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.

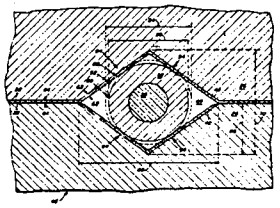
4,475,790 Oct. 9, 1984

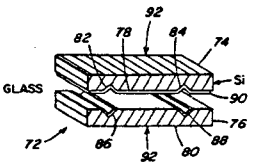
Fiber-Optic Coupler

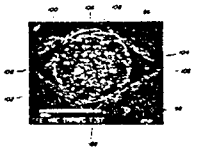
Inventor: Roger G. Little.
Assignee: Spire Corporation.
Filed: Jan. 25, 1982.

Abstract—A high-resolution, rugged fiber-optic coupler for use in optical data transmission systems and method of its manufacture. The fiber-optic coupler includes a pair of thin silicon wafers having preferentially etched complementary opposed V-grooves. A very thin layer of a deformable hard glass is used as the lining for the V-grooves and also for covering one of the opposed surfaces of the pair of wafers. An optical fiber is held securely within a pair of opposed complementary V-grooves by the deformable hard glass lining. Preferably, the pair of silicon wafers is joined to each other, with the optical fiber held therebetween in the opposed V-grooves, by electrostatic bonding.

22 Claims, 8 Drawing Figures







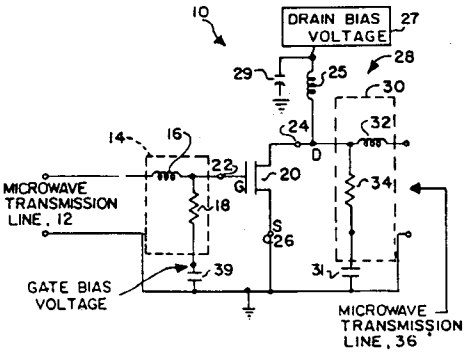
4,476,446 Oct. 9, 1984

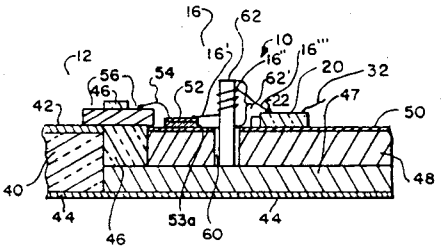
Impedance Matching Network for Field Effect Transistor

Inventor: Ronald E. Blight.
Assignee: Raytheon Company.
Filed: Aug. 12, 1983.

Abstract—An impedance matching network for coupling a microwave transmission line to a field effect transistor (FET). The impedance matching network includes a resistor coupled in shunt with the FET and an inductor connected between the microwave transmission line and the resistor. The inductor is formed by wrapping a conductive wire around a post inserted into a hole formed in a support for the FET.

4 Claims, 4 Drawing Figures





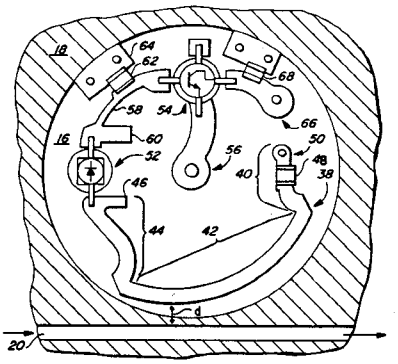
4,476,447 Oct. 9, 1984

Adjustable Directional Coupler and Power Detector Utilizing Same

Inventor: John K. Lauchner.
Assignee: Motorola, Inc.
Filed: Sept. 7, 1982.

Abstract—A compact power detector apparatus comprises a unique adjustable directional coupler and a power detector circuit integrated therewith. The adjustable coupler comprises a pair of stripline conductors, one of which is carried on a turntable. The coupling distance between the conductors varies as the turntable rotates. The power detector circuit is also carried on the turntable, thus avoiding the need for flexible interconnections. The output from the detector circuit is taken from a connector substantially in the center of the turntable.

18 Claims, 4 Drawing Figures



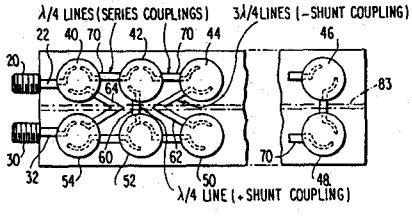
4,477,785 Oct. 16, 1984

Generalized Dielectric Resonator Filter

Inventor: Ali E. Atia.
Assignee: Communications Satellite Corporation.
Filed: Dec. 2, 1981.

Abstract—A generalized dielectric resonator filter is disclosed for the realization of the most general transfer function characteristics of bandpass filters using cylindrical dielectric resonator discs in a microstrip transmission line configuration. The dielectric resonator filter of the invention has electrical properties comparable to conventional waveguide filters, but has a much smaller volume and mass, and is thus very attractive for use in the construction of input multiplexers of communications satellite transponders.

8 Claims, 11 Drawing Figures



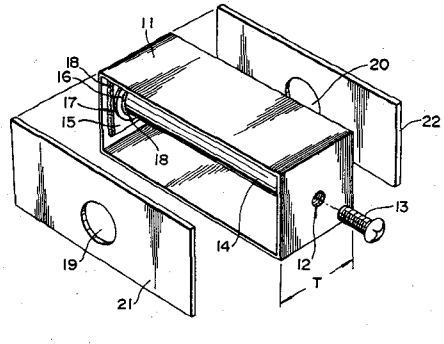
4,477,786 Oct. 16, 1984

Semi-Coaxial Cavity Resonator Filter

Inventors: Masahide Tamura and Koga Daisuke.
Assignee: Toyo Communication Equipment Co., Ltd.
PCT Filed: Jan. 26, 1982.

Abstract—A semi-coaxial cavity resonator filter including a plurality of semi-axial cavity resonators, as constructed units, each of which has an adjustable device in which dielectric substrates having a specific dielectric constant of more than 1 are disposed in the gap between the inside wall of a tube-shaped outer conductor and the open end of an inner conductor provided on the inside wall of the outer conductor, and the electrostatic capacitance of the spaces interposed by the dielectric substrates is changed without steps by varying the area of the electrodes on the dielectric substrate. The filter is made by making an individual and predetermined frequency adjustment on the plurality of the semi-axial cavity resonators and then cascade-connecting those resonators in one block through shielding plates having a coupling iris so as to obtain desired filtering characteristics as a bandpass filter.

6 Claims, 10 Drawing Figures



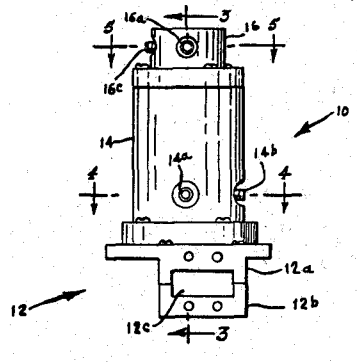
4,477,787 Oct. 16, 1984

Dual-Mode Directionally Coupled Band-Reject Filter Apparatus

Inventor: Herbert L. Thal, Jr.
Assignee: The United States of America as represented by the Secretary of the Air Force.
Filed: Jan. 19, 1983.

Abstract—A dual-mode directionally coupled band-reject filter apparatus having coaxially aligned first and second cylindrical cavity members which are asymmetrically mounted to the broadwall of a waveguide. Both cylindrical cavity members include a plurality of tuning screws to establish elliptic-type responses.

9 Claims, 5 Drawing Figures



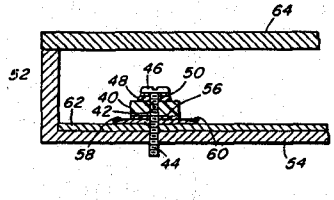
4,477,788 Oct. 16, 1984

Dielectric Resonator Tuner and Mechanical Mounting System

Inventors: Jean C. Collinet and Mark V. Slyke.
Assignee: M/A Com, Inc.
Filed: Feb. 3, 1983.

Abstract—A combined mounting and tuning structure for a dielectric resonator comprised of a stack of a dielectric resonator body, a resilient body of dielectric material, and an electrical tuning conductor. A fastening means preferably in the form of a dielectric screw threadedly engaged in a base wall of an enclosure and by turning the fastening means, the tuning conductor is brought closer to the resonator, and the resonant frequency of the resonator is thereby adjusted while also providing a clamping force on the stack so as to maintain its position relative to the base wall. The dielectric resonator tuner of the invention is shown in oscillator and filter circuit embodiments.

11 Claims, 7 Drawing Figures



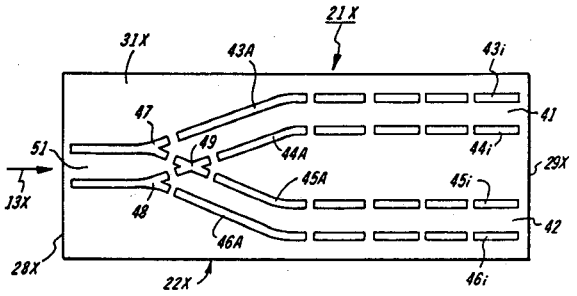
4,478,483 Oct. 23, 1984

Variable Length Electrooptic Waveguides and Applications Therefor

Inventor: Robert A. Sprague.
Assignee: Xerox Corporation.
Filed: May 10, 1982.

Abstract—A variable-length electrooptic waveguide is used to adjust the input conjugate of a focusing lens, thereby providing a relatively high-speed and inexpensive focus control device having a wide dynamic control range for optical memories and the like. A pair of segmented electrodes are deposited in spaced apart relationship on or near a surface of an electrooptic element, and provision is made for individually addressing the electrode segments, whereby the effective length of the waveguide may be increased or decreased by increasing or decreasing, respectively, the number of adjacent electrode segments that are being actively driven at any given time. In keeping with one of the more detailed features of this invention, a multilayer electrode construction is preferred so that the electrode segments may be interleaved in stacked, overlapping relationship to create a substantially continuous waveguide of controllable length.

12 Claims, 4 Drawing Figures



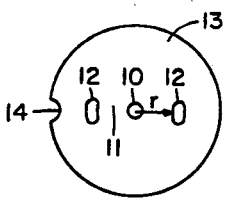
4,478,489 Oct. 23, 1984

Polarization Retaining Single-Mode Optical Waveguide

Inventors: Michael G. Blankenship and Donald B. Keck.
Assignee: Corning Glass Works.
Filed: Mar. 28, 1983.

Abstract—A single-mode optical waveguide is fabricated in a manner such that the core thereof is subjected to a stress-induced birefringence. This characteristic is accomplished by introducing into the cladding region of the fiber on opposite sides of the core longitudinally extending regions of glass having a thermal coefficient of expansion different from that of the remainder of the cladding. A number of novel techniques are disclosed for forming such a fiber.

10 Claims, 11 Drawing Figures



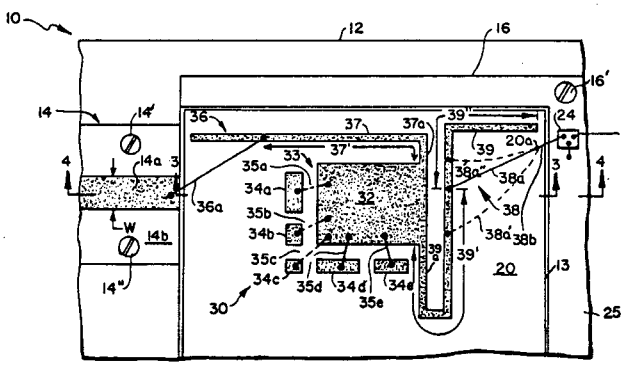
4,479,100 Oct. 23, 1984

Impedance Matching Network Comprising Selectable Capacitance Pads and Selectable Inductance Strips or Pads

Inventors: Sanjay B. Moghe, Roger E. Gray, and Wei Tsai.
Assignee: Raytheon Company.
Filed: May 27, 1982.

Abstract—A customizable impedance matching network for coupling a microwave transmission line to an FET. The network includes a plurality of conductive pads formed on the first surface of a dielectric substrate each pad providing in combination with the substrate and a conductor formed on an opposite surface of the substrate, a predetermined capacitance. Selective ones of such conductive pads are interconnected in parallel to form a capacitor having a capacitance related to the total surface area of such interconnected conductive pads, to provide the requisite capacitive reactance for the network. The network further includes a strip conductor formed on such first surface having a predetermined inductance per unit length and having a first end electrically connected to the network. A first end of a selected length of bonding wire is attached to such strip conductor at a bonding point between the ends of such strip conductor to provide an inductor having an inductance related to the sum of the lengths of the bonding wire and the length of the strip conductor between the bonding point and the first end of such strip conductor. Such inductor provides the requisite inductive reactance for the network. Alternatively, the requisite inductive reactance may be provided by a second plurality of conductive pads formed on such first surface selectively interconnected together with selected lengths of bonding wire. The inductance of such inductor is related to the total length of such bonding wire.

6 Claims, 7 Drawing Figures



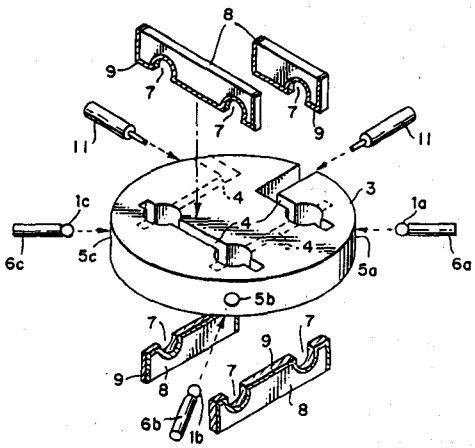
4,480,238 Oct. 30, 1984

YIG Tuned Filter Having Coupling Loops Formed from Conductively Layered Insulated Plates

Inventor: Jun-ichi Iwasaki.
Assignee: Takeda Riken Co. Ltd.
Filed: Oct. 14, 1982.

Abstract—A tunable YIG bandpass filter which can be manufactured with reliably constant characteristics. A housing with slots for receiving insulating plates having a conducting layer on the side edge, and holes for receiving YIG elements over which indentations in the side edges having the conducting layers are located, provides the coupling loops of the filter to the YIG elements. The insulating plates and the YIG elements are fixed at predetermined positions.

13 Claims, 8 Drawing Figures



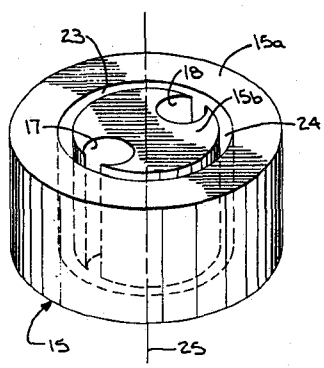
4,480,239 Oct. 30, 1984

Loop-Gap Resonator Network

Inventors: James S. Hyde and Wojciech Froncisz.
Assignee: The Medical College of Wisconsin Inc.
Filed: Feb. 7, 1983.

Abstract—A lumped circuit loop-gap resonator is formed by a plurality of openings formed through a block of material. The openings form inductive loop elements and these are interconnected in a variety of possible networks by capacitive gap elements. String, star, ring and lattice networks are described.

10 Claims, 11 Drawing Figures



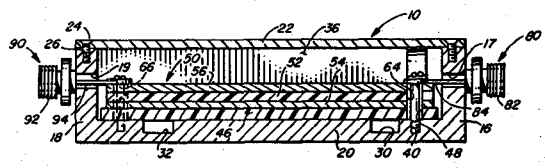
4,480,240 Oct. 30, 1984

Apparatus for Separating RF Ground Plane from Housing

Inventor: Harry J. Gould.
Filed: Sept. 30, 1982.

Abstract—Apparatus for separating a radio frequency (RF) ground plane from a metal housing in which a circuit board is disposed includes an RF choke and a dielectric layer for separating the housing from the circuit board.

11 Claims, 9 Drawing Figures



4,480,897 Nov. 6, 1984

Single-Polarization Single-Mode Optical Fiber

Inventors: Katsunari Okamoto, Toshihito Hosaka,
Yutaka Sasaki, Juichi Noda,
and Takao Edahiro.
Assignee: Nippon Telegraph & Telephone Public Corporation.
Filed: June 15, 1982.

Abstract—A single-polarization single mode optical fiber of the type comprising an elliptical core, a pair of stress applying parts on both sides of the minor radius of the elliptical core for applying asymmetrical stress thereto and a clad embedding therein the core and the stress applying parts, the stress applying parts being made of B_2O_3 wherein a relative refractive index difference Δ between the core and the clad satisfies a relation $0.004 \leqq \Delta \leqq 0.05$, an ellipticity ϵ satisfies a relation $0.01 \leqq \epsilon \leqq 0.9$, the B_2O_3 has a molar concentration of 1 to 25 mole %, ratio of thickness of the stress applying parts and the core is 5 to 15, a modal birefringence B expressed by an equation $B = (\beta_x - \beta_y)/k$ satisfies a relation $B = 1 \times 10^{-6}$ where $(\beta_x - \beta_y)$ represents a propagation constant difference between HE_{11^x} and HE_{11^y} modes, and k a wavenumber in vacuum, whereby a polarization mode dispersion, that is a delay time difference between the HE_{11^x} and HE_{11^y} modes which are orthogonal with each other is zero.

2 Claims, 20 Drawing Figures