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, D.C. 20231.

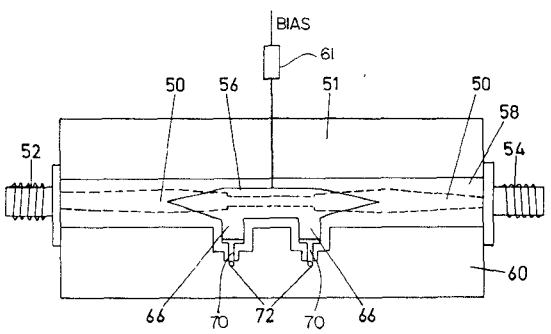
4,647,880 Mar. 3, 1987

Microwave Diode Phase Shifter

Inventor: Gideon Argaman.
Assignee: State of Israel-Ministry of Defense.
Filed: Jan. 17, 1986.

Abstract—A two-state microwave signal phase shifter comprising a first signal conductor disposed in a first plane, a second signal conductor electromagnetically coupled to the first signal conductor and disposed in overlapping relationship therewith in a second plane parallel to and spaced from the first plane, a ground plane element disposed in a third plane parallel to and spaced from the first plane, third and fourth signal conductors connected to the second signal conductor and disposed perpendicular to the second signal conductor; fifth and sixth conductors disposed in the second plane; switching diodes connecting the opposite ends of the third and fourth conductors to the fifth and sixth conductors; and a seventh conductor connected to the fifth and sixth conductors.

17 Claims, 6 Drawing Figures



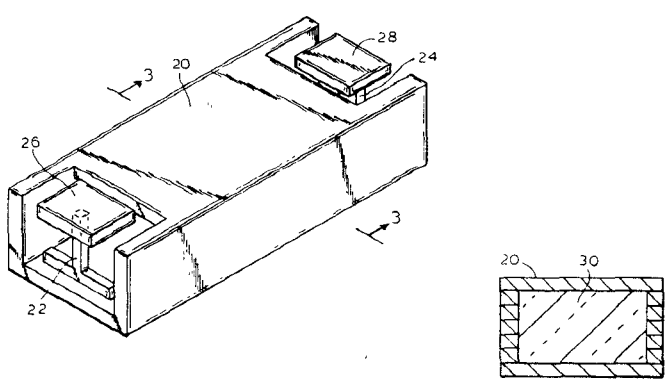
4,647,882 Mar. 3, 1987

Miniature Microwave Guide

Inventor: Richard C. Landis.
Assignee: ITT Corporation.
Filed: Nov. 14, 1984.

Abstract—A miniature microwave guide is provided in a substrate made of successive superimposed layers of conductive and/or dielectric materials. Probes are provided at the extreme ends of the guide for injecting and extracting signals.

20 Claims, 11 Drawing Figures



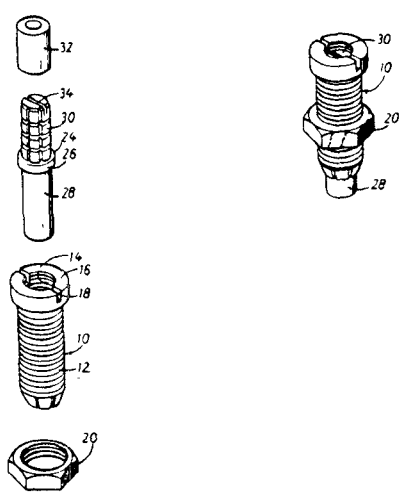
4,647,883 Mar. 3, 1987

Tuning Screw Having a Resilient Plastics Bush Which Supports the Tuning Plunger within a Metal Bush

Inventor: Robert F. Oxley.
Filed: Aug. 27, 1984.

Abstract—A microwave tuning device including a cylindrical metal bush having an internal screw thread. A metal rod-like plunger is axially displaceable within the plastics bush. A plastics bush is fitted over one end of the plunger and fixed thereto by means of splines and grooves. The bush is inserted into the internal screw thread so as to form a corresponding mating screw thread on its outer periphery. A plurality of fingers extend from one end of the metal bush and resiliently engage the outer periphery of a plain portion of the plunger so as to provide resistance to unintentional rotation of the plunger in the metal bush and electrical interconnection therebetween.

8 Claims, 6 Drawing Figures



4,649,354 Mar. 10, 1987

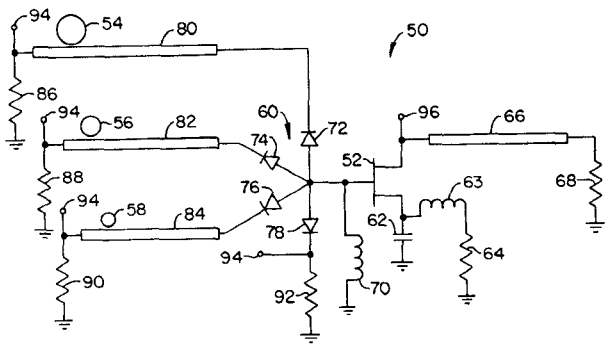
Switchable Multifrequency Dielectric Resonator Oscillator

Inventor: Amarpal S. Khanna.
Assignee: Avantek, Inc.
Filed: Dec. 16, 1985.

Abstract—A switchable multifrequency dielectric resonator oscillator that generates microwave energy at any of several available frequencies is disclosed. The oscillator includes a transistor that is operable for oscillation at a frequency determined by a feedback resonator connected to its control terminal, and switching means for selectively connecting any one of a plurality of feedback resonators to the control terminal of the transistor. The oscillation frequency of the oscillator is determined by the resonant frequency of whichever of the feedback resonators is connected to the control terminal of

the transistor through the switching means. It is preferred to utilize dielectric resonators as the feedback resonators, a field effect transistor as the transistor, and p-i-n diodes as the switching means.

20 Claims, 8 Drawing Figures



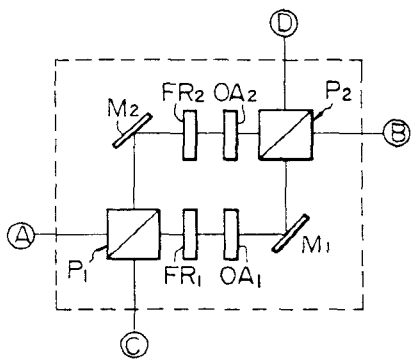
4,650,289 Mar. 17, 1987

Optical Circulator

Inventor: Hideo Kuwahara.
Assignee: Fujitsu Limited.
Filed: Feb 20, 1980.

Abstract—An optical circulator comprising a first optical path and a second optical path formed between a first polarizer prism and a second polarizer prism, Faraday rotators interposed in the first and second optical paths, the polarizing direction of the Faraday rotators being rotated by an angle of 45° by a magnetic field and the direction of polarizing rotation being reversed with respect to the propagation direction of light which passes therethrough, and polarizing direction rotators interposed in the first and second optical paths, the polarizing direction of the polarizing direction rotators being rotated by an angle of 45° and the direction of polarizing rotation not being reversed with respect to the propagation direction of light which passes therethrough.

28 Claims, 23 Drawing Figures



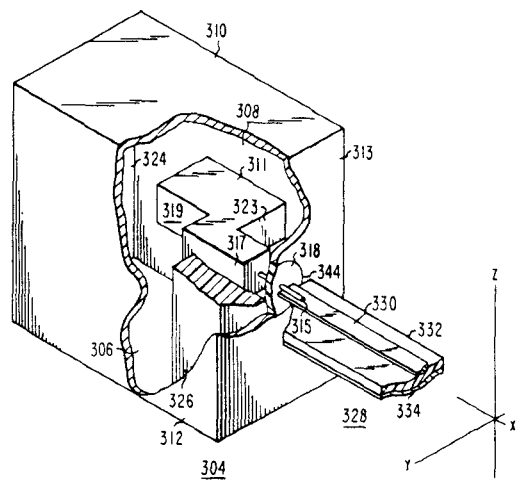
4,651,115 Mar. 17, 1987

Waveguide-to-Microstrip Transition

Inventor: You-Sun Wu.
Assignee: RCA Corporation.
Filed: Jan. 31, 1985

Abstract—A waveguide-to-coax-to-microstrip transition includes a rectangular waveguide portion having a ridged impedance transformer attached to the lower wide wall. The waveguide portion is closed off by a conductive wall through an aperture in which the center conductor of a coaxial transmission-line passes. A ridge extension isolated from all four walls of the rectangular waveguide couples the ridge to the center-conductor of the coax. For broadbanding, a glass plate is located between the ridge extension and the upper wide wall. The strip conductor of a microstrip transmission line is connected to the center conductor of the coaxial transmission line. The plane of the dielectric plate of the microstrip may be oriented parallel to the narrow wall of the rectangular waveguide to achieve high packing density.

17 Claims, 8 Drawing Figures



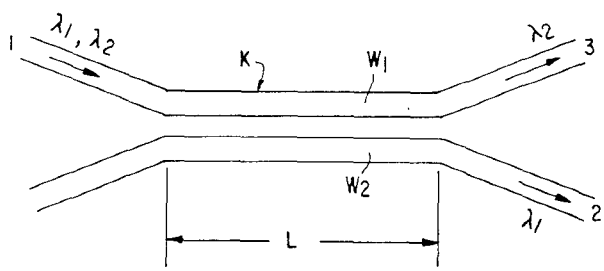
4,652,076 Mar. 24, 1987

Symmetrical Waveguide Coupler

Inventor: Hans-Georg Unger.
Assignee: ANT Nachrichtentechnik GmbH.
Filed: June 22, 1984.

Abstract—A symmetrical waveguide coupler having two signal channels for coupling a first signal having a wavelength λ_1 and a second signal having a wavelength λ_2 which is longer than λ_1. The coupler includes a carrier substrate and first and second dielectric strips embedded in the substrate to form two identical dielectric waveguides which together with the substrate define a coupling region. The first waveguide has first and second arms connected to the coupling region and the second waveguide has a third arm connected to the coupling region The second and third arms are oriented in a direction facing away from the first arm. The dielectric strips are so dimensioned and arranged within the substrate as to present an effective coupling length $c_1 L_1$ equal to $\pi/2$ at a wavelength of λ_1 for coupling the first signal between the first and third arms and an effective coupling length $c_1 L_1$ equal to π at a wavelength of λ_2 for coupling the second signal between the first and second arms, with c_1 being the coupling coefficient between the fundamental modes of the signals in the strips and a function of wavelength, and L_1 being the length of the coupling region.

6 Claims, 3 Drawing Figures



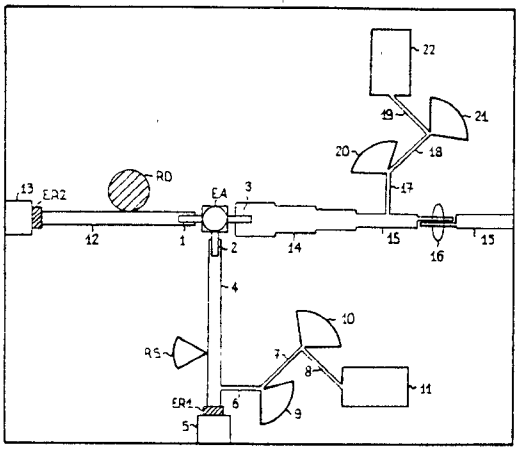
4,652,836 Mar. 24, 1987

Integrated Microwave Oscillator with Microstrip Resonator Frequency Stabilizer

Inventors: Luciano Accatino and Giorgio Bertin.
Assignee: Cselt—Centro Studi e Laboratori Telecommunicazioni S.p.A.
Filed: Feb. 19, 1986.

Abstract—An integrated microwave oscillator as which the generated frequency is stabilized by a dielectric resonator with high quality factor and stability. The positive feedback is assured not only by the dielectric resonator coupled to a line connected to a terminal of the active device, but also by a microstrip resonator connected in parallel to a second line connected to a second terminal of the active device. The signal generated is extracted from the third terminal of the active device.

2 Claims, 1 Drawing Figure



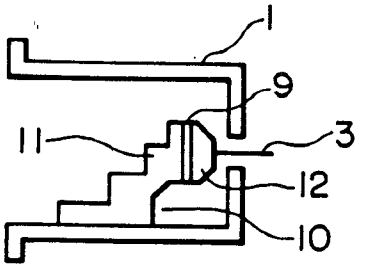
4,652,839 Mar. 24, 1987

Waveguide-to-Coaxial Converter

Inventors: Akio Tadachi and Makoto Sato.
Assignee: Alps Electric Co., Ltd.
Filed: June 25, 1985.

Abstract—A waveguide-to-coaxial converter has a dielectric element attached to a ridge provided inside a waveguide. A coaxial line for a converted wave output which is secured to an output side of the ridge is dc insulated by the dielectric element from the waveguide.

3 Claims, 6 Drawing Figures



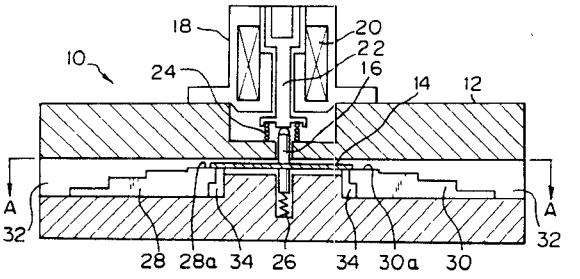
4,652,840 Mar. 24, 1987

Ultra-High-Frequency Switch

Inventor: Yuhei Kosugi.
Assignee: NEC Corporation.
Filed: July 15, 1985.

Abstract—An ultra-high-frequency switch is disclosed which features a desirable frequency characteristic, significantly short switching time, and small-size construction. Impedance conversion members serving as input and output terminals are connected between a waveguide and an opening and closing switch section. An elongate and flat movable center conductor in a stripline configuration is driven from the outside to in turn open and close the impedance conversion members, thereby opening and closing the circuit.

10 Claims, 11 Drawing Figures



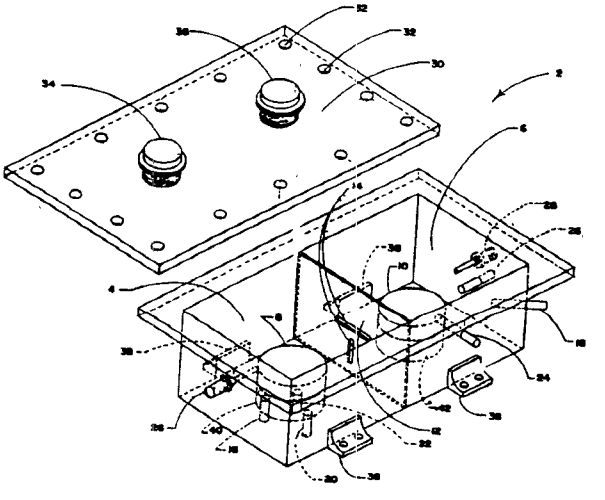
4,652,843 Mar. 24, 1987

Planar Dual-Mode Cavity Filters Including Dielectric Resonators

Inventors: Wai-Cheung Tang, David Siu, Bruce C. Beggs, and Joseph Sferrazza.
Assignee: Com Dev Ltd.
Filed: Nov. 2, 1984.

Abstract—A bandpass filter has a plurality of cascade cavities that operate in a dual-mode and are mounted in a planar relationship to one another. Each cavity contains a dielectric resonator and resonates at its resonant frequency in two $HE_{11\delta}$ modes. An iris is located between adjacent cavities and contains an aperture that can independently control inter-cavity coupling. The dielectric resonator is cylindrical in shape and an adjustable metallic plunger is located in a wall of each cavity so that the cavity can be tuned over a relatively broad range. The filter has good mechanical and thermal stability as well as being extremely flexible in the arrangement of cavities.

18 Claims, 9 Drawing Figures



4,652,844 Mar. 24, 1987

Dual-Mode Filters

Inventor: Enrico Brambilla.
Assignee: Telettra-Telefonia Electronica e Radio, S.p.A.
Filed: Sept. 24, 1985.

Abstract—A dual-mode filter has a hollow cylindrical longitudinal outer body which is divided by transversely extending disk-like separation walls into a plurality of internal cavities. At least one coupling opening in each separation wall permits coupling of energy from one cavity to another. Said coupling opening being preferably an arcuate opening, in each separation wall, which extends along a constant radius at the outer periphery of the separation wall and over a limited angular span. When the openings are two, they are spaced 180° apart, i.e., opposite one another Adjacent separation walls are rotably displaced 90° with respect to each other so that their respective coupling opening(s) is (are) misaligned by 90°. One respective adjustment screw is provided for each separation wall which penetrates through a hole in the outer body into one of the coupling openings in the given separation wall. Since the coupling openings are located almost against the outer body of the filter, the stroke or range of travel of the screw into the cavity is extremely limited.

13 Claims, 16 Drawing Figures