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.

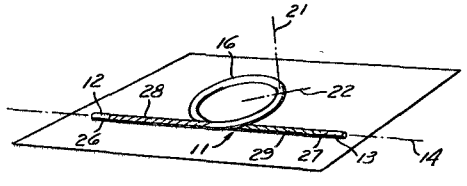
4,389,090 Jun. 21, 1983

Fiber Optic Polarization Controller

Inventor: Herve C. LeFevre.
Assignee: The Board of Trustees of Leland Stanford Jr. Univ.
Filed: Sep. 4, 1980.

Abstract—Fiber optic device for controlling the state of polarization of light. In one embodiment, a strand of fiber optic material is bent into a generally planar coil of relatively tight radius to stress the material and form a birefringent medium having principal axes which are rotated to control the polarization of light passing through the strand. In a second embodiment, one portion of a fiber optic strand is twisted about its axis to change the polarization, and a second portion of the strand is formed into a coil which is free to change in radius without additional twisting as the first portion is twisted.

10 Claims, 3 Drawing Figures



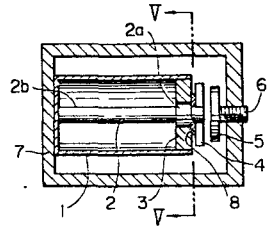
4,389,624 Jun. 21, 1983

Dielectric-Loaded Coaxial Resonator With a Metal Plate for Wide Frequency Adjustments

Inventors: Yukichi Aihara; Sadahiko Yamashita.
Assignee: Matsushita Electric Industrial Company, Limited.
Filed: Apr. 3, 1981.

Abstract—A coaxial resonator comprising an outer conductor with closed and open ends, an inner conductor concentrically disposed in the outer conductor to establish a short circuit at the closed end and an open circuit at the open end, and a dielectric member mounted in the open circuit between the outer and inner conductors. An electrode is connected to the open circuit end of the inner conductor with a spacing from the dielectric member. A conductive plate, having a smaller surface area than that of the electrode but larger than the transverse cross-sectional area of the inner conductor, is provided between the dielectric member and the electrode. The dimensions of the conductive plate is appropriately chosen to accommodate frequency variations which might occur as a result of a connection with an external circuit.

6 Claims, 7 Drawing Figures



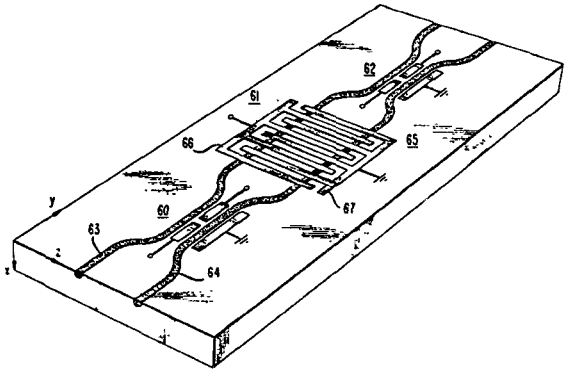
4,390,236 Jun. 28, 1983

Tunable Polarization Independent Wavelength Filter

Inventor: Rodney C. Alferness.
Assignee: Bell Telephone Laboratories, Incorporated.
Filed: Mar. 19, 1981.

Abstract—Tunable, polarization independent wavelength filtering is obtained in a circuit configuration comprising an input polarization selective coupler which separates the TM and TE mode waves. A first, wavelength selective mode converter, in the TE mode wavepath, converts the TE mode wave energy at the selected wavelength to the TM mode. Similarly, a second wavelength selective mode converter, located in the TM mode wavepath, converts the TM mode wave energy at the selected wavelength to the TE mode. An output polarization selective coupler combines the TE and TM mode wave energy at the selected wavelength in one output wavepath and combines the balance of the input signal in a second wavepath. By cascading a plurality of such circuits, each tuned to a different wavelength, a wavelength multiplexed signal can be demultiplexed.

5 Claims, 8 Drawing Figures



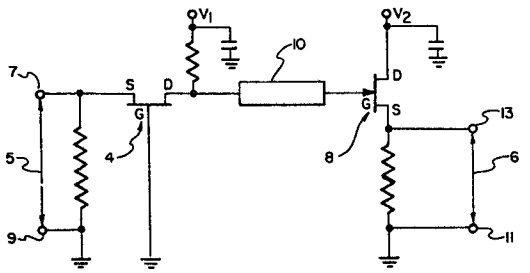
4,390,851 Jun. 28, 1983

Monolithic Microwave Amplifier Having Active Impedance Matching

Inventors: J. Aiden Higgins;
Aditya K. Gupta.
Assignee: Rockwell International Corporation.
Filed: Nov. 25, 1980.

Abstract—A monolithic microwave amplifier fabricated on a GaAs substrate utilizes MESFETs to provide both gain and impedance matching. The source of a first MESFET is connected to an input terminal of the amplifier and its drain is connected to an interstage matching network. The gate of a second MESFET is connected to the output of the interstage matching network and its source is connected to the output terminal of the amplifier. Suitable voltages are applied to the MESFETs to bias the devices appropriately. The gate of the first MESFET and the drain of the second MESFET are connected in common with the grounds of the amplifier's input and output ports. In a second embodiment, additional gain is obtained by providing a third MESFET with a common source connection between the first and second MESFETs.

5 Claims, 9 Drawing Figures



4,390,897 Jun. 28, 1983

Technique for Automatically Centering a Lightguide Fiber in a Coating

Inventor: David H. Smithgall, Sr.
Assignee: Western Electric Company, Inc.
Filed: Apr. 17, 1981.

Abstract—A technique for automatically centering a lightguide fiber (7) in a transparent plastic coating (6) having a refractive index lower than that of the fiber. The fiber (7) is passed through an applicator (14) having the coating material (6) therein to coat the fiber. Orthogonal laser beams (50 or 52) are directed at the coated fiber (5) resulting in first and second forward scattered light patterns (51 or 53) impinging on first and second screens (36 and 37). The patterns are monitored with a pair of CCTV cameras (38 and 39) and the video output signals therefrom are processed to determine the period (P_1 and P_2) of outboard interference fringes (61 and 62) of each pattern. The period of the interference fringes are compared to determine the difference therebetween which is proportional to the eccentricity of the fiber (7) within the coating. The position of the applicator (14) is then adjusted to center the lightguide fiber (7) in the coating (6).

9 Claims, 8 Drawing Figures

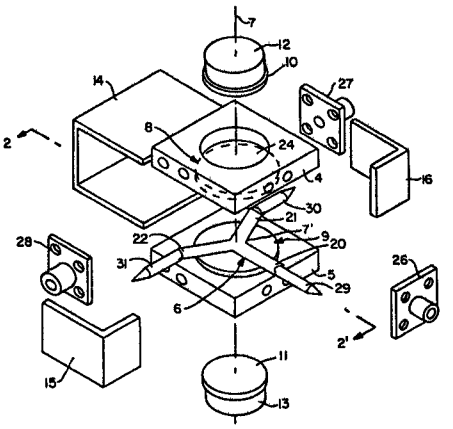
4,390,853 Jun. 28, 1983

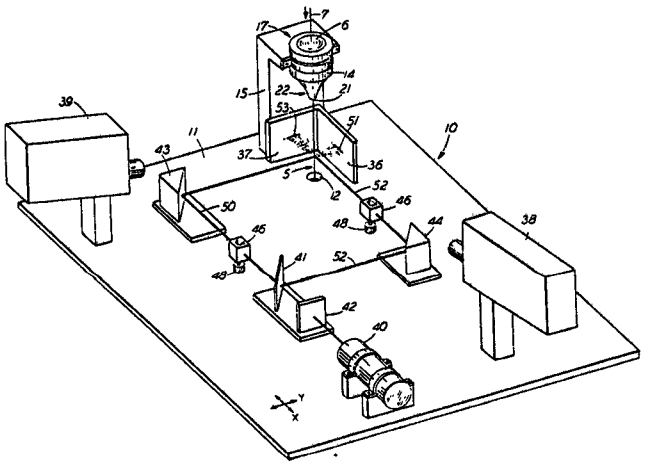
Microwave Transmission Devices Comprising Gyromagnetic Material Having Smoothly Varying Saturation Magnetization

Inventors: Moni G. Mathew; Thomas J. Weisz.
Assignee: TRW Inc.
Filed: Aug. 12, 1981.

Abstract—A multi-port microwave device, such as an isolator or circulator, for transmission of electromagnetic energy in TEM and higher order modes non-reciprocally between parts. The device exhibits low insertion loss, high return loss (low VSWR) and high isolation and is operable over a 100 percent or more bandwidth. The microwave device includes a composite ferrite body between a circuit conductor and a ground plane. The composite ferrite body includes ferrite material having a saturation magnetization gradient for providing different frequency characteristics over the frequency pass band of the device.

22 Claims, 8 Drawing Figures





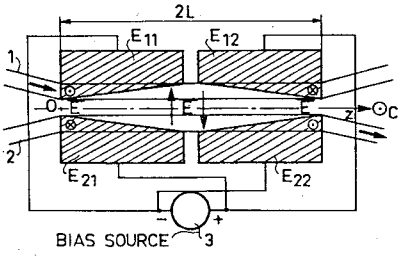
4,391,486 Jul. 5, 1983

Electrically Controlled Electrooptical Switch and Integrated Optical Circuit Incorporating Such a Switch

Inventors: Michel Papuchon; Claude Puech.
Assignee: Thomson-CSF.
Filed: Sep. 5, 1980.

Abstract—An electro-optical switch for switching optical radiation between two wave guides having a coupling zone with two pairs of electrodes ($E_{11}, E_{12}, E_{21}, E_{22}$) respectively associated with two guides (1,2) and positioned so as to cover a variable fraction of the width of the guides. As a result, the electro-optical effects produced and, therefore, the propagation velocities in the two guides are made variable as a function of the electrical connection mode of the electrodes. Two switching states are obtained with a considerable tolerance for the length of the guides (2L) and the control voltage.

8 Claims, 12 Drawing Figures



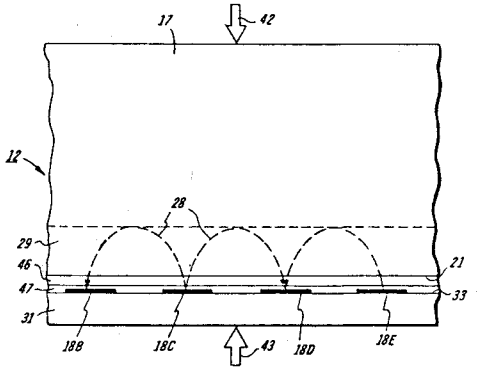
4,391,490 Jul. 5, 1983

Interface for Proximity Coupled Electrooptic Devices

Inventor: David H. Hartke.
Assignee: Xerox Corporation.
Filed: Apr. 2, 1981.

Abstract—A proximity coupled electro-optic device in which the electro-optic element has a pattern of conductors applied to the surface thereof abutting the individually addressable electrodes applying encoded data samples. The conductors are aligned in the same, or substantially the same, direction as the electrodes, and the period of the conductor pattern is equal to or less than the maximum width of the electrodes. Directional alignment tolerances between the conductors and electrodes are increased as the period of the conductor pattern is decreased, and when the conductors are segmented.

6 Claims, 10 Drawing Figures



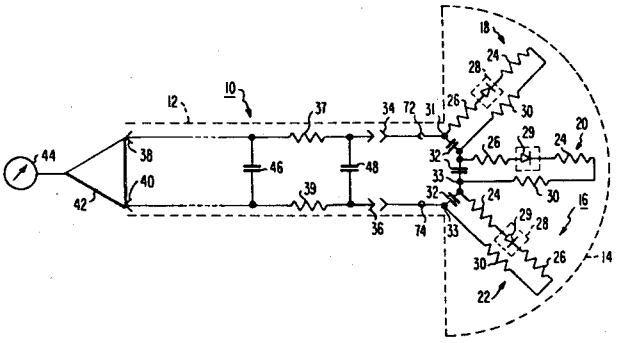
4,392,108 Jul. 5, 1983

Broadband Radiation Detectors for Microwave and Lower Frequencies

Inventor: Samuel Hopfer.
Assignee: General Microwave Corporation.
Filed: Apr. 24, 1980.

Abstract—A radiation detector for free space microwave radiation uses thin film resistive strips, having an equivalent surface resistivity that is large compared to the characteristic impedance of free space, and diode circuits in series with the strips for deriving d-c signals monitoring the radiation intensity over a broad frequency range. In part of that range, the strips operate like a short dipole antenna. The diode circuits are constructed to operate with a uniform response over the entire frequency range.

6 Claims, 8 Drawing Figures



4,392,245 Jul. 5, 1983

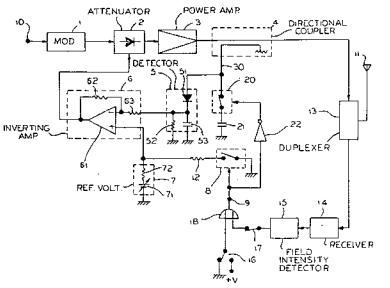
Radio Transmitter Having an Output Power Control Circuit

Inventor: Masataka Mitama.
Assignee: Nippon Electric Co., Ltd.
Filed: Dec. 22, 1980.

Abstract—A radio transmitter has an output power control circuit including a power amplifier, a directional coupler coupled to the power amplifier, a detector of the forward power of the directional coupler, a generator of a difference voltage between the output voltage of the detector means and a reference voltage. A power regulator varys the output power of the power amplifier in response to the output of the difference voltage. The power applied from the power amplifier through the directional coupler to the detector is controlled by a control signal.

The control circuit electrically varies the coupling coefficient of the directional coupler for attenuating the power applied from the directional coupler to the detector means to extend the controllable range of the transmitter output power.

10 Claims, 4 Drawing Figures



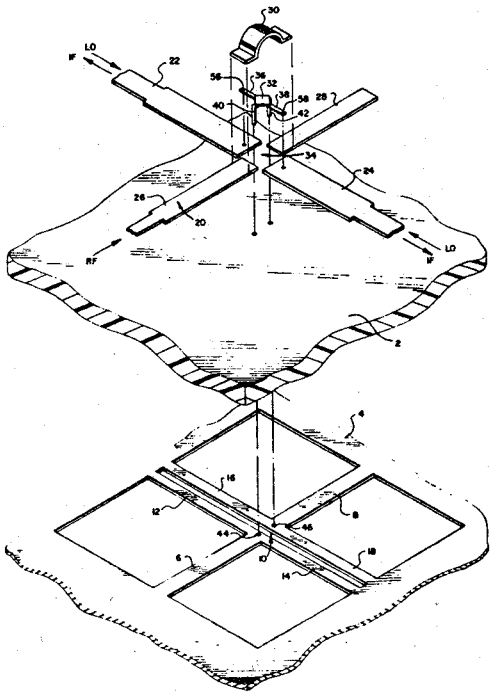
4,392,250 Jul. 5, 1983

Symmetric Microwave Mixer

Inventor: Ben R. Hallford.
Assignee: Rockwell International Corporation.
Filed: May 19, 1981.

Abstract—Microwave circuit layout structure is disclosed for a diode mixer bridge. The circuit layout structure is compact and symmetric, and enables short orthogonal equal length leads from a diode ring quad mixer bridge. The configuration also affords equal path lengths through the diodes to provide precise 180° phase differential image frequency cancellation. The structure also affords precise and consistent mounting of the mixer bridge, to further improve performance.

33 Claims, 6 Drawing Figures



4,392,251 Jul. 5, 1983

Symmetric Microwave Mixer with Coplanar Diode Connection

Inventor: Ben R. Hallford.
Assignee: Rockwell International Corporation.
Filed: Jul. 24, 1981.

Abstract—Microwave circuit layout structure is disclosed for a diode mixer frequency converter. The circuit layout structure is compact and symmetric, and enables coplanar diode lead connection.

24 Claims, 3 Drawing Figures