.

6 Claims, 6 Drawing Figures



4,303,900

Dec. 1, 1981

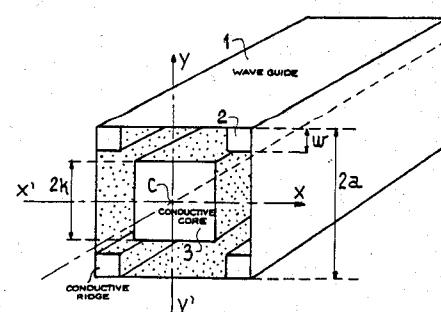
Wide Band Waveguide With Double Polarization and Ultra-High Frequency Circuit Incorporating Such a Waveguide

Inventor: Jacky Tourneur.
Assignee: Thomson-CSF.
Filed: Apr. 10, 1980.

Abstract — The invention relates to a double polarization wide band waveguide.

The waveguide according to the invention comprises a polygonal waveguide having a symmetry of order 4 with respect to a center of symmetry. The waveguide is provided with a plurality of conductive ridges located on the inner face of the sides of the waveguide in accordance with a symmetry of order 4 with respect to the center of symmetry and with a central conductive core, whose cross-section has the same symmetry of order 4n with respect to the center of symmetry.

6 Claims, 7 Drawing Figures



4,303,309

Dec. 1, 1981 4,300,815

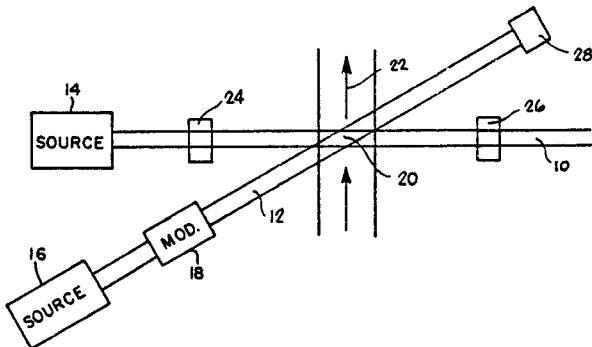
Nov. 17, 1981

Continuous High Speed Modulation of Light With Light

Inventor: Lawrence C. West.
Filed: Jul. 20, 1979.

Abstract—Method and apparatus for the continuous high speed switching or modulation of light with light. A flow medium containing an active coupling medium is flowed relative to the light beams so as to continually restore the coupling medium which is degraded by interaction with the light beam, thereby maintaining the coupling medium in a desired condition for modulating a light beam. The problem of removal of heat generated by light power dissipation is eliminated by advective flow of the medium.

19 Claims, 2 Drawing Figures

**Connector End Fitting For Optical Monofiber**

Inventors: Christian Malsot; Roland Desmurs; Jean Bouygues.
Assignee: Socapex.
Filed: Oct. 15, 1979.

Abstract—The invention relates to the field of connectors for optical monofibres. In the case where the monofibre (1) is covered by a flexible sheath or envelope (3), the fixing in a connector end fitting may suffer from poor concentricity. According to the invention, a deformable cylinder (4) is placed round the fibre and to said cylinder are applied forces (P) balanced in four perpendicular directions transmitted to the flexible sheath (3) of the fibre by four, internal clamping jaws (31), which bring about a spontaneous recentering of the fibre by the creep or flow thereof. The cylinder is then placed in the end fitting. The applications relate more particularly to optical fibres with plastic sheaths for telecommunications purposes.

4 Claims, 5 Drawing Figures

