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.

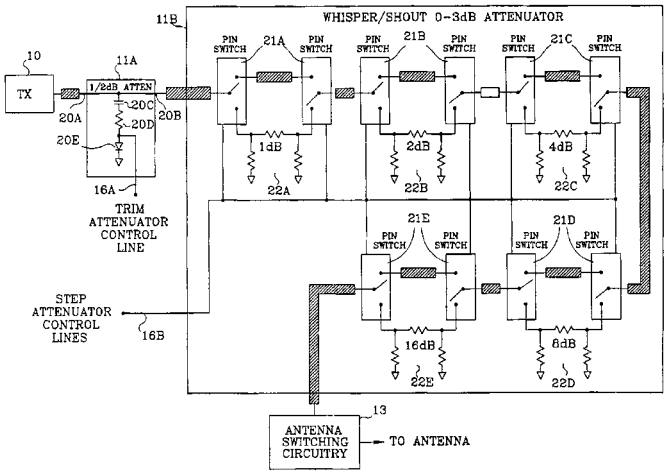
6,144,265 November 7, 2000

Calibrated High Power Radio Frequency Step Attenuator

Inventors: Charles Louis Dosdall and James R. Troxel.
Assignee: Honeywell Inc.
Filed: November 26, 1997.

***Abstract*—**A high power radio frequency (RF) precision step attenuator includes a trim attenuator, a multi-step attenuator and a calibration/control circuit. The control circuit includes a memory for storing attenuator specific calibration data. The calibration data incorporates attenuator characteristics which are used by the control circuit to adjust the attenuator and compensate for manufacturing variances, temperature variations, and the like.

8 Claims, 2 Drawing Sheets



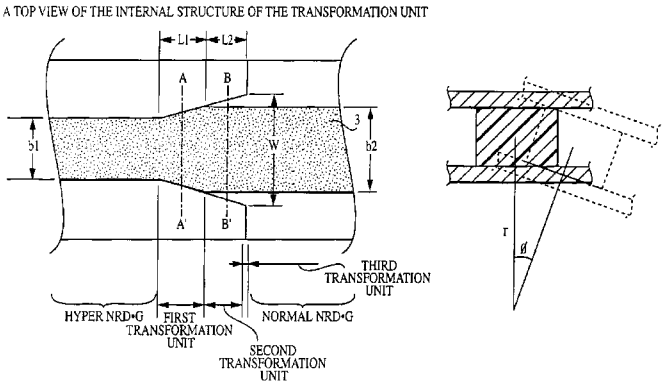
6,144,267 November 7, 2000

Non-Radiative Dielectric Line Assembly

Inventors: Atsushi Saitoh, Toru Tanizaki, Hiroshi Nishida, Ikuo Takakuwa, and Yoshinori Taguchi.
Assignee: Murata Manufacturing Co., Ltd.
Filed: December 18, 1998.

***Abstract*—**A normal NRD guide is constituted in the part to be coupled with a dielectric resonator, a hyper NRD guide for simply transmitting the LSM01 mode is constituted in a multipoints circulator part, the normal NRD guide is constituted in a coupler part, the hyper NRD guide is constituted in the mixer part, and the normal NRD guides are constituted in a dielectric line switch part and in a connection unit between components.

4 Claims, 12 Drawing Sheets



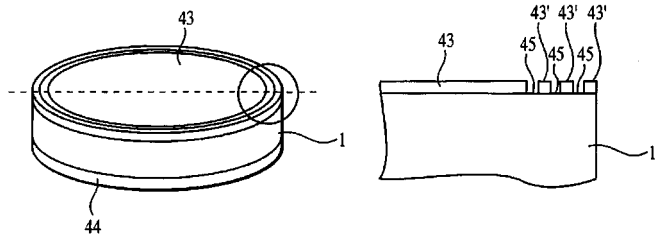
6,144,268 November 7, 2000

High-Frequency Transmission Line, Dielectric Resonator, Filter, Duplexer, and Communication Device, with an Electrode Having Gaps in an Edge Portion

Inventors: Norifumi Matsui, Seiji Hidaka, and Yohei Ishikawa.
Assignee: Murata Manufacturing Co., Ltd.
Filed: October 9, 1998.

***Abstract*—**The invention provides a high-frequency transmission line and a dielectric resonator having a small size and having an effectively reduced loss. When a transmission line is produced, an electrode is formed on a dielectric plate in such a manner that one or more gaps are formed in an edge portion of the electrode along an edge of the electrode thereby forming thin line-shaped electrodes whereby a current which would otherwise be concentrated to a great extent in the edge portion of the electrode is divided into a plurality of portions.

12 Claims, 33 Drawing Sheets



Publisher Item Identifier S 1531-1309(01)04737-7.

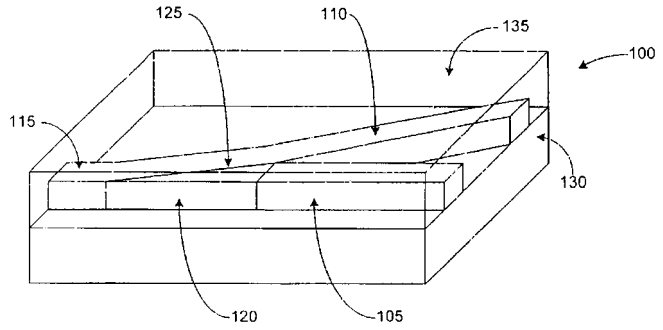
6,144,780 November 7, 2000

Polymer Waveguide Switch and Method

Inventors: Dietrich Marcuse and Herman M. Presby.
Assignee: Lucent Technologies Inc.
Filed: October 5, 1998.

***Abstract*—**An optical switch having a straight waveguide core with a lateral waveguide core extending therefrom. A region of polymer material is disposed in the straight waveguide core to deflect optical waves from the first waveguide core into the lateral waveguide core depending on the relative indexes of refraction between the first waveguide core and the polymer material. The temperature of the polymer material is adjusted, thereby adjusting the index of refraction of the polymer material so as to cause the deflection in a switched state, and to allow light radiation to pass through the polymer material in an un-switched state.

8 Claims, 3 Drawing Sheets



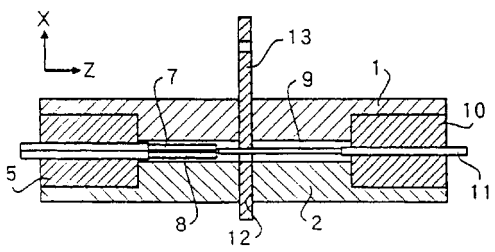
6,144,782 November 7, 2000

N×2N Optical Fiber Switch

Inventor: Mitsuo Takahashi.
Assignee: Seikoh Giken Co., Ltd.
Filed: October 5, 1998.

***Abstract*—**An optical fiber switch for switching N×2 N (N≥1) circuits is capable of mechanically switching a plurality of pairs of optical fiber circuits at the same time. The optical fiber switch moves an N (N≥1) number of movable optical fibers at the same time by a drive member which is guided by a slit of alignment members and reciprocated at right angles or in the X direction with respect to an optical axis. The optical axes of the movable optical fibers are accurately aligned with the optical axes of first or second fixed optical fibers by a mechanism which presses the N (N≥1) number of the movable optical fibers against alignment V grooves at the same time by utilizing the flexure stress of an elastic pin provided on an actuator. Further, the elastic pin imparts a self-holding function to the actuator.

8 Claims, 8 Drawing Sheets



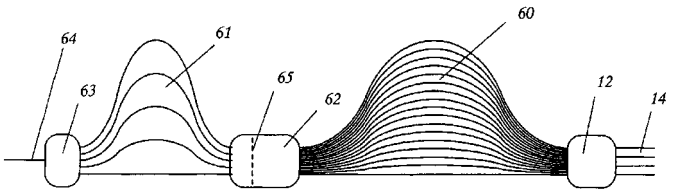
6,144,783 November 7, 2000

Optical Multiplexer/Demultiplexer

Inventors: Richard Edward Epworth, Terry Bricheno, and George Horace Brooke Thompson.
Assignee: Nortel Networks Corporation.
Filed: July 30, 1997.

***Abstract*—**An optical multiplexer/demultiplexer with an improved spectral characteristic is provided by two diffraction gratings **(61, 60)** arranged optically in tandem, the gratings being arranged to provide free spectral ranges differing by a factor of at least two, and having a coupling between them that carries over into the second grating information concerning the dispersion afforded by the first grating.

13 Claims, 8 Drawing Sheets



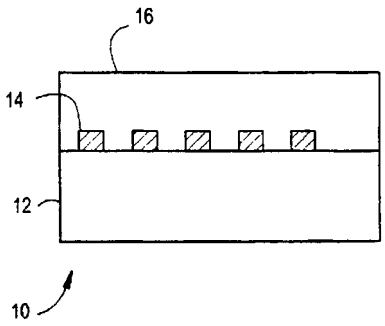
6,144,795 November 7, 2000

Hybrid Organic–Inorganic Planar Optical Waveguide Device

Inventors: Steven B. Dawes, Ronald E. Johnson, Richard O. Maschmeyer, and Robert D. Shoup.
Assignee: Corning Incorporated .
Filed: Dec. 12, 1997.

***Abstract*—**A planar optical device is formed on a substrate **(12)** and comprising an array of waveguide cores **(14)** and a cladding layer **(16)** formed contiguously with the cores. At least one of the array of waveguide cores **(14)** and the cladding layer **(16)** is an inorganic–organic hybrid material that comprises an extended matrix containing silicon and oxygen atoms with at least a fraction of the silicon being directly bonded to substituted or unsubstituted hydrocarbon atoms. In accordance with other embodiments of the invention, a method of forming an array of cores comprises the steps of preparing a core composition precursor material; partially hydrolyzing and polymerizing the material; forming an array of waveguide cores under conditions effective to form an inorganic–organic hybrid material that comprises an extended matrix containing silicon and oxygen atoms with at least a fraction of the silicon being directly bonded to substituted or unsubstituted hydrocarbon atoms.

31 Claims, 8 Drawing Sheets



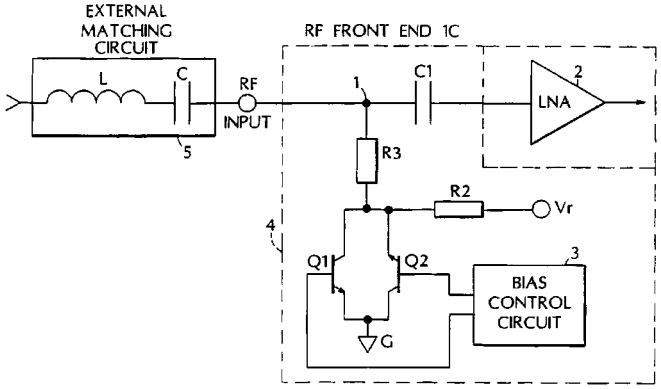
6,147,568 November 14, 2000

Radio-Frequency Variable Attenuator

Inventor: Viatcheslav Igor Souetinov.
Assignee: Mitel Semiconductor Limited.
Filed: February 26, 1999.

***Abstract*—**A variable attenuator comprises bipolar transistors Q1 and Q2 connected in reverse parallel between a point 1 and ground potential G. The base electrodes of the transistors Q1 and Q2 are biased independently by a control circuit 3. The collector of transistor Q1 and the emitter of transistor Q2 are commonly connected to a bias voltage provided by resistor R2 and voltage source Vr. The attenuator provides means by which the linearity, gain, power handling capabilities and noise figure of a front-end receiver can be altered. The attenuator is susceptible to integration in, for example, a radio receiver front-end.

7 Claims, 2 Drawing Sheets



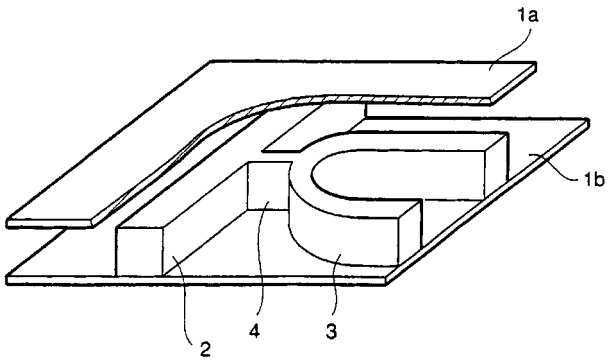
6,147,569 November 14, 2000

Non-Radiative Dielectric Waveguide Coupler

Inventors: Tetsuya Kishino, Takeshi Okamura, and Akinori Satoh.
Assignee: Kyocera Corporation.
Filed: July 20, 1999.

***Abstract*—**A nonradiative dielectric waveguide coupler for coupling or dividing high-frequency signals between at least two dielectric waveguides arranged maintaining a predetermined gap between a pair of parallel flat conductors, wherein said two dielectric waveguides are connected to each other through a bridge of a dielectric material. Upon joining the two dielectric waveguides through the bridge, the gap between the two dielectric waveguides, that affects the characteristics of the coupler, is set maintaining a high precision without effecting any particular positioning operation. Therefore, the coupler can be mass-produced very favorably. Besides, the gap between the two dielectric waveguides is stably maintained without being varied during the production of the coupler or during the use of the coupler, contributing to improving the reliability of the coupler. A drop in the characteristics of the coupler stemming from the provision of the bridge is easily avoided by setting the width of the bridge to be smaller than the width of the dielectric waveguides.

6 Claims, 5 Drawing Sheets



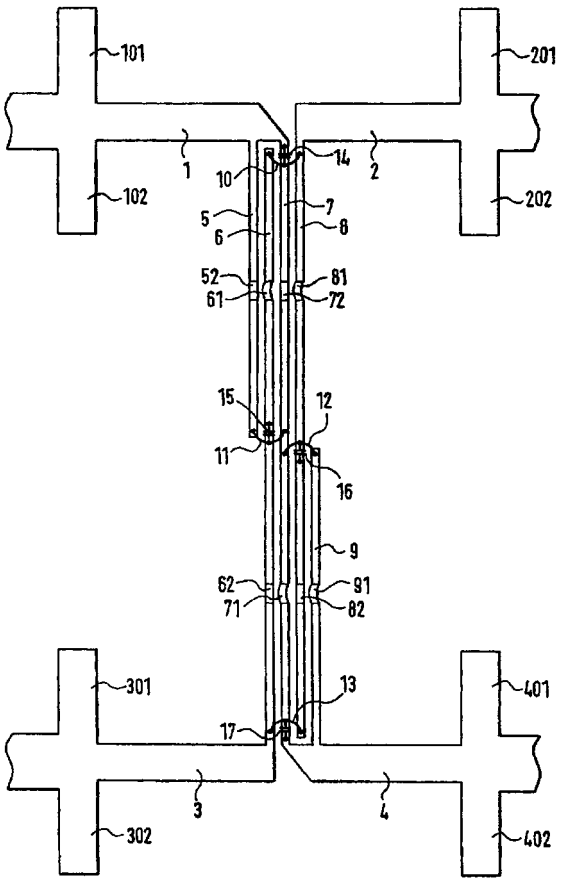
6,147,570 November 14, 2000

Monolithic Integrated Interdigital Coupler

Inventor: Hardial Gill.
Assignee: Robert Bosch GmbH.
Filed: July 21, 1999.

***Abstract*—**The monolithic integrated interdigital coupler includes a plurality of parallel conductors **(5, 6, 7, 8, 9)** extending side-by-side and a plurality of conducting air bridges **(10, 11, 12, 13)** connecting pairs of conductors. One end of each conductor is connected with one end of another nonadjacent or non-neighboring conductor by means of one of the conducting air bridges **(10, 11, 12, 13)**. In order to provide a closer or tighter coupling at least one conducting air bridge **(10, 11, 12, 13)** is connected to the conductor it bridges by a concentrated capacitance **(14, 15, 16, 17)**.

4 Claims, 1 Drawing Sheet



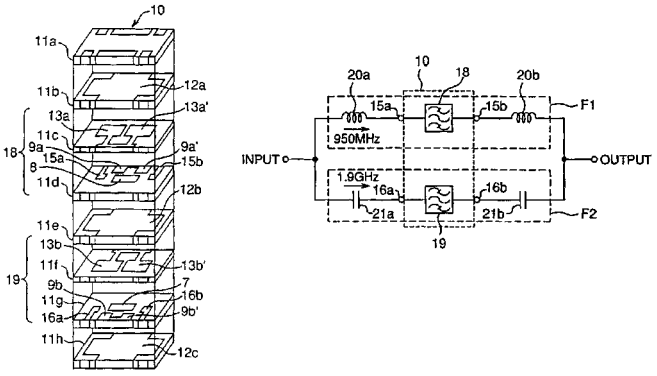
6,147,571 November 14, 2000

Dual-Band Multilayer Bandpass Filter

Inventors: Shoichi Kitazawa, Toru Yamada, Toshio Ishizaki, Koichi Ogawa, Makoto Fujikawa, Tadanori Fujisawa, Kaoru Ishida, and Yoshitaka Nagatomi.
Assignee: Matsushita Electric Industrial Co., Ltd.
Filed: July 31, 1997.

Abstract*—**A dual-band multilayer bandpass filter having a first filter unit **(18)** for filtering a first signal having a first frequency and a second filter unit **(19)** for filtering a second signal having a second frequency. First and second filter units are arranged in stacked ceramic layers. A first blocking element **(20a*, **20***b*; **25***a*, **25***b*; **25***a′*, **25***b′*; **46***a*, **46***b*) is coupled to the first filter unit **(18)** for blocking the second signal from being applied to the first filter unit **(18)**. A second blocking element (**21***a*, **21***b*; **26***a*, **26***b*; **25***c*, **25***d*; **27***a*, **27***b*) is coupled to the second filter unit **(19)** for blocking the first signal from being applied to the second filter unit **(19)**.

23 Claims, 18 Drawing Sheets



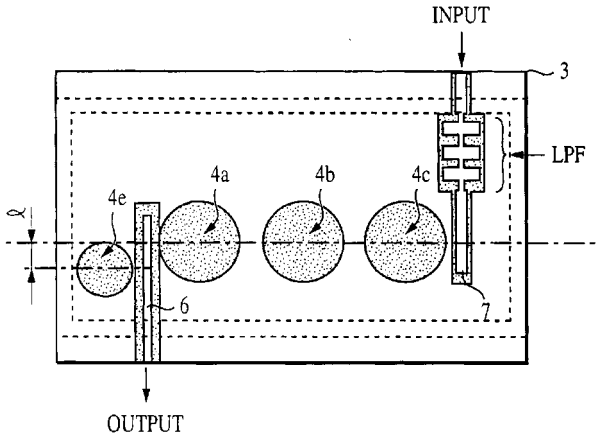
6,147,575 November 14, 2000

Dielectric Filter Transmission-Reception Sharing Unit and Communication Device

Inventors: Toshiro Hiratsuka, Tomiya Sonoda, and Kenichii Iio.
Assignee: Murata Manufacturing Co., Ltd.
Filed: April 29, 1999.

***Abstract*—**A dielectric filter, a transmission-reception shared unit, and a communication device, which incorporate the filter, are disclosed; spurious modes among resonant modes of dielectric resonators formed on parts of a dielectric plate can be suppressed so as to improve attenuation characteristics. In the dielectric filter, an electrode having electrodeless parts is formed on both main surfaces of a dielectric plate so as to form dielectric resonators; and linear conductors as probes are formed on the upper surface of the dielectric plate, in which one of the linear conductors is coupled with the dielectric resonator so as to form a band elimination filter circuit and a low-band pass filter circuit is formed at a particular position on the other linear conductor. These band elimination filter circuit and low-band pass filter circuit allow signals of spurious modes to be cut off.

7 Claims, 9 Drawing Sheets



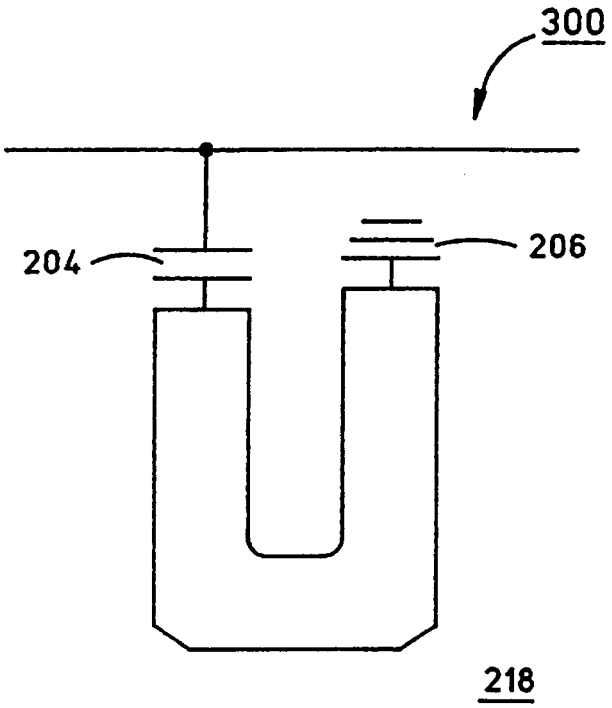
6,147,576 November 14, 2000

Filter Designs Utilizing Parasitic and Field Effects

Inventor: Augusto Arevalo.
Assignee: Ameramp LLC.
Filed: April 10, 1998.

***Abstract*—**A method for designing a filtering device essentially comprising the steps of determining a desired response of the filtering device at a selected frequency; and selecting a circuit element that exhibits a parasitic effect at the selected frequency, wherein the parasitic effect results in the circuit element having the desired response at the selected frequency. A second method for designing a filtering device, similar to the first, but utilizes a field effect at the selected frequency, instead of a parasitic effect. A frequency converter comprising a notch filter which filters a first frequency and does not filter a second frequency. The notch filter comprises a lumped parameter element and a transmission line, wherein the transmission line is coupled to the lumped parameter element.

10 Claims, 2 Drawing Sheets



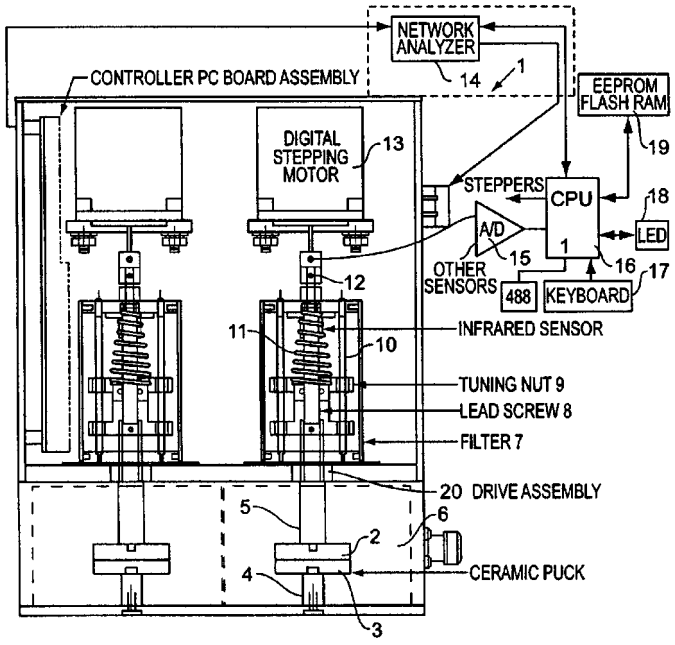
6,147,577 November 14, 2000

Tunable Ceramic Filters

Inventor: William Weldon Cavey.
Assignee: K&L Microwave, Inc.
Filed: January 15, 1998.

***Abstract*—**The present invention provides improved tunable filters that may provide more accurate tuning and a substantially greater tuning range as compared with conventional filters. Filters according to one or more aspects of the present invention may include improved tuning mechanisms, may include a CPU and a memory, wherein the CPU controls the tuning mechanism to tune to different frequencies responsive to a plurality of predefined filter characteristics stored in the memory. Filters according to one or more aspects of the present invention may further include two opposed ceramic pucks of approximately equal size, thereby providing a substantially larger tuning range than where the upper puck is simply a dielectric disk of a substantially different size. Further, the two opposed ceramic puck may be moved relative to each other in a nonrotational manner, thus reducing undesirable variations in the tuning of the filter.

21 Claims, 7 Drawing Sheets



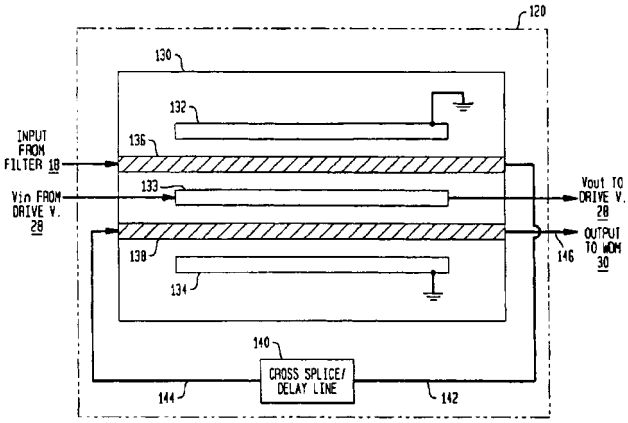
6,148,122 November 14, 2000

High Speed Lithium Niobate Polarization Independent Modulators

Inventors: Xiang-Dong Cao and David Kirk Lewis.
Assignee: Qtera Corporation.
Filed: November 17, 1998.

***Abstract*—**An optical modulator receives both an optical channel signal and at least one electrical driving voltage signal, and generates an optical output channel signal which is polarization independent. The optical modulator includes at least three electrodes, and first and second lithium niobate optical waveguides interspersed between the electrodes. At least one electrode receives the driving voltage signal to provide a travelling wave therealong. The first optical waveguide receives the optical channel signal, and the second optical waveguide provides the optical output channel signal. A cross splice/delay line interconnects the second end of the first optical waveguide to the first end of the second optical waveguide with polarization maintaining optical fibers, respectively, for introducing a predetermined rotation of TE and TM modes. As a result, polarization components at the second end of the second optical waveguide experience a same amount of phase modulation. In one embodiment, the modulator includes three electrodes which are placed in alternating form with the first and second optical waveguides. In a second embodiment, the modulator includes five electrodes, and the first and second optical waveguides are divided into two parallel branches which are positioned between a separate pair of the five electrodes.

12 Claims, 4 Drawing Sheets



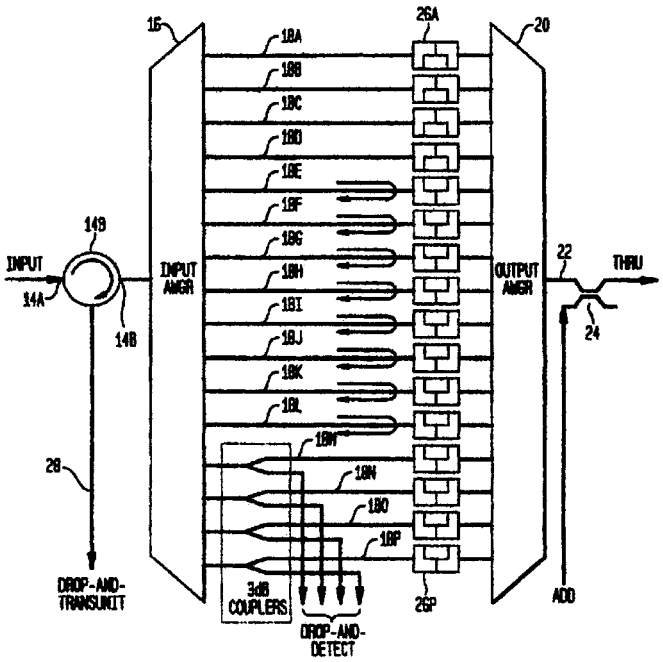
6,148,124 November 14, 2000

Wavelength Division Multiplexed Optical Networks

Inventors: Vladimir A. Aksyuk, Bradley P. Barber, David J. Bishop, Clinton R. Giles, Lawrence W. Stulz, and Rene R. Ruel.
Assignee: Lucent Technologies.
Filed: November 20, 1998.

***Abstract*—**Arrayed waveguide grating routers are used to form $1\times N$ demultiplexers and $N\times 1$ multiplexers to form channel drop modules in a WDM optical network. The demultiplexer and the multiplexer are interconnected by optical waveguides in which are inserted optical switches provided by MEMs devices that can be used to reflect incident optical signals backward for dropping channels or to both transmit and reflect incident optical signals to drop and detect channels.

17 Claims, 3 Drawing Sheets



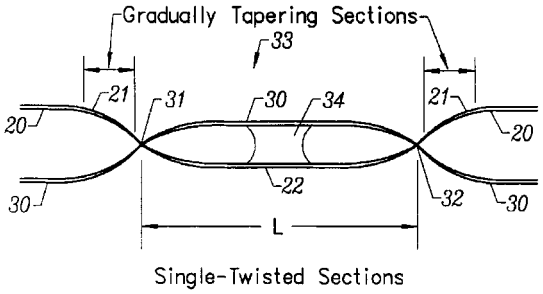
6,148,129 November 14, 2000

Broad Bandwidth, Single Mode Fiber Optic Coupler and Method of Manufacture

Inventors: Jing-Jong Pan and Donna Yu.
Assignee: E-Tek Dynamics, Inc.
Filed: October 30, 1997.

***Abstract*—**The present invention provides for a fiber optic coupler of first and second optic fibers formed by a length of the two fibers. The first optic fiber along the length has a different core diameter than that of the second optic fiber. At the both ends of the length the first and second optic fibers are twisted about each other with a central portion in which said first and second optic fibers are fused substantially parallel to each other. The resulting coupler is such that an input light signal is split into output light signals in a predetermined power ratio on the two optic fibers with the coupled power ratio relatively insensitive for a predetermined range of signal wavelengths.

25 Claims, 8 Drawing Sheets



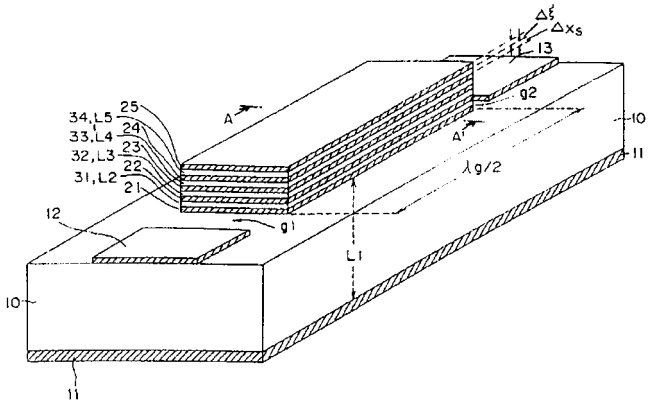
6,148,221 November 14, 2000

Thin Film Multilayered Electrode of High Frequency Electromagnetic Field Coupling

Inventors: Youhei Ishikawa and Seiji Hidaka.
Assignee: Murata Manufacturing Co., Ltd.
Filed: March 7, 1994.

***Abstract*—**A plurality of TEM mode transmission lines **(L2–L5)** are structured by pairs of thin film conductors **(21** and **22, 22** and **23, 23** and **24**, and **24** and **25)** which sandwich thin film dielectrics **(31** to **34)** by alternately stacking the thin film conductor **(21** to **25)** and the thin film dielectric **(31** to **34)**. The phase velocities of TEM mode waves which are propagated at least by two of the transmission lines **(L2** to **L5)** are substantially equal to each other. The thickness of each of the thin film conductors **(21** to **25)** is smaller than the skin depth of the frequency used so that the electromagnetic fields of at least two TEM mode transmission lines among the TEM mode transmission lines **(L2** to **L5)** are coupled to each other. In this way, the skin depth can be increased effectively. The conductor loss and the surface resistance can be reduced significantly as compared to those of the conventional electrode. By use of this electrode, a transmission line, a resonator, a filter, and a high frequency device are structured.

20 Claims, 25 Drawing Sheets



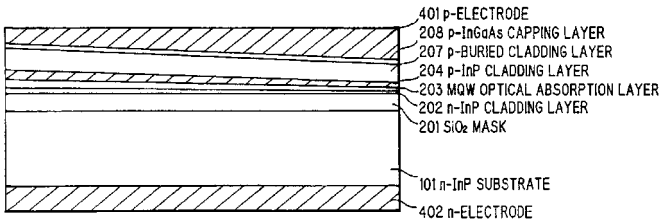
6,150,667 November 21, 2000

Semiconductor Optical Modulator

Inventors: Masashige Ishizaka and Hiroyuki Yamazaki.
Assignee: NEC Corporation.
Filed: May 21, 1997.

***Abstract*—**Disclosed is an electroabsorption-type optical modulator, which includes a semiconductor substrate; and a semiconductor buffer layer, a semiconductor optical absorption layer and a semiconductor cladding layer which are layered in order on the semiconductor substrate. The absorption of a light wave supplied to an end of the semiconductor optical absorption layer is controlled by changing the intensity of an electric field applied to the semiconductor optical absorption layer. The semiconductor optical absorption layer has a first region with an absorption-edge wave length shorter than that of a second region of the semiconductor optical absorption layer. A voltage corresponding to an external electrical signal is simultaneously applied to both regions of the semiconductor optical absorption layer, so that, to incident light, a refractive index of the semiconductor optical absorption layer is decreased and the absorption coefficient of the semiconductor optical absorption layer is increased when the intensity of the electric field applied to the semiconductor optical absorption layer corresponding to the external electrical signal is increased.

12 Claims, 14 Drawing Sheets



6,150,896 November 21, 2000

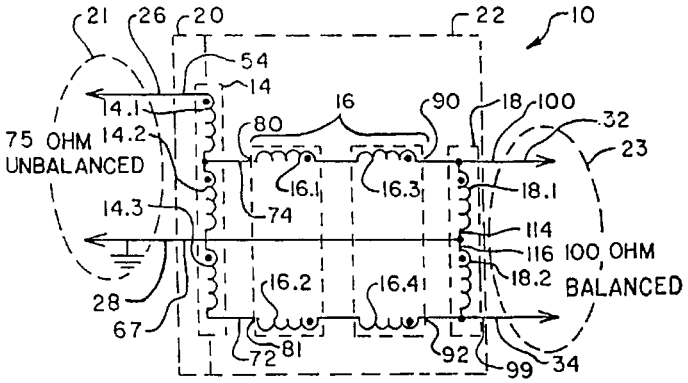
22 Claims, 11 Drawing Sheets

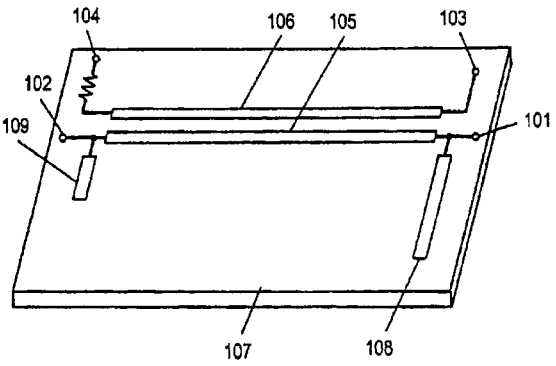
Coupling Device Connecting an Unbalanced Signal Line to a Balanced Signal Line

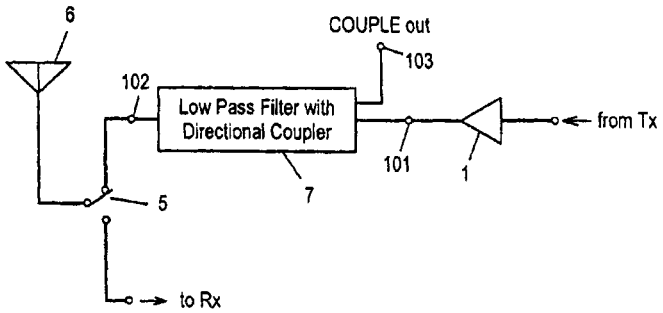
Inventors: John E. DeCramer and Franklin Bradley Gass.
Assignee: BH Electronics, Inc.
Filed: May 23, 1997.

***Abstract*—**Disclosed is a passive, highly efficient, low noise coupling device that includes a balun and noise reduction circuitry uniquely configured for converting an unbalanced video signal on a 75 ohm transmission line or connector to a balanced signal on a 100 ohm transmission line or connector and vice versa. The device efficiently allows use of a 100 ohm unshielded twisted pair, such as a conventional telephone cable, for multiplex transmission of video signals or the like in the frequency range of 50 to 500 megahertz. The preferred embodiment has a circuit board with a 75 ohm unbalanced side and a 100 ohm balanced side separated by a balun having a toroid core with a very high permeability. A common mode choke for noise rejection is inserted in the balanced side. A common mode toroid shunt on the device's balanced side provides further noise reduction. An isolation transformer in the device can provide personnel protection and eliminate ground loops. Circuit board traces connecting the components are impedance matched to either the balanced side or the unbalanced side as appropriate.

21 Claims, 8 Drawing Sheets







6,150,898 November 21, 2000

Low-Pass Filter with Directional Coupler and Cellular Phone

Inventors: Hiroshi Kushitani, Naoki Yuda, Yoshikuni Fujihashi, and Koji Hashimoto.
Assignee: Matsushita Electric Industrial Co., Ltd.
Filed: March 14, 1997.

***Abstract*—**An integrated component providing the function of both a conventional directional coupler and a low-pass filter having two attenuation poles at a specified frequency band without changing the line length. Stub lines are connected to both ends of a main transmission line of a directional coupler. A frequency of the attenuation poles is adjustable by characteristic impedance, terminating conditions, and line length of the stub lines.

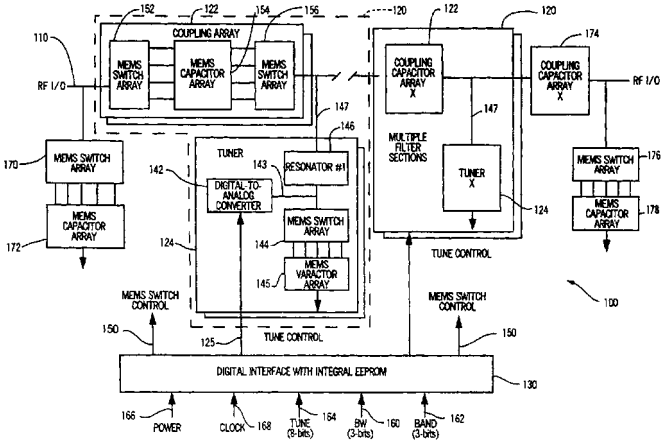
6,150,901 November 21, 2000

Programmable RF/IF Bandpass Filter Utilizing MEM Devices

Inventor: Floyd Van Auken.
Assignee: Rockwell Collins, Inc.
Filed: November 20, 1998.

***Abstract*—**A programmable high frequency (HF) bandpass filter is disclosed. The programmable filter has a tunable bandwidth and center frequency over a large range of the radio frequency (RF) and intermediate frequency (IF) spectrum. The programmable filter incorporates micro-electro–mechanical switches (MEMS), Acoustic Charge Transport (ACT) devices, or a combination thereof, to provide tunability of the bandpass filter response characteristics.

7 Claims, 4 Drawing Sheets



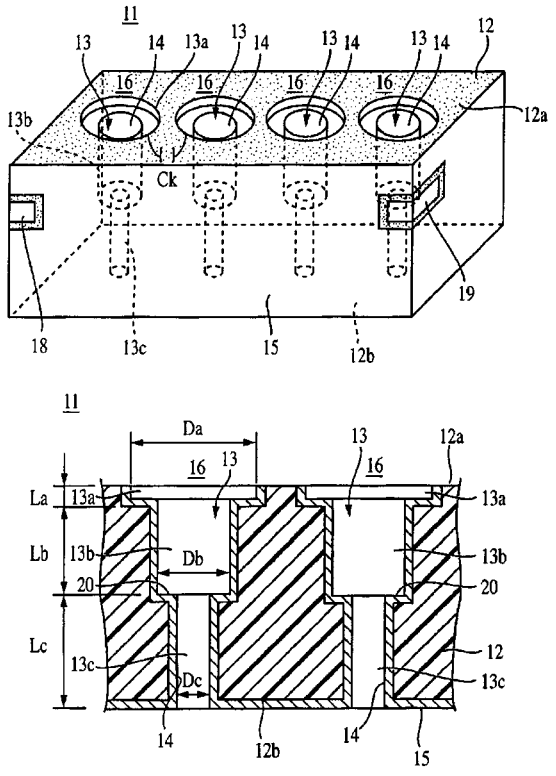
6,150,905 November 21, 2000

Dielectric Filter with Through-Hole Having Large and Small Diameter Portions and a Coupling Adjustment Portion

Inventor: Shohachi Nishijima.
Assignee: Murata Manufacturing Co., Ltd.
Filed: October 19, 1998.

***Abstract*—**On the internal surface of each of the through-holes formed in a dielectric block, an internal conductor is formed, while on the external surface except the top surface, an external conductor is formed. The internal conductors, together with the external conductor and the dielectric block, form dielectric resonators with 1/4-wavelength using the top and bottom surfaces of the dielectric block as an open surface and a short surface, respectively. Each of the through-holes has a large-diameter hole portion and a small-diameter hole portion and also has a coupling adjustment hole portion for the purpose of a fine adjustment of electromagnetic coupling between adjacent the dielectric resonators.

17 Claims, 6 Drawing Sheets



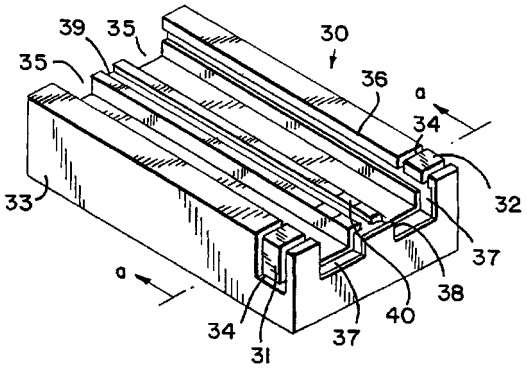
6,150,906 November 21, 2000

HF Filter Using Resonators Having Convex–Concave Structure

Inventors: Chang Hwa Lee, Bon Hee Koo, Oh Gon Chun, and Sang Seok Lee.
Assignee: Electronics and Telecommunications Research Institute.
Filed: December 15, 1998.

***Abstract*—**An HF filter using resonators of a convex–concave structure is capable of easily inserting a serial or parallel capacitance inside the resonators for the sake of a characteristic improvement of frequency at a stop band desired. In the inventive HF filter, an error compensation is simple and a size smallization is available, by utilizing the resonators of the convex–concave structure. Such HF filter consists of a dielectric block having a multitude of grooves formed, in a length direction, on an upper face thereof; a plurality of resonators formed by covering a lowly constant portion of each groove with conductive material, for resonating signals inputted from the outside; a grounding electrode formed on an outer face of the dielectric block and electrically shorted with the PCB; an input electrode for receiving signals from the outside; an output electrode for outputting signals; and a first nonplating part for preventing the input and output electrodes from being electrically shorted with the grounding electrode and realizing a capacitive coupling among the input and output electrodes and its adjacent resonators, thereby being employed in a smallization of a radio communication system and an improvement of a communicative characteristic.

2 Claims, 9 Drawing Sheets



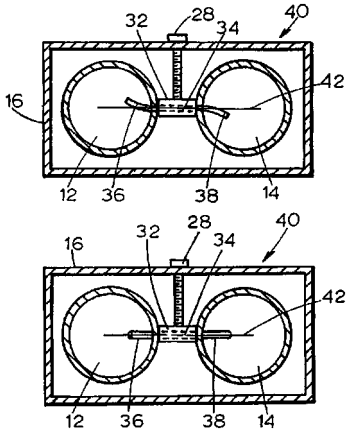
6,150,907 November 21, 2000

Coupling Mechanism with Moving Support Member for TE_{011} and $TE_{01\delta}$ Resonators

Inventors: Keith N. Loi and Paul J. Tatomir.
Assignee: Hughes Electronics Corporation.
Filed: May 3, 1999.

***Abstract*—**The present invention is directed to improved coupling mechanisms for TE_{011} and $TE_{01\delta}$ mode resonators. In one embodiment, the coupling mechanism provides an adjustable connection for transferring electromagnetic energy from a first resonator to a second resonator. Once the resonators are coupled, the coupling mechanism is adapted to allow adjustment of the magnitude and/or the phase of the electromagnetic energy while preserving the electromagnetic connection between the resonators. In another embodiment, the coupling mechanism provides a connection of the resonators using a waveguide. By varying the connection of the resonators with respect to the waveguide, positive relative coupling and/or negative relative coupling of the electromagnetic energy transferred between the waveguide and the resonators is provided.

7 Claims, 4 Drawing Sheets



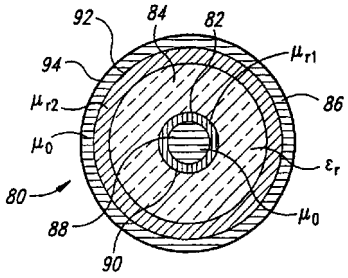
6,154,104 November 28, 2000

High Permeability Tapped Transmission Line

Inventor: Garrett W. Hall.
Assignee: Micron Technology, Inc.
Filed: June 3, 1998.

***Abstract*—**A transmission line includes a high permeability conductor. The high permeability conductor increases the inductance-per-length of the transmission line to reduce the propagation velocity along the line. The high permeability conductor supplements a high dielectric constant insulator and high permeability core that increase the capacitance-per-length and inductance-per-length, respectively. In one embodiment, the transmission line is a microstrip line that is used in a matrix addressable display. In another embodiment, the transmission line is a coaxial line where the central conductor includes a center layer of nonmagnetic material and an outer layer of high permeability material. The high permeability conductor can be formed from a single layer of high permeability material or may be formed from a central layer of high conductivity material coated with an outer layer of a high permeability conductor.

20 Claims, 2 Drawing Sheets



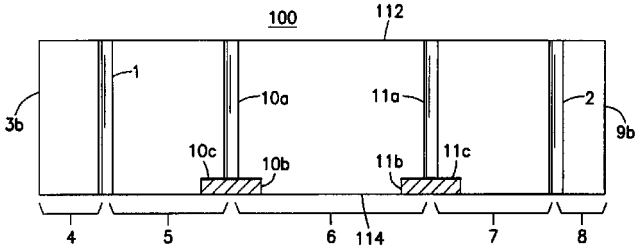
6,154,106 November 28, 2000

Multilayer Dielectric Evanescent Mode Waveguide Filter

Inventor: Rocco A. De Lillo.
Assignee: Merrimac Industries, Inc.
Filed: November 25, 1998.

***Abstract*—**A multilayer dielectric evanescent mode waveguide bandpass filter with resonators utilizing via hole technology is capable of achieving very narrow bandwidths with minimal insertion loss and high selectivity at microwave frequencies is provided. A typical implementation of this filter is fabricated with soft substrate multilayer dielectrics with high dielectric constant ceramics. This filter typically takes up less space than other filters presently available. A typical implementation operates at a center frequency of 1 GHz, although other center frequencies, such as approximately 0.5 GHz to approximately 60 GHz, are achievable.

15 Claims, 13 Drawing Sheets



6,154,588 November 28, 2000

Dispersion Compensation Apparatus

Inventor: Yutaka Kai.
Assignee: Fujitsu Limited.
Filed: February 26, 1998.

***Abstract*—**Dispersion compensation having a flat loss characteristic is performed. Overall wavelength dependence is made flat by using a passive device, such as a fiber Bragg grating having a transmission characteristic compensating for the wavelength dependent loss characteristic of a dispersion-compensating fiber, or an optical amplifier having a gain characteristic compensating for the wavelength dependent loss characteristics.

24 Claims, 6 Drawing Sheets