Patent Abstracts

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4,415,872 Nov. 15, 1983

Adaptive Equalizer

Inventor: Peter D. Karabinis.
Assignee: Bell Telephone Laboratories, Incorporated.
Filed. Aug. 17, 1981.

Abstract—The dispersive effects of frequency selective fading in a digital, FM, or AM radio system are reduced by means of an adaptive equalizer (11) comprising a cascade of feed-forward stages (1,2,...N), each of which includes: a first parallel wavepath (1-1, 1-2,...1-N) including a first adjustable attenuator (20-1, 20-2,...20-N); a second parallel wavepath (2-1, 2-2, . 2-N) including a second adjustable attenuator (21-1, 21-2,...21-N) and delay means (22-1, 22-2,...22-N); and means (23-1, 23-2,...23-N) for combining the signals in said wavepaths and for coupling said combined signal to the next stage. By a suitable selection of parameters, according to two unique relationships, a transfer function can be realized which can compensate for amplitude and delay distortions caused by minimum and nonminimum phase fades.

6 Claims, 12 Drawing Figures

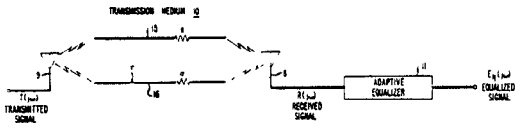
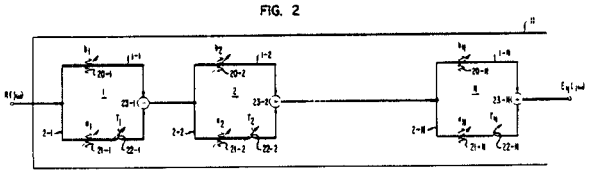


FIG. 2



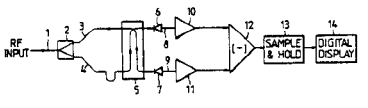
4,414,505 Nov. 8, 1983

Microwave Instantaneous Frequency Measurement Apparatus

Inventors: Harry Cuckson and Peter D. Curtis.
Assignee: The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland.
Filed: July 21, 1981.

Abstract—The present invention provides microwave instantaneous frequency measurement apparatus which includes a power divider (2) for dividing an RF input signal line (4) for delaying the first signal, a 3 decibel hybrid coupler (5) for quadrature summing and differencing the delayed first signal and the second signal, a pair of logarithmic amplifiers (10,11) connected to receive sum and difference outputs from the coupler, and a substrator (12) arranged to subtract the outputs from the amplifiers.

3 Claims, 6 Drawing Figures



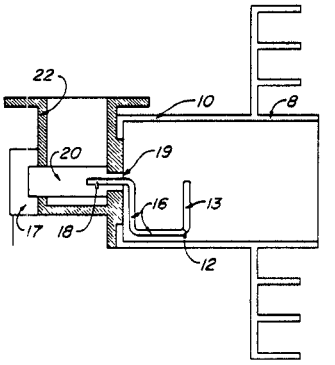
4,414,516 Nov. 8, 1983

Polarized Signal Receiver System

Inventor: H. Taylor Howard.
Assignee: Chaparral Communications, Inc.
Filed: Nov 18, 1981.

Abstract—A rotatable polarized signal receiver in a system for receiving linearly polarized electromagnetic signals includes a signal conductor having a receiver probe portion, oriented in a circular waveguide parallel to the polarization of the incident signal, and signal launch probe portion extending into the rectangular waveguide orthogonal to the direction of signal transmission therein, mounted concentrically in an insulator rod through perpendicular coupling of the circular and rectangular waveguides.

15 Claims, 3 Drawing Figures



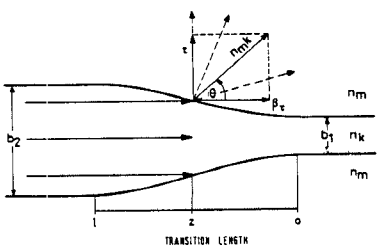
4,415,227 Nov. 15, 1983

Transition Between Two Single-Mode Optical Waveguides

Inventor: Hans-Georg Unger.
Assignee: Licentia Patent-Verwaltungs-GmbH
Filed. Apr. 1, 1981

Abstract—A connection piece connected for propagating light between two single mode optical waveguides having respectively different cross sections, the piece being in the form of a transition from one cross section to the other. The waveguides and the piece are composed of a transparent core member forming a light propagating path from one waveguide to the other via the transition, and a cladding material surrounding the core member. The core member part of the piece is formed to vary gradually and continuously in cross section in the direction of light propagation, and the piece has a length which is two to four times the free space wavelength of the light to be propagated divided by the difference between the index of refraction of the core member and the index of refraction of the cladding material.

5 Claims, 2 Drawing Figures



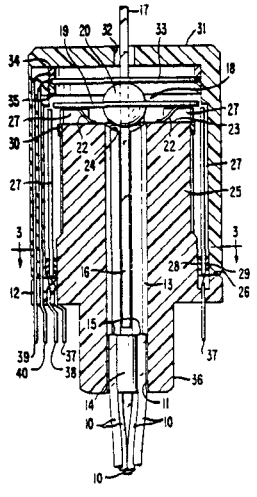
4,415,228 Nov. 15, 1983

Optical Fiber Switch Apparatus

Inventor: Frank L. Stanley.
Assignee: Bell Telephone Laboratories, Incorporated.
Filed: Aug. 24, 1981.

Abstract—Optical fiber switch apparatus for selectively coupling the end (16) of a first fiber (17) to the ends of a plurality of second fibers (10) circularly arranged within a housing (12) also enclosing the free end (16) of the first fiber (17). The latter (17) extends through a spherical bearing (20) seatable in socket (24) formed in the housing (12) end, the bearing having a disc (19) fitted about it at right angles to the axis of the first fiber (17). Arranged around the periphery of the housing (12) is a plurality of piezoelectric bimorph beams (27) having ends slightly below and outside the periphery of the disc (19). When one of the beams (27′) is energized, its free end is deflected inward and under the edge of the disc (19). At this time a piezoelectric bimorph plate (33) is energized to deflect its center toward bearing (19) to tilt the disc (19) about a fulcrum presented by the end of the deflected beam against spring clips (22) acting on the housing (12) end. As a result, the free end (16) of the first fiber (17) is swung into juxtaposition with the end of a selected second fiber (10′). Continued downward urging of the bearing (20) into its socket (24) maintains the ends of the two fibers (17,10′) in abutment.

8 Claims, 4 Drawing Figures



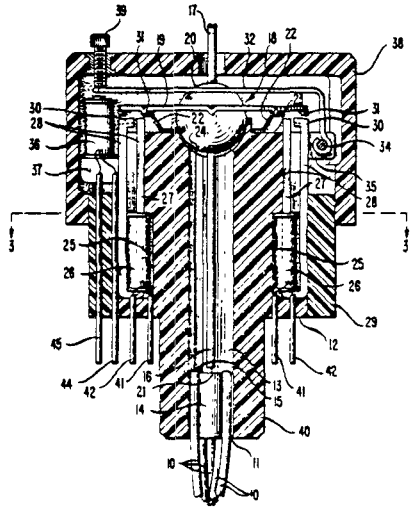
4,415,229 Nov. 15, 1983

Optical Fiber Switch Apparatus

Inventor: Harold E. McCullough.
Assignee: Bell Telephone Laboratories, Incorporated.
Filed: Aug 24, 1981.

Abstract—Optical fiber switch apparatus for selectively coupling the end (16) of a first fiber (17) to the ends of a plurality of second fibers (10) circularly arranged within a housing (12) also enclosing the free end (16) of the first fiber (17). The latter (17) extends through a spherical bearing (20) seatable in a socket (24) formed in the housing end (23), the bearing having a disc (19) fitted about it at right angles to the axis of the first fiber (17). The pole-pieces of a plurality of electromagnets (26) arranged under the periphery of the disc (19) selectively tilt the disc (19) upon selective energization to swing the free end (16) of the first fiber (17) into juxtaposition with the end of a selected second fiber (10′). A hold electromagnet (36) is energized to urge the bearing (20) into its socket (24) and thereby the ends of the two fibers (17,10′) into abutment.

9 Claims, 4 Drawing Figures



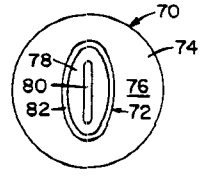
4,415,230 Nov. 15, 1983

Polarization Retaining Single-Mode Optical Waveguide

Inventor: Donald B. Keck.
Assignee: Corning Glass Works.
Filed: Mar. 30, 1981

Abstract—A single-mode optical waveguide is constructed in a manner such that the core thereof is subjected to a stress-induced birefringence. The fiber comprises an oblong core surrounded by an oblong inner cladding layer. An outer layer of stress cladding glass, which has a circular outer surface, surrounds the inner cladding layer. The TCE of the stress cladding glass is different from that of the inner cladding glass

9 Claims, 10 Drawing Figures



4,415,854 Nov. 15, 1983

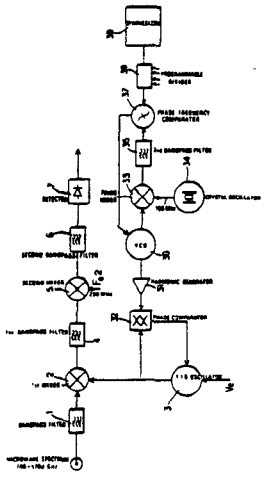
Microwave Spectrum Analyzer with a Synthesized Local Oscillator

Inventor: Joel Remy.
Assignee: Adret Electronique
Filed: May 18, 1981

Abstract—A microwave spectrum analyzer comprising a first mixer which provides beats between the output of an YIG oscillator and the spectrum to be

analyzed. A second mixer carries out a fixed transposition of said beats. The said YIG oscillator is locked to harmonics of the frequency of an auxiliary oscillator controlled by a phase-frequency comparator. The latter is adapted to receive on the one hand the frequency, divided by N of a synthesizer, and on the other hand, the beats between the frequency of said auxiliary oscillator and that of a crystal oscillator.

1 Claim, 1 Drawing Figure



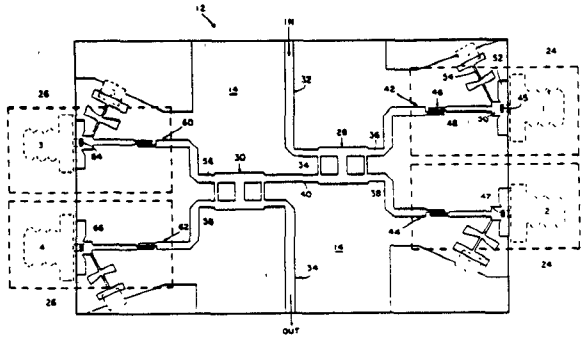
4,415,867 Nov. 15, 1983

Hybrid Coupled Microstrip Amplifier

Inventor: David Rubin.
Assignee: The United States of America as represented by the Secretary of the Navy.
Filed: May 22, 1981.

Abstract—A microstrip integrated circuit reflection amplifier utilizing packaged diodes and permitting some gain and bandwidth adjustment. A 3 db quadrature coupler has two of its ports connected to substantially identical reflection amplifiers. The reflection diodes are adjustably mounted in brackets perpendicular to the dielectric substrate of the microstrip network and may be moved in and out along the microstrip circuit to provide for some gain correction and bandwidth adjustment.

10 Claims, 3 Drawing Figures



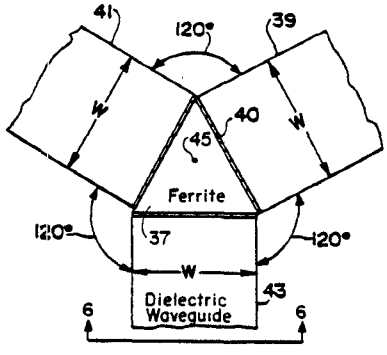
4,415,871 Nov. 15, 1983

Dielectric Waveguide Circulator

Inventors: Richard A. Stern and Richard W. Babbitt.
Assignee: The United States of America as represented by the Secretary of the Army.
Filed: Oct. 13, 1981

Abstract—Millimeter wave circulators are disclosed for use with millimeter wavelength dielectric waveguides. The structure comprises a prism of magnetized ferrimagnetic material with the waveguide ends bonded to the lateral faces of the prism. The waveguide ends and the lateral faces are congruent rectangles. The prisms may have triangular bases in which case a Y-junction circulator results, or square bases with waveguide ends attached to three out of four of the lateral faces thereof, whereby a T-junction circulator results.

13 Claims, 10 Drawing Figures



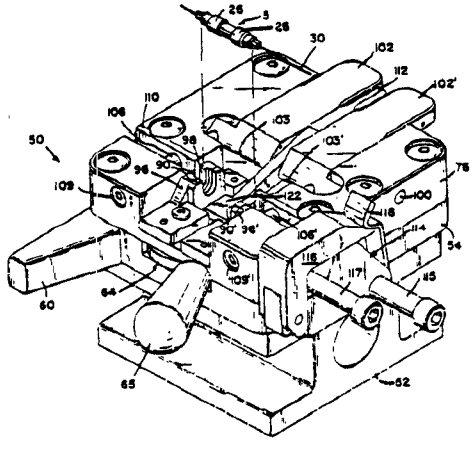
4,416,506 Nov. 22, 1983

Apparatus for Splicing Fiber Optic Waveguides

Inventors: Tore R. Johnson, and Keith Johnson, Jr.
Assignee: AMP Incorporated
Filed: July 22, 1981.

Abstract—Apparatus 50 for splicing a pair of optical waveguides 32, 34 in a splice 5 having three cylindrical rods 2 in a tubular plastic body 12 having a profiled surface 20 which is radially compressed by crimping collars 26. Apparatus 50 has holders 96, 96′ which hold body 12 stationary and clamping pins 106, 106′ activated by clamping levers 102, 102′ to hold waveguides 32, 34 stationary while crimpers 90, 90′ are moved together by rotating handle 65′. Clamping slide 114 and clamp 116 travel on rods 115, 117 a limited distance useful in placing the waveguide ends in the center of the splice 5 prior to moving the crimping collars 26.

7 Claims, 11 Drawing Figures



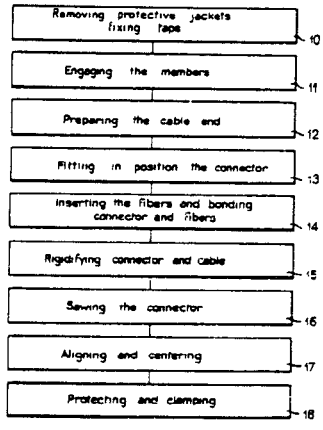
4,416,507 Nov. 22, 1983

Method for *in situ* Splicing Optical Fiber Cables

Inventors: Jean P. Hulin; Andre Bouvard; and Patrick Le Maitre.
Assignee: Lignes Telegraphiques et Telephoniques.
PCT Filed: Mar. 13, 1981

Abstract—For splicing two optical fiber cables placed within a grooved dielectric support, centering and alignment of the fibers are carried out by means of centering pins inserted in longitudinal openings of an annular flange rigidly fixed to a terminal connector forming an extension of the grooved dielectric support, at least one of these openings being located at a distance from the cable axis which is greater than the radius of the cable.

8 Claims, 13 Drawing Figures



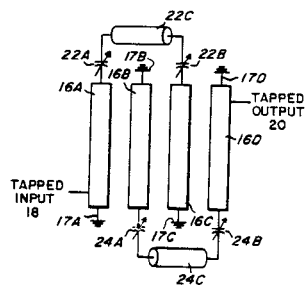
4,418,324 Nov. 29, 1983

Implementation of a Tunable Transmission Zero on Transmission-Line Filters

Inventor: Robert J. Higgins
Assignee: Motorola, Inc.
Filed: Dec. 31, 1981

Abstract—The invention is directed to a interdigital filter comprising a plurality of conductive strips positioned in a row and electromagnetically coupled to one another A conductive transmission line is positioned with respect to the row of conductive strips such that the two ends of the transmission line are capacitively coupled to the ungrounded ends of two nonadjacent conductive strips. This arrangement gives the frequency response of the filter a transmission zero. The frequency of the transmission zero can be adjusted by trimming the ends of the conductive transmission line so as to effect the capacitive coupling between the non-adjacent strips.

3 Claims, 6 Drawing Figures



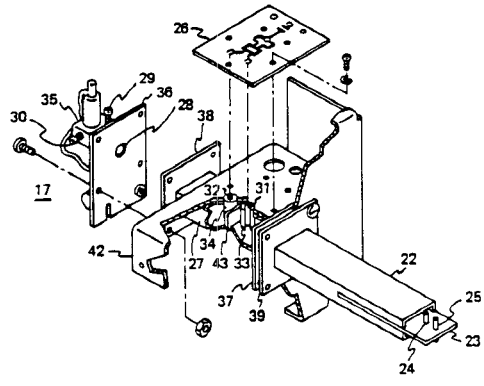
4,418,429 Nov. 29, 1983

Mixer for Use in a Microwave System

Inventor: Clayton R. Roberts.
Assignee: General Electric Company
Filed: May 7, 1982.

Abstract—The present invention relates to a mixer for use at high microwave frequencies (typically 21.8×23 2 GHz) in a low cost communications application. The invention utilizes low cost microwave components, including a low cost compartmented waveguide, shared by the signal and local oscillator and extensive microstrip circuitry The provision of a pair of novel $\frac{1}{4}$ wave impedance transformers coupled into the waveguide compartments provides efficient antenna and local oscillator input filtering, and efficient coupling from the waveguide sections to the microstrip circuitry The mixer operation is carried out in the microstrip circuitry, which contains a hybrid coupler, a balanced diode detector, and the required mixer output filter. The arrangement is of low cost, and provides a low noise figure (7 db including the preamplifier), good band selectivity (15 db return loss over the communications band), and low local oscillator radiation.

15 Claims, 5 Drawing Figures



4,418,430 Nov. 29, 1983

Millimeter-Wavelength Overmode Balanced Mixer

Inventor: Garry N. Hulderman.
Assignee: General Dynamics, Pomona Division.
Filed: Oct. 5, 1981

Abstract—Apparatus for providing intermediate frequency signals derived from microwave energy having an overmode energy distribution A plurality of waveguide transition sections expand applied local oscillator and input signals at a fundamental energy mode into signals at a predetermined energy overmode. A directional coupler combines these signals which have differing frequencies to provide intermediate frequency signals within the coupler. An energy extraction section comprising a plurality of diodes and filters extracts the intermediate frequency signal energy from the coupler to produce the output signals of the apparatus Also disclosed are a fundamental-mode mixer, a subharmonically-pumped mixer and a power divider designed in accordance with the overmode concepts of the present invention.

16 Claims, 4 Drawing Figures