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, D.C. 20231,

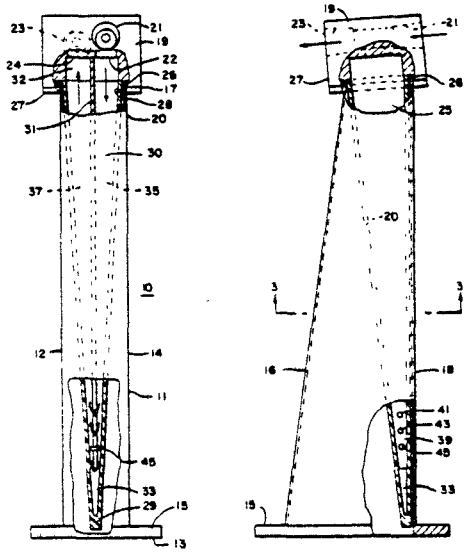
4,516,088 May 7, 1985

Power Absorbing Termination for a Waveguide Transmission Line

Inventors: Ray M. Johnson and George H. Dremann.
Filed: Nov 30, 1981

Abstract—A power absorbing termination for a waveguide transmission line comprised of a waveguide section containing a fluid carrying dielectric taper which is inclined relative to the waveguide axis so that the point end of the taper lies against the guidewall of the waveguide section. Fluid in the dielectric taper is preferably circulated around a center planar divider extended down the taper's axis; alternatively, fluid is circulated through the taper by inducing a spiral flow of fluid in the taper hollow.

17 Claims, 5 Drawing Figures



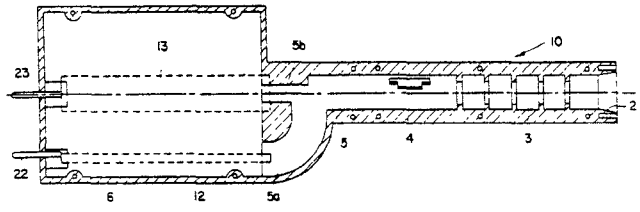
4,516,089 May 7, 1985

System for Receiving Microwave Signals Having Orthogonal Polarizations

Inventors: Michel Goscianski and Francois de Ronde.
Assignee U.S. Philips Corporation.
Filed Mar. 16, 1982.

Abstract—A system is disclosed for coupling orthogonal polarized microwave signals from a reflector to signal processing circuits. The system includes successively a horn, a bandpass filter, a polarizer, a mode separator, and a housing for containing the circuits. The system is constructed from two half-shells. The horn, bandpass filter and polarizer form a waveguide portion which is coupled to the circuits by the mode separator.

5 Claims, 4 Drawing Figures



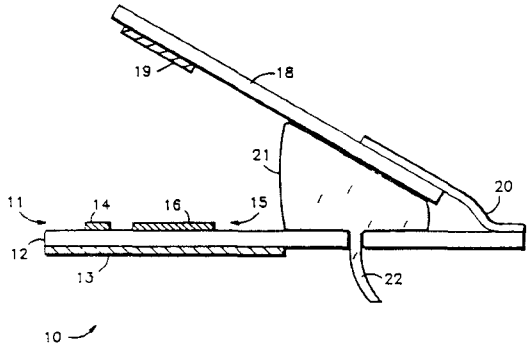
4,516,091 May 7, 1985

Low RCS RF Switch and Phase Shifter Using Such a Switch

Inventor: Bill H. Sasser.
Assignee: Motorola, Inc.
Filed: Dec. 19, 1983

Abstract—A low RCS RF switch fabricated in microstrip utilizes bridge conductors carried on a second substrate to perform the coupling and uncoupling function. The second substrate is moveably affixed to the first substrate on which the primary RF transmission line is carried by means of a hinge spring. The switch is actuated by means by a pneumatic bladder coupled to a pneumatic control line. A three bit phase shifter utilizing such a switch is disclosed which is suitable for use in certain phases array antennas.

11 Claims, 4 Drawing Figures



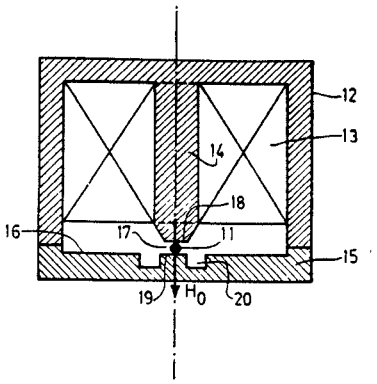
4,516,096 May 7, 1985

Magnetic Crcuit for an Yttrium-Iron Garnet Crystal Resonator for an Oscillator

Inventor: Daniel Doyen.
Assignee: U.S. Philips Corporation.
Filed: Oct. 31, 1983

Abstract—Magnetic circuit for an yttrium-iron garnet crystal (11) resonator for an oscillator, formed by a first cylindrical pole piece (12) comprising a coil (13) provided around an axial core (14) and a second cylindrical pole piece (15) having a flat bottom (16), the yttrium-iron garnet crystal (11) being placed in a gap (17) defined by an end (18) of the axial core (14) and the part (19) of the flat bottom facing the end (18). According to the invention, a circular groove (20) is arranged in the flat bottom (16) around the part (19) facing the end (18) of the axial core (14).

2 Claims, 1 Drawing Figure



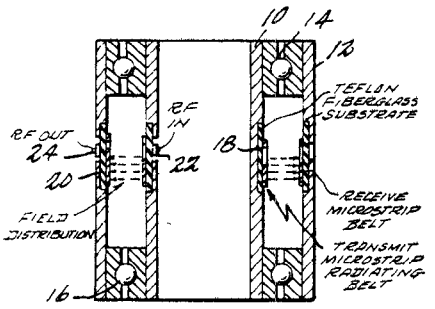
4,516,097 May 7, 1985

Apparatus and Method for Coupling RF Energy Through a Mechanically Rotatable Joint

Inventors: Robert E. Munson and Hussain A. Haddad.
Assignee: Ball Corporation.
Filed: Aug. 3, 1982.

Abstract—First and second annular RF radiating structures are mounted for concentric relative rotational motion with their RF radiation patterns directed toward one another. The annular RF radiating structures may be realized, for example, by cylindrically conformed microstrip antenna radiators which define tuned resonant cavities feeding one or more radiation apertures defined between an edge of a microstrip radiator "patch" and an underlying electrical reference or ground surface. The microstrip radiator "patch" may be either continuous in its circumferential dimensions or it may have occasional circumferential discontinuities formed by axially directed gaps therein. If the total circumferential dimension is greater than one wavelength at the intended operating frequency, then a corporate structured feedline provides plural spaced-apart feedpoints about the circumference so as to achieve a substantially uniform distribution of RF field amplitudes and phases about the circumference.

31 Claims, 7 Drawing Figures



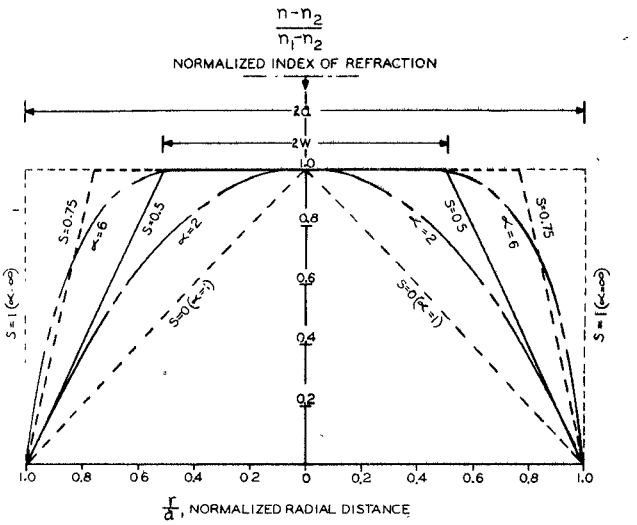
4,516,826 May 14, 1985

Single-Mode Lightguide Fiber Having a Trapezoidal Refractive Index Profile

Inventor: Un-Chul Paek
Assignee: AT&T Technologies, Inc.
Filed. Apr. 21, 1983

Abstract—A single-mode lightguide fiber having a trapezoidal shaped refractive index profile. In a particular embodiment the ratio of the upper base to the lower base is less than 0.3.

3 Claims, 3 Drawing Figures



4,516,827 May 14, 1985

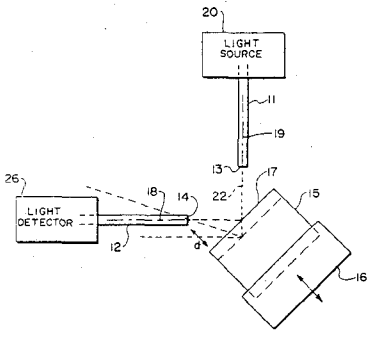
Variable Optical Attenuator

Inventors: Clyde E. Lance and Wanda S. Hutchison.
Assignee: The United States of America as represented by the Secretary of the Army.
Filed: July 16, 1982.

Abstract—A device in a fiber optic system for variably attenuating the signal between optical fibers consisting of two fixedly mounted optical fibers and a moveably mounted reflective surface disposed therebetween. Light emitted from the face of the first fiber strikes the reflective surface and is redirected toward the collecting face of the second fiber That amount of redirected light which will fall incident upon the face of the second fiber, within a prede-

termined angle to the optical axis of the second fiber will be transmitted through the fiber and be measured by a light detector. By moving the reflective surface calibrated amounts with respect to the faces of the fixed fibers, the amount of light incident on the face of the second fiber, and thereby transmitted, can be varied, measured and controlled.

7 Claims, 2 Drawing Figures



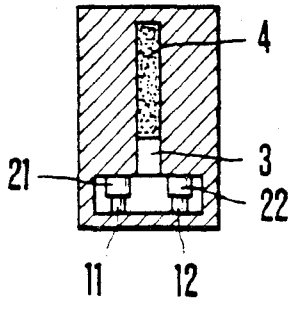
4,517,527 May 14, 1985

Waveguide Amplifier Circuit

Inventors: Shigenobu Aihara and Akio Yamada.
Assignee: NEC Corporation.
Filed: Apr. 12, 1983.

Abstract—A waveguide amplifier circuit has two semiconductor amplifier elements in a first waveguide circuit, a second waveguide circuit which is perpendicular to the first waveguide circuit and a termination circuit arranged at an end, remote from the semiconductor amplifier elements, of the second waveguide circuit. An abnormal oscillation component between the two semiconductor amplifier elements is attenuated by the second waveguide circuit and the termination circuit, thereby obtaining a high power output.

4 Claims, 8 Drawing Figures



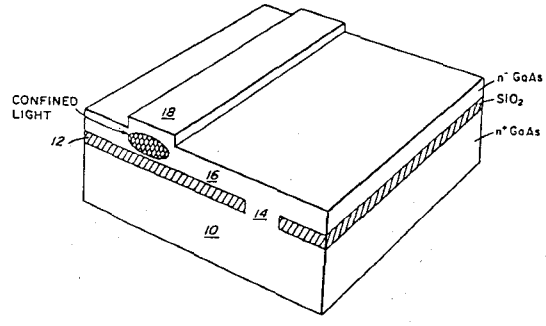
4,518,219 May 21, 1985

Optical Guided Wave Devices Employing Semiconductor-Insulator Structures

Inventors: Frederick J. Leonberger, Ivars Melngailis, Carl O. Bozler, and Robert W. McClelland.
Assignee: Massachusetts Institute of Technology.
Filed: Feb. 3, 1983.

Abstract—A three-dimensional optical waveguide is disclosed. This waveguide comprises a single crystal semiconductor layer grown upon an insulator which has an index of refraction lower than the semiconductor. The semiconductor layer has a thickness which provides confinement of light propagating in the semiconductor layer in the vertical direction. An effective larger index of refraction over a cross-sectional region of the semiconductor layer provides confinement of light in the lateral direction. This lateral confinement is achieved by side walls in the semiconductor layer which extend toward, but fall short of, the insulator layer.

17 Claims, 19 Drawing Figures



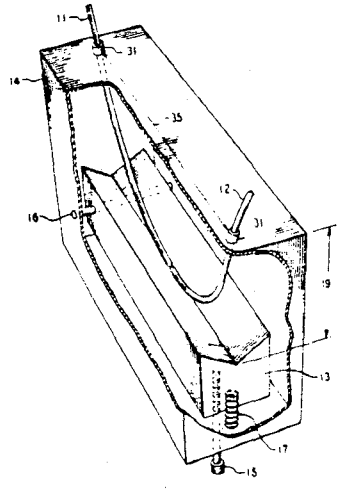
4,519,671 May 28, 1985

Optical Attenuator

Inventors: Lyn Curtis and William C. Young.
Assignee: AT&T Bell Laboratories.
Filed: Apr. 1, 1983.

Abstract—Continuously variable attenuation between the substantially abutting ends of two optical fibers is provided by varying the angle formed between the fiber ends. In the disclosed embodiment, the ends of two optical fibers are abutted and biased against a fiber receiving member. The varying angle is then formed by displacement of the receiving member.

7 Claims, 6 Drawing Figures



4,520,329 May 28, 1985

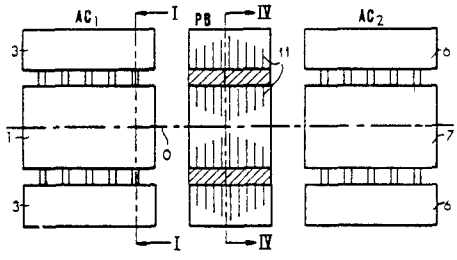
Circuit Component for Separating and/or Combining Two Isofrequential but Differently Polarized Pairs of Signal Waves Lying in Different High-Frequency Bands

Inventors: Enzo Cavalieri D'Oro and Piero Vita.
Assignee: Italtel Societa Italiana Telecomunicazioni S.p.A.
Filed: Feb. 23, 1983.

Abstract—A circuit component for separating and/or combining two pairs of high-frequency signal waves lying in different frequency bands, the waves of each pair having the same frequency but mutually orthogonal planes of polarization, comprises two mutually identical and aligned 3-dB couplers bracketing a filtering assembly between them. Each 3-dB coupler has a central

guide of square cross section surrounded by four collateral guides, each connected with the central guide by a coupling guide letting only the waves polarized in one plane—regardless of frequency—pass therebetween. The filtering assembly has sets of baffles in line with the central and collateral guides of both couplers, these baffles defining slots giving passage to only the waves of one of the two bands while reflecting the others. Waves in the passband of the filtering assembly, admitted at an input end of the central guide of the first coupler, appear separately at output ends of the two collateral guides of the second coupler; waves rejected by the filtering assembly are reflected toward the input side of the first coupler and appear separately at the free ends of its collateral guides. Conversely, two isofrequential waves of mutally orthogonal polarization applied to the output ends of the collateral guides of the second coupler appear combined at the central input of the first coupler so that pairs of outgoing and incoming signal waves may be simultaneously transmitted to and received from an antenna connected to that input end.

5 Claims, 5 Drawing Figures



4,521,069 Jun. 4, 1985

Optical Switch

Inventor: Masahiro Ikeda.
Assignee: Nippon Telegraph & Telephone Public corporation.
Filed: Apr. 1, 1982

Abstract—A semiconductor optical switch having a p-n junction with an active layer coupled with an input and output waveguides has been found. An input optical signal with the wavelength close to the center of the gain spectrum defined by said p-n junction is applied to said active layer, and said input optical signal is switched *on* and *off* according to the injection current applied in said p-n junction. Said injection current for turning *on* the optical switch is in the range between 80% and 90% of the threshold current which initiates oscillation operation of said p-n junction. When injection current is zero, an input optical signal does not appear at an output, and with the above injection current of 80–90% of the threshold current, an input optical signal appears at an output terminal. When a switch is in *ON* state, an input optical signal is amplified with some gain.

12 Claims, 15 Drawing Figures