Patent Abstracts

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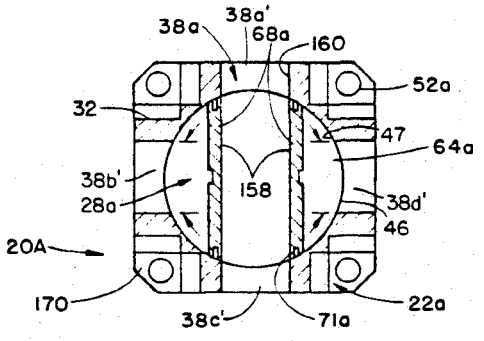
4,617,538 Oct. 14, 1986

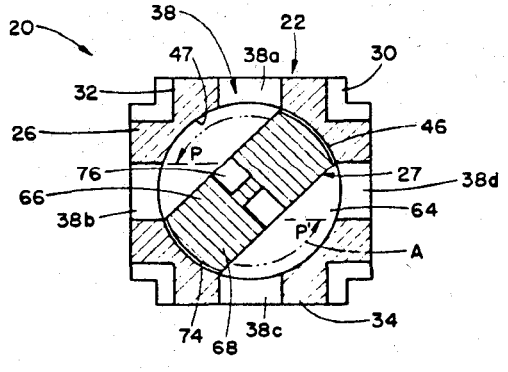
Microwave Waveguide Switch Assembly

Inventor: Victor H. Nelson.
Filed: June 21, 1984.

Abstract—A microwave waveguide switch assembly comprises a stationary housing having four openings and a cylindrical chamber of housing rotor which has a microwave switch section formed with two cylindrical axially spaced plates at ends of an integral bar to contain the microwave energy between the walls of the rotor and the chamber wall during transmission of microwave energy through selected passages in the housing. The plates and the bar along with the chamber wall provide an essentially sealed microwave passageway thus minimizing transmission losses and at the same time, preventing leakage of microwave energy between passageways.

4 Claims, 15 Drawing Figures





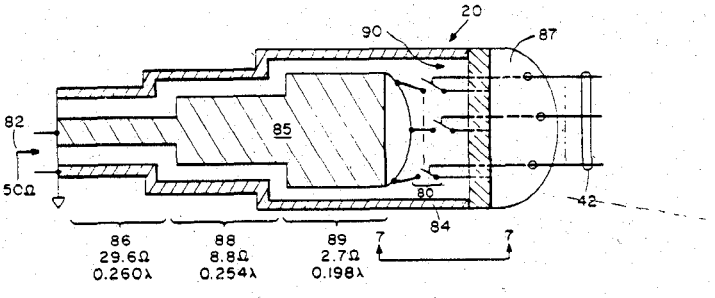
4,617,539 Oct. 14, 1986

Reflective Phase Shifter

Inventors: Richard L. O'Shea and Philip R. Merrill.
Assignee: Raytheon Company.
Filed: May 13, 1985.

Abstract—A digitally controlled reflective type phase shifter wherein radio frequency energy is fed to an input/output port of the phase shifter and then coupled from the phase shifter at the input/output port, the phase shifter providing one of a plurality of predetermined phase shifts between the fed energy and the coupled energy selectively in accordance with a control signal. The phase shifter includes: a coaxial transmission line with an inner conductor and an outer conductor, a first end of the inner conductor and a first end of the outer conductor providing the input/output port; a conductor connected to the second end of the outer conductor, such conductor being dielectrically spaced from a second end of the inner conductor; and, a plurality of switches, disposed between different portions of the second end of the inner conductor and the conductor and responsive to a control signal, for electrically connecting a selected one or ones of said different portions of the second end of the inner conductor to the conductor while unselected ones of the different portions of the second end of the inner conductor remain dielectrically spaced from the conductor.

14 Claims, 7 Drawing Figures



4,618,210 Oct. 21, 1986

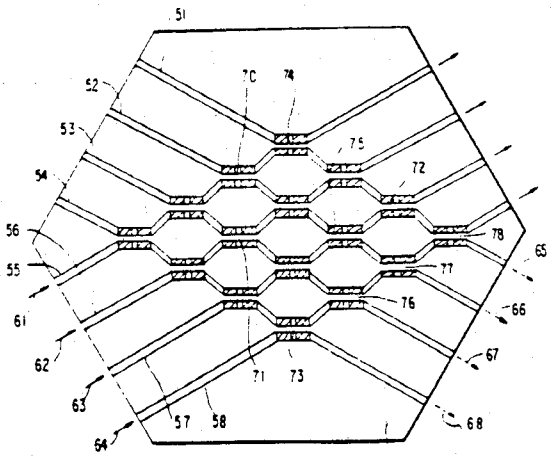
Optical Switch of Switched Directional Coupler Type

Inventor: Michikazu Kondo.
Assignee: NEC Corporation.
Filed: June 9, 1983.

Abstract—An optical switch with switched optical directional couplers, switched by the application of either 0 volt or a voltage V_1, different from 0 volt. Coupling of almost 100 percent is achieved when the V_1 voltage is

applied to a selected directional coupler, while coupling of 0 percent to 20 percent occurs when 0 volt is applied to the selected directional coupler. The optical directional coupler is formed by locating adjacent optical waveguides in close proximity and applying electric field producing electrodes to the waveguides where they are in close proximity such that the substrate below opposing waveguide sections receive electric fields of opposite directions.

8 Claims, 7 Drawing Figures



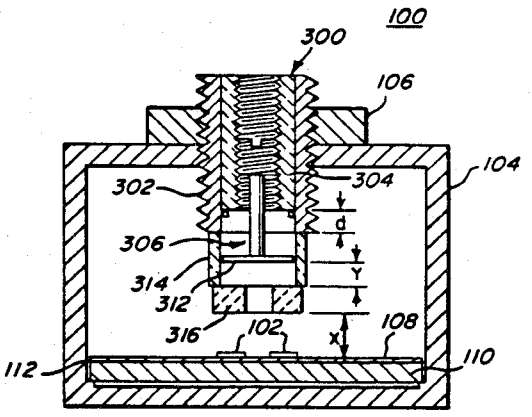
4,618,836 Oct. 21, 1986

Wide-Band Dielectric Resonator Oscillator Having Temperature Compensation

Inventors: Mark A. Gannon, Francis R. Yester, Jr., and Paul H. Gailus.
Assignee: Motorola, Inc.
Filed: Dec. 24, 1984.

Abstract—A improved microwave dielectric oscillator module which is provided with a removable temperature compensated dielectric resonator channel element is described. The removable temperature compensated dielectric resonator channel element cooperates with an electrically shielded housing. A substrate is mounted within the housing. Microstrip or stripline conductive patterns deposited on the substrate couple energy from the removable dielectric resonator to the remainder of the oscillator circuitry. The oscillator achieves wideband operation utilizing a GaAs FET transistor as the oscillators active element in conjunction with an integral trombone-line phase adjuster.

5 Claims, 4 Drawing Figures



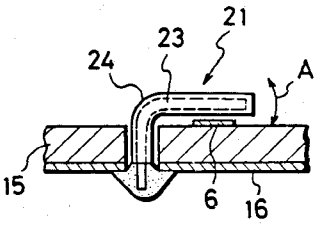
4,618,838 Oct. 21, 1986

Impedance-Adjusting Element for a Microstrip Circuit

Inventors: Tadashi Kajiwara, Akira Sato, Shinobu Tsurumaru, and Kenichiro Kumamoto.
Assignee: Sony Corporation.
Filed: Feb. 12, 1985.

Abstract—Impedance-adjusting elements for a microstrip circuit of the kind employing a signal transmission line connected to an active circuit element and impedance matching elements, such as parallel-connected open-ended stubs, are formed of one or more wire elements arranged in proximity to the transmission line and the open-ended stub and connected at one end to the ground plane on the side of the substrate opposite the transmission line, wherein the free end of the wire elements can be freely moved, thereby adjusting the spacing of the wire elements from the respective signal path and open-ended stub and adjusting the angle of intersection of the wire elements and the respective signal path and open-ended stub, so that the effective impedances of the circuit can be controlled.

15 Claims, 5 Drawing Figures



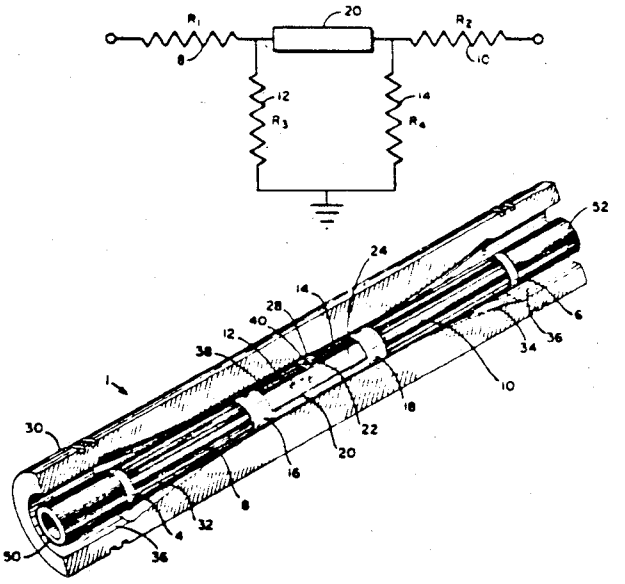
4,618,839 Oct. 21, 1986

Microwave Attenuator

Inventor: Jon E. Barth.
Filed: Apr. 11, 1985.

Abstract—A microwave attenuator forming two series connected L-pads is comprised of a plurality of electrically conductive, resistive, and non-conductive sections disposed on the surface of an elongate dielectric cylindrical base. The series resistances are connected through a conducting strip having an impedance that matches the impedance of the L-pads.

17 Claims, 9 Drawing Figures



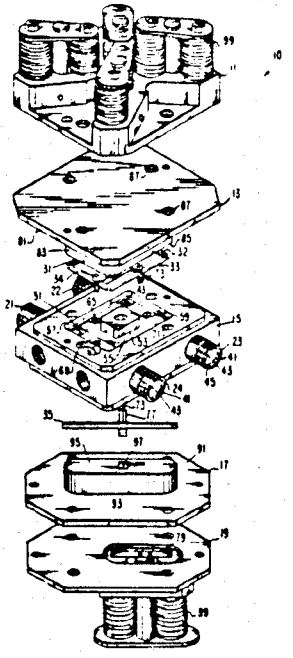
4,618,840 Oct. 21, 1986

Air-Line Microwave Coaxial Reversing Switch Having Diagonally Switched Path

Inventors: Harold H. Yee and James F. Hudson.
Assignee: Hughes Aircraft Company.
Filed: Apr. 9, 1983.

Abstract—A switch (10) of the type comprising a rectangular arrangement of ports (21, 22, 23 and 24) includes a diagonally extending connector bar (35) disposed on one side of the rectangular arrangement opposite four laterally extending connector bars (31, 32, 33 and 34). The diagonally disposed connector bar is actuatable independently of the other bars. Electromagnetically driven rockers (79) or other means are provided to actuate the rods. In one realization of the switch, the ports are coaxial connectors, for a microwave network. Each connector bar resides within a corresponding groove (51,61) in a conductive housing and is independently actuatable. When actuated, a bar contacts the center conductors of two ports. The actuated bar cooperates with the walls of the containing groove to form an air-line microwave connection between the contacted ports. When the contained bar is unactuated, the groove becomes a waveguide-beyond-cutoff to isolate the respective ports.

10 Claims, 4 Drawing Figures



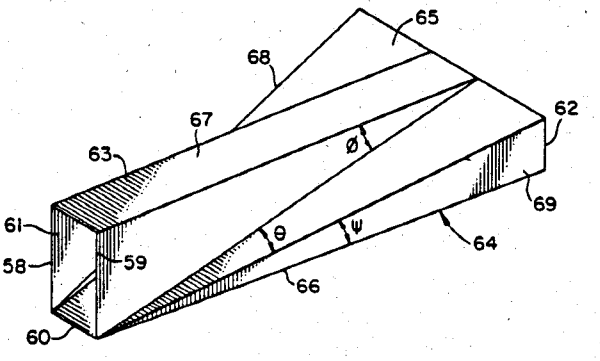
4,620,163 Oct. 28, 1986

TE_{10} Rectangular to TE_{01} Circular Waveguide Mode Launcher

Inventor: Lock R. Young.
Assignee: Harris Corporation.
Filed: Apr. 17, 1984.

Abstract—The first section of a Marie'-configured TE_{10} rectangular mode to TE_{01} circular mode waveguide launcher is modified to provide an effectively true linear taper for the injected TE_{10} mode wave to the emitted TE_{20} mode wave. As a result, the first section is well matched at the low end of the frequency band as well as being resonance free to frequencies above the upper end of the band of interest. According to this modification, rather than have a single taper for the triangular shaped lower portion of the first section, the lower triangular portion has a second taper extending from the intersection at the lower wall of the input to the height of the exit wall at the output. This second taper provides an effective true linear taper for the input section. Thus, not only is there improved performance, in terms of electrical impedance matching and resonance free operation, but the input section is easier to machine, since there is no requirement of the insertion of formation of an internal impedance matching element.

11 Claims, 15 Drawing Figures



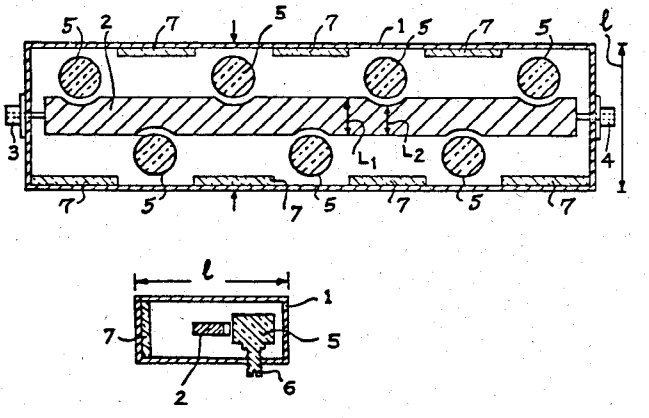
4,620,168 Oct. 28, 1986

Coaxial-Type Tunable Hyperfrequency Elimination Band Filter Comprising Dielectric Resonators

Inventors: Xavier Delestre and Marc Sauvage.
Assignee: Thomson CSF.
Filed: May 9, 1984.

Abstract—A tunable hyperfrequency elimination band filter forms a coaxial line having a rectangular cross section external conductor enclosing a rectangular cross-section internal conductor which is substantially coaxial therewith. A plurality of cylindrical resonators are mounted on an interior face of the external conductor. The width of the internal conductor is reduced in areas adjacent to each resonator. The resonators are cylindrically shaped and constructed of a dielectric material. Each resonator is mounted to the interior face by means of dielectric screws which may be adjusted to cause the central frequency of the filter to be tuned. Hyperfrequency absorbent material may be placed on the interior walls in areas opposite the resonators.

14 Claims, 4 Drawing Figures



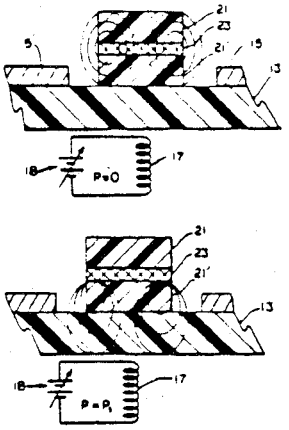
4,620,169 Oct. 28, 1986

Magnetically Tunable Dielectric Resonator Having a Magnetically Saturable Shield

Inventor: Martin J. Blickstein.
Assignee: Murata Erie N. A., Inc.
Filed: Apr. 4, 1985.

Abstract—A dielectric resonator 11 is tuned by varying the magnetic flux induced into a magnetically saturable shield 12 mounted adjacent the resonator by varying the flow of current through a coil 17.

4 Claims, 8 Drawing Figures



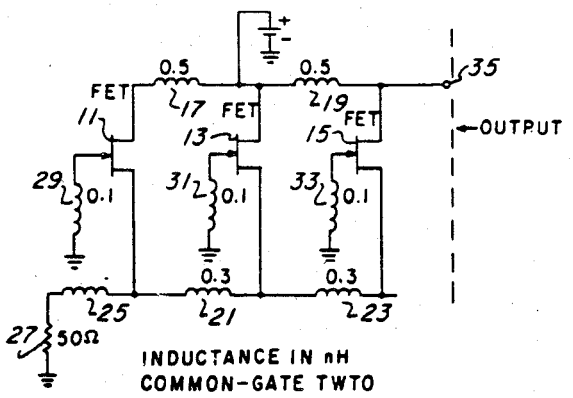
4,621,239 Nov. 4, 1986

Gallium Arsenide Traveling-Wave Transistor Oscillators for Millimeter-Wave Applications

Inventor: Hua Q. Tserng.
Assignee: Texas Instruments Incorporated.
Filed: Mar. 29, 1985.

Abstract—The disclosure relates to a gallium arsenide traveling-wave transistor oscillator which extends the oscillation frequency of the individual FET's by connecting them in parallel across a pair of inductive arrangements, either in common-gate or common-source configurations.

14 Claims, 4 Drawing Figures



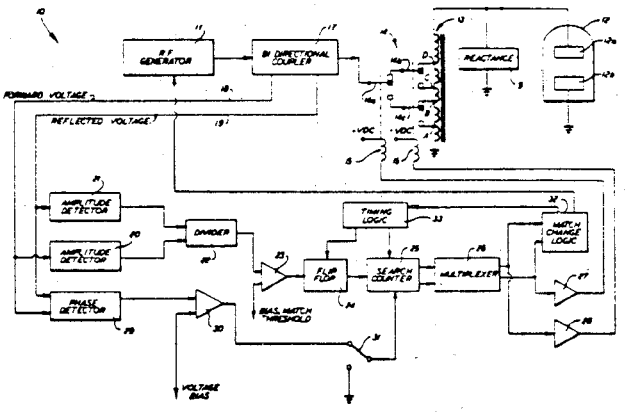
4,621,242 Nov. 4, 1986

RF Impedance Match Control System

Inventors: C. Earle Theall, Jr., Hans G. Ludwig, and Michael J. Gustin.
Assignee: The Perkin-Elmer Corporation.
Filed: Mar. 19, 1984.

Abstract—An RF impedance match control system. The reflection coefficient of the system is compared to a threshold to determine a mismatch condition which is corrected by selectively changing in incremental steps the turns ratio of an autotransformer provided at the input to the load until the mismatch condition is corrected. Timing means are provided to delay each mismatch correction until initial transient conditions are stabilized and to shut off RF power during each turns ratio change.

8 Claims, 3 Drawing Figures



4,621,243 Nov. 4, 1986

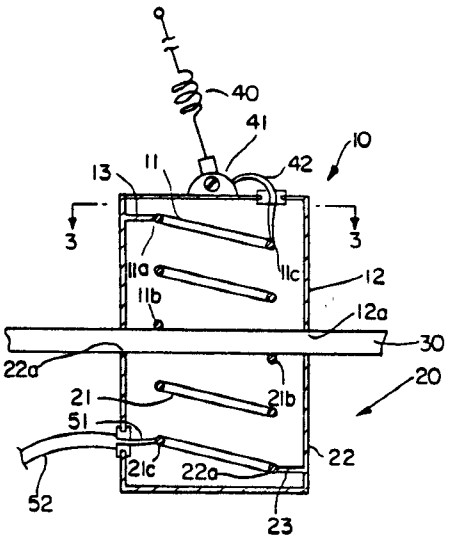
Transmission Channel Coupler for Antenna

Inventor: Takuji Harada.
Assignee: Harada Kogyo Kabushiki Kaisha.
Filed: Mar. 27, 1985.

Abstract—A transmission channel coupler for an antenna including two resonators, each resonator being formed with a helical conductor and an outer conductor which is disposed outside of the helical conductor by sharing the same axis with the helical conductor. One end of the helical conductor is electrically connected to the inner wall of the outer conductor, and the other end of the helical conductor is connected to a printed circuit board mounted at the end of the outer conductor so that the helical conductor is positioned inside the outer conductor. The resonators are coaxially mounted on the either side of a glass such as the rear window of a car, window of a building, etc. By means of the structure above, high frequency signals are transmitted through

an insulating material, that is, the glass, without damaging it. Also, the coupler can be manufactured small in size and provides excellent frequency characteristics with less transmission loss.

15 Claims, 9 Drawing Figures



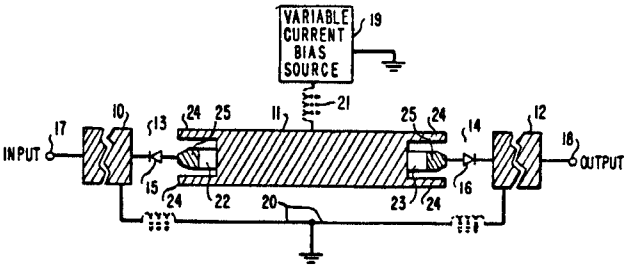
4,621,244 Nov. 4, 1986

Broad-Band Variable Attenuator Using Transmission Lines Series Coupled by Adjustable p-i-n Diodes

Inventor: George L. Heiter.
Assignee: AT&T Bell Laboratories.
Filed: May 17, 1984.

Abstract—The present invention relates to a broadband variable attenuator comprising a two- or three-section transmission line with a separate p-i-n diode bridging each of the two gaps between the adjacent ends of the transmission line sections. The two p-i-n diodes are disposed in series opposition and the first, second and third transmission line sections are connected to a diode variable biasing source to cause (a) substantially a total reflection of an input signal to the attenuator for a bias below a first value, (b) substantially a total transmission of an input signal through the diodes for a bias above a second value, and (c) a selected amount of both partial reflection and partial transmission of an input signal for a bias value between the first and second values. The broadband variable attenuator can be implemented using microstrip, stripline or coaxial technology without the need of d-c isolation capacitors or applique resistors while providing a maximum insertion loss under zero bias conditions.

13 Claims, 5 Drawing Figures



4,621,245 Nov. 4, 1986

Intermediate-Frequency Filter for a DBS Receiver

Inventors: Pierre Dobrovolny and Dominic J. Nicoletto.
Assignee: Zenith Electronics Corporation.
Filed: May 8, 1984.

Abstract—A quadruple tuned 400-MHz IF filter comprises a rectangular substrate having a foil pattern of four inductors formed on one side thereof with four leadless capacitors and three lead type coupling capacitors interconnected between the inductors and the foil to form a filter. The inductors are arranged in a generally U-shaped configuration with the input inductor and output inductor being located at the legs of the U adjacent to each other for providing electromagnetic coupling between the input and output of the filter to sharpen the response of the filter along the skirts of the response curve. A triple tuned filter includes three helical resonators that are coupled by mutual stray capacitances. Output to input coupling is achieved with two wires connected to the input and output helical resonators and positioned adjacent to the middle helical resonator.

11 Claims, 9 Drawing Figures