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.

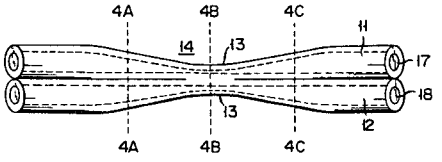
4,392,712 July 12, 1983

Light Distributor

Inventor: Takeshi Ozeki.
Assignee: Tokyo Shibaura Electric Co., Ltd.
Filed: Oct. 29, 1980.

Abstract—A light distributor comprising a plurality of optical fibers each having a tapered portion, said tapered portions of the optical fibers being thermally fused together to form a light mixing section where the cores of the fibers are packed together in a single cladding.

7 Claims, 16 Drawing Figures



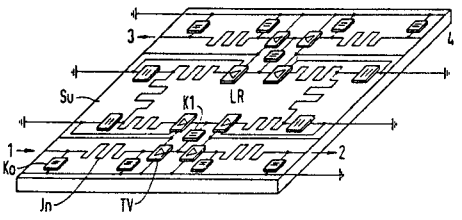
4,393,356 July 12, 1983

Filter Circuit for Electric Waves

Inventor: Friedrich L. Kuenemund.
Assignee: Siemens Aktiengesellschaft.
Filed: May 21, 1980.

Abstract—A filter circuit for electrical waves including at least one line which supplies electrical input waves and at least one line for withdrawing output electrical waves and in which the frequency dependent transmission characteristic is determined by coupled line loops each of which is in the form of a line ring and wherein coupling between the line loops is unidirectional and the individual line loops are designed so that they have unidirectional transmission characteristics.

6 Claims, 14 Drawing Figures



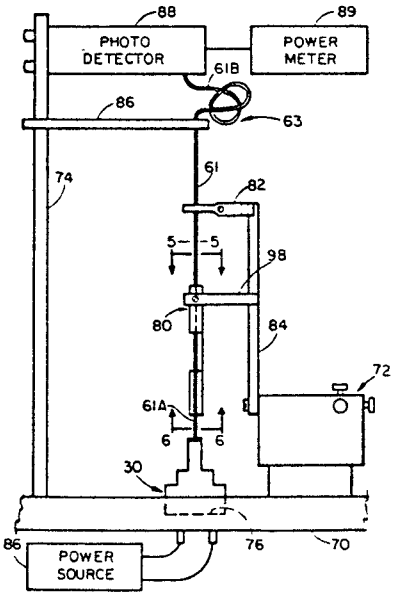
4,394,061 July 19, 1983

Apparatus for Aligning an Optical Fiber in an LED Package

Inventor: Scott L. Schroeder.
Assignee: GTE Automatic Electric Incorporated.
Filed: Jan. 22, 1982.

Abstract—Method and apparatus for aligning one end of an optical fiber in the emitting well of an LED employs an elongated rod having a flat milled halfway through the midsection thereof for forming a recess and first and second channels extending between the recess and an associated end of the rod to the depth of the recess. The two channels are located in front of the bottom of the recess and are oriented at 90° with respect to each other in an end view. The channels also overlap along the center line of the rod and are dimensioned for loosely-releasably receiving and supporting a length of fiber in a straight line while the one end thereof is aligned with the emitting surface of the LED.

18 Claims, 6 Drawing Figures



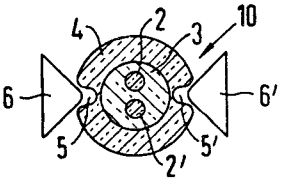
4,394,062 July 19, 1983

Splittable Fiber Optical Waveguide and Method of Manufacture

Inventor: Hartmut Schneider.
Assignee: Siemens Aktiengesellschaft.
Filed: Feb. 25, 1980.

Abstract—A splittable fiber optical waveguide and a method of manufacture characterized by the fiber having at least one optical core embedded in a cladding material and at least one pair of longitudinal indentations on an outer surface of the fiber. The splittable fiber is formed by being drawn from a preform which has longitudinal grooves or indentations on an outer surface.

9 Claims, 4 Drawing Figures



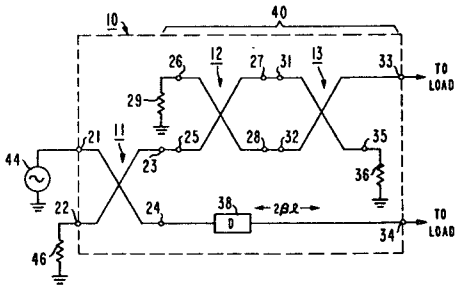
4,394,629 July 19, 1983

Hybrid Power Divider/Combiner Circuit

Inventors: Mahesh Kumar;
Raymond J. Menna;
Ho-Chung Huang.
Assignee: RCA Corporation.
Filed: Mar. 31, 1981.

Abstract—A 0° and 180° hybrid power divider/combiner includes a first quadrature hybrid and two other quadrature hybrids arranged in tandem with one output port of the first hybrid connected to an input port of the tandem arrangement and the other output port thereof connected to a delay of electrical length equal to that of the tandem arrangement. When an input signal is applied to one input port of the first hybrid with the other port terminated, two signals of reduced amplitude which are either in phase or of opposed phase (dependent on which input port receives the input signal) are produced at the output of the tandem arrangement and delay.

6 Claims, 2 Drawing Figures



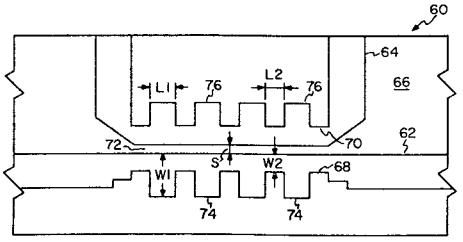
4,394,630 July 19, 1983

Compensated Directional Coupler

Inventors: Kenyon, S. Wayne;
Bernard H. Geyer, Jr.;
Conrad E. Nelson.
Assignee: General Electric Company.
Filed: Sep. 28, 1981

Abstract—Transmission line directional coupler directivity is improved by providing compensation for even and odd mode phase velocity differences. Teeth are added to the edges of the coupler electrodes remote from the coupling region separating the electrodes, so that the phase velocity of even mode and odd mode waves is made similar over a wide frequency band. The compensation approach is applicable to both suspended substrate and stripline type directional couplers, where the uncompensated odd mode velocity is less than the even mode velocity.

21 Claims, 11 Drawing Figures



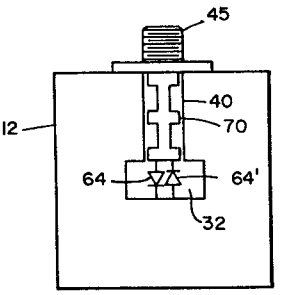
4,394,632 July 19, 1983

Millimeter-Wave Odd-Harmonic Frequency Multiplier

Inventor: Chi P. Hu.
Assignee: Honeywell Inc
Filed: Jun. 29, 1981.

Abstract—A millimeter-wave odd-harmonic frequency multiplier comprising a block member having an RF output port and an RF input port at right angles to one another with a pair of nonlinear resistance type diodes positioned at the intersection of the RF input port and the RF output port.

12 Claims, 12 Drawing Figures



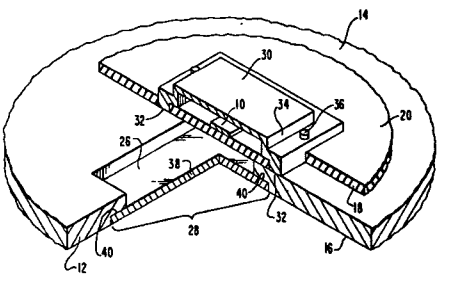
4,394,633 July 19, 1983

Microstrip Circuit with Suspended Substrate Stripline Regions Embedded Therein

Inventor: Gerald I. Klein.
Assignee: Westinghouse Electric Corp.
Filed: Apr. 28, 1981.

Abstract—A microstrip microwave circuit having embedded therein at least one suspended substrate stripline region for high Q circuit elements is disclosed. Each suspended substrate region includes an upper ground plane formed by covering the microstrip circuitry of each region with a metallic housing having holes in the sidewalls thereof to permit passage therethrough for the interconnecting circuit paths of the region and by connecting the housing to the top surface of the microstrip ground plane substrate; and a lower ground plane formed by removing the section of substrate lying substantially underneath each high Q region to form openings in the bottom surface of the substrate which are covered by an individual cover plate. The upper and lower ground planes are separated from their corresponding high Q regions by an air spacing dimensioned as a function of the RF impedance desired. Also disclosed herein is a method of making the microstrip microwave circuit including the steps of embedding the least one suspended substrate stripline region for high Q circuit elements therein.

11 Claims, 10 Drawing Figures



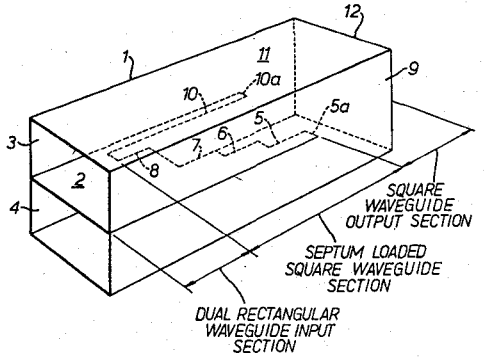
4,395,685 July 26, 1983

Waveguide Junction for Producing Circularly Polarized Signal

Inventors: Arthur B. C. Davies;
Andrew P. Norris.
Assignee: Plessey Overseas Limited.
Filed: May 1, 1981.

Abstract—A microwave apparatus comprises a waveguide section including a stepped septum. The septum is positioned so as to divide the waveguide into two channels. The steps comprise a plurality of first steps which advance progressively in one direction and at least one second step, or the equivalent, which follows the first steps and which returns in an opposite direction. The invention is intended to enable the production of a circularly polarized microwave signal without requiring the use of phase adjustment techniques.

5 Claims, 5 Drawing Figures



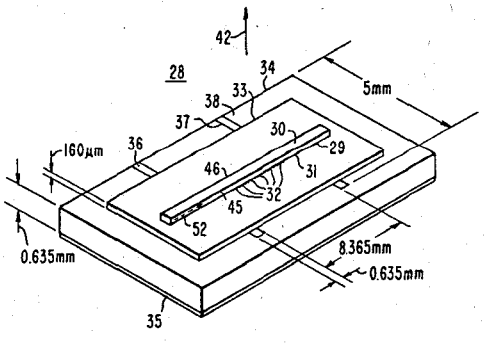
4,395,686 July 26, 1983

Attenuation of Higher Order Width Modes in Magnetostatic Wave Devices

Inventor: John D. Adam.
Assignee: Westinghouse Electric Corp.
Filed: Oct. 2, 1981.

Abstract—A magnetostatic wave device is described incorporating a plurality of resistive strips spaced apart from one another and transverse to the propagation path of magnetostatic waves in a material such as a YIG film having a finite width for attenuating selected higher order modes of propagating magnetostatic waves.

17 Claims, 12 Drawing Figures



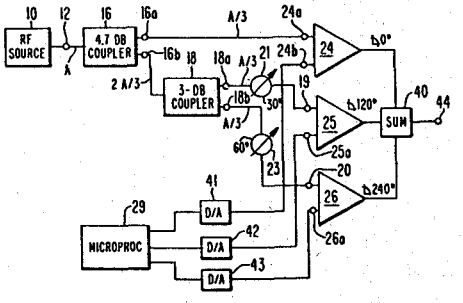
4,395,687 July 26, 1983

Adjustable Phase Shifter

Inventor: Erwin F. Belohoubek.
Assignee: RCA Corporation.
Filed: Jun. 10, 1981.

Abstract—An adjustable phase shifter for adjustably providing a 360° range of phase shift to RF signals by dividing the RF signals into three equal parts, adjusting the relative amplitudes of the parts of the RF signals and combining the three parts of the RF signals at relative phase angles of 0°, 120°, and 240°.

7 Claims, 6 Drawing Figures



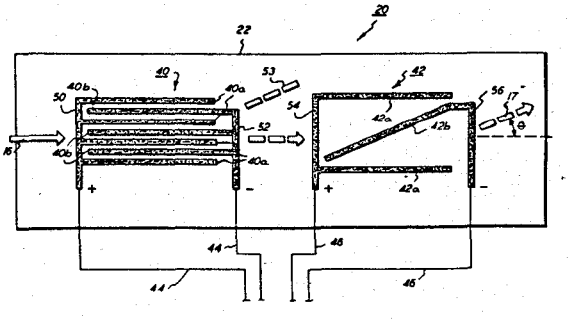
4,396,246 Aug. 2, 1983

Integrated Electrooptic Wave Guide Modulator

Inventor: Robert L. Holman.
Assignee: Xerox Corporation.
Filed: Oct. 2, 1980.

Abstract—An electrooptic wave guide substrate for both intensity modulating and continuously deflecting an incident laser beam. A first set of electrodes for intensity modulating the beam include substantially parallel, periodically interdigital conductors affixed to a substrate surface and coupled to a controlled voltage source. A second set of electrodes for beam deflecting have nonparallel conductors affixed to the same substrate and are also coupled to a controlled voltage. By controlling the voltage applied to the second set of electrodes the beam can be continuously deflected through a controlled angle to facet track a rapidly rotating multi-faceted mirror of a raster output scanner. The substrate is fabricated using a new technique whereby the atmosphere in which the waveguiding surface is diffused is controlled. In particular, the diffusion is done in a heated oxygen environment having an elevated moisture content. The elevated oxygen concentration tends to oxidize impurities in the substrate and the moisture tends to form lattice sites for trapping mobile charge carriers. Both effects reduce the incidence of optical damage in the wave guide caused by the laser beam.

10 Claims, 7 Drawing Figures



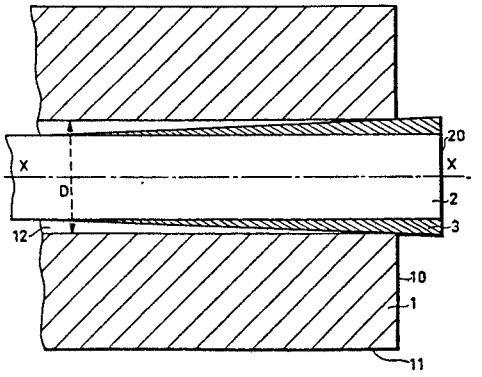
4,396,247 Aug. 2, 1983

Method for Fitting an Optical Fiber into an End Fitting, the Resulting End Fitting and a Connecting Assembly for Optical Fibers Using This End Fitting

Inventors: Jacques Simon; Jean V. Bouvet; Raymond Henry.
Assignee: Thomson-CSF.
Filed: Jun. 3, 1980.

Abstract—A method for fitting an optical fiber in an end fitting, the end fitting obtained constituting a connection device for connecting to another connecting device incorporating an optical fiber A hollow cylindrical support whose lateral surface constitutes the reference surface for the position of the fiber is machined and the terminal portion of the fiber is coated with electrolytic gold deposit in the form of a frustum. Then the fiber is self-centered by force inserting the frustum and the terminal portion of the fiber which it covers in the hollow support. Levelling then occurs at the butting face of the fiber by sawing and/or grinding the projecting portions of both the frustum and fiber

11 Claims, 8 Drawing Figures



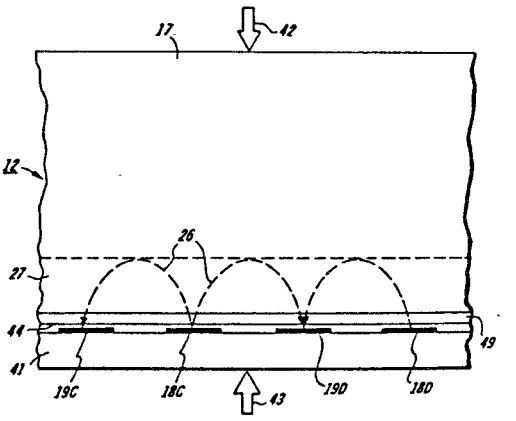
4,396,252 Aug. 2, 1983

Proximity Coupled Electrooptic Devices

Inventor: William D. Turner.
Assignee: Xerox Corporation.
Filed: Sep. 17, 1980.

Abstract—One or more electrodes of an electrooptic device are supported on a separate substrate which is held in close contact with the electrooptic element of the device so that the electric fields that are created when voltages are applied to such electrodes are proximity coupled into the electrooptic element. Proximity coupling is especially advantageous for multi-gate light valves and the like where separate electrical connections have to be made to a multitude of electrodes because it permits those connections to be made remotely from the electrooptic element. However, the broader aspects of proximity coupling are applicable to electrooptic devices in general, including bulk and TIR electro-optic modulators and straight through and TIR multi-gate electrooptic light valves

11 Claims, 8 Drawing Figures



4,396,833 Aug. 2, 1983

Optomicrowave Integrated Circuit

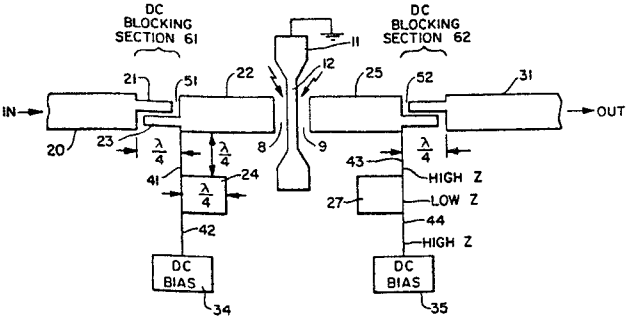
Inventor: Jing-Jong Pan.
Assignee: Harris Corporation.
Filed: Jan. 22, 1981.

Abstract—An optically controlled integrated circuit device for microwave signalling/switching is configured of a microstrip structure formed on a thin layer of active semiconductor material, such as doped GaAs or silicon, that is disposed atop an insulator substrate. A gap is provided in the conductive strip and radiant energy is directed onto the exposed surface of the active layer therebeneath for the purpose of bridging the gap via a surface-generated charge carrier region.

Electrical off-mode isolation in the gap is obtained by a narrow ribbon of conductive material disposed on the surface of the thin active layer at the gap between separated ends of the microstrip. This narrow ribbon is connected to a bias potential (e.g. ground), to create an isolation-enhancing depletion region in that portion of the active layer directly beneath the narrow ribbon. The thus generated depletion region provides input/output isolation in the gap between the separated ends of the microstrip.

To turn the switch on, the gap is illuminated with a beam of light, in response to which electron-hole pairs in the semiconductor material of the active layer are generated. This generation of electron-hole pairs increases the carrier concentration, reduces the cross-sectional area of the depletion region and increases current flow in the gap, so that the separated ends of the microstrip are effectively electrically connected. To turn the device off, the beam of light is extinguished, cancelling the photo generated carrier and restoring the isolating depletion region.

31 Claims, 4 Drawing Figures



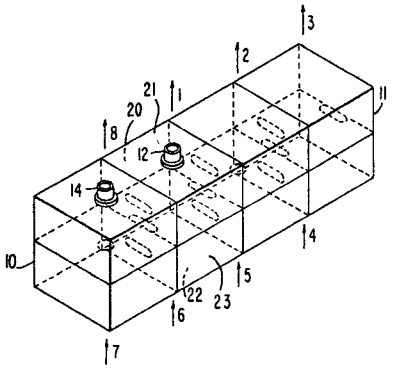
4,396,896 Aug. 2, 1983

Multiple Coupled Cavity Waveguide Bandpass Filters

Inventor: Albert E. Williams.
Assignee: Communications Satellite Corporation.
Filed: Jul. 10, 1979.

Abstract—The relative positions of the cavities in known single or dual mode multiple coupled cavity waveguide bandpass filters are rotated to achieve new filter structures in which the primary cavity couplings remain intact while the secondary couplings are shifted. The cavity rotation provides design flexibility since the input and output ports can now be taken from the same side of the filter structure. An additional advantage in dual mode filters is that the rotation permits the physical separation of input and output cavities, thereby providing increased isolation and eliminating spurious out-of-band coupling.

7 Claims, 9 Drawing Figures



4,398,164 Aug. 9, 1983

Coaxial Resonator

Inventors: Toshio Nishikawa; Sadahiro Tamura; Youhei Ishikawa; Haruo Matsumoto.
Assignee: Murata Manufacturing Co.
Filed: Jan 13, 1981.

Abstract—A $\frac{1}{4}$-wave length coaxial resonator comprises an outer cylindrical portion, an inner cylindrical portion positioned coaxially in the outer cylindrical portion, with the outer and inner cylindrical portions connected at one end by a radial connecting portion, and a dielectric unit disposed therebetween. The outer cylindrical portion and the inner cylindrical portion and the radial connecting portion are formed with a unitary member of a metallic extruded material formed by means of an impact extruding process so that the inner cylindrical portion is positioned coaxially in the outer cylindrical portion. As a result, a space is formed between the outer cylindrical portion and the inner cylindrical portion to allow for insertion of a hollow cylindrical dielectric unit. One end of the above described metallic extruded member of a unitary material is formed as an opened end allowing for insertion of the dielectric unit, while the other end of the metallic extruded member is formed as a radial connecting portion for electrically short-circuiting the outer cylindrical portion and the inner cylindrical portion. The dielectric unit is formed with an outer conductor layer on the outer wall surface and an inner conductor layer on the inner wall surface. The dielectric unit is inserted only in the region close to the opened end or in the whole portion of the space between the outer cylindrical portion and the inner cylindrical portion.

11 Claims, 31 Drawing Figures