Patent Abstracts

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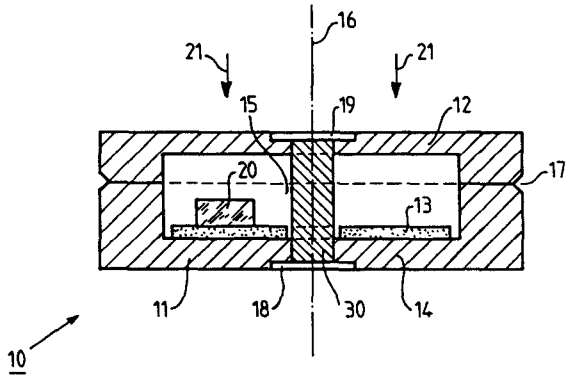
4,873,495 Oct. 10, 1989

Ultra-High-Frequency Oscillator Having a Dielectric Resonator Stable with Respect to Mechanical Vibrations

Inventors: Daniel Doyen and Tarcisio Vriz.
Assignee: U.S. Philips Corporation.
Filed: Aug. 30, 1988.

Abstract—An ultra-high-frequency oscillator (10) stabilized by a dielectric resonator (20) comprising a housing (11) closed by a cover (12) and having a circuit (13) including a dielectric resonator (20) fixed in the bottom (14) of the housing (11). According to the invention, a small column (30) situated in the central part (15) of the housing (11) rigidly connects the bottom (14) of the housing (11) to the cover (12), the dielectric resonator (20) being arranged outside the said central part (15).

2 Claims, 1 Drawing Sheet



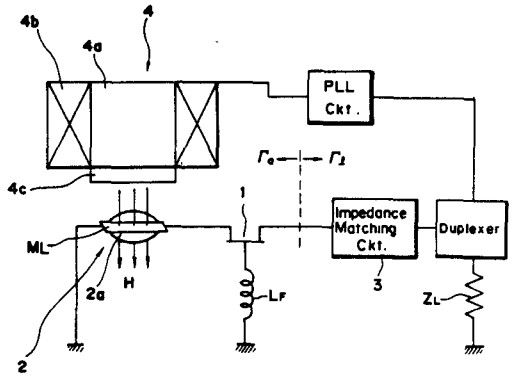
4,873,496 Oct. 10, 1989

Tuned Oscillator

Inventors. Takahiro Ohbihara, Yoshikazu Murakami, Yasuyuki Mizunuma, and Hiroyuki Nakano.
Assignee: Sony Corporation.
Filed: Dec. 8, 1988.

Abstract—A tuned oscillator is disclosed which consists of an active element for oscillation, a ferrimagnetic resonant element connected to part of feedback of the active element, and a matching circuit connected to the active element. The matching circuit is designed to reflect the fundamental wave produced by the ferrimagnetic resonant element and active and pass the second harmonic wave. Consequently, the magnetic circuit has its load reduced in applying a dc magnetic field necessary for frequency tuning to the ferrimagnetic resonance element.

7 Claims, 10 Drawing Sheets



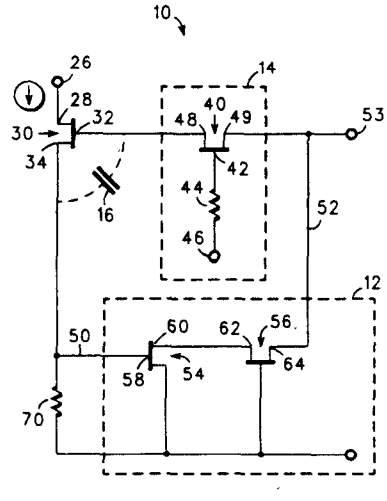
4,873,497 Oct. 10, 1989

Wide-Band Voltage-Controlled *R–C* Oscillator for Use with MMIC Technology

Inventor: Ronald F. Kielmeyer, Jr.
Assignee: Motorola, Inc.
Filed: Oct. 3, 1988.

Abstract—A wide-band tunable microwave oscillator for monolithic microwave integrated circuits. The oscillator does not use varactors or inductors for oscillation, but uses a voltage variable resistor coupled to a first MESFET supplying a capacitance, and to an amplifying element to create an *RC* oscillator. The voltage variable resistor is a second MESFET coupled to a variable voltage source. The oscillator takes advantage of the gate capacitance of the first MESFET, as well as the gain available from using an active element within the feedback loop.

18 Claims, 1 Drawing Sheet



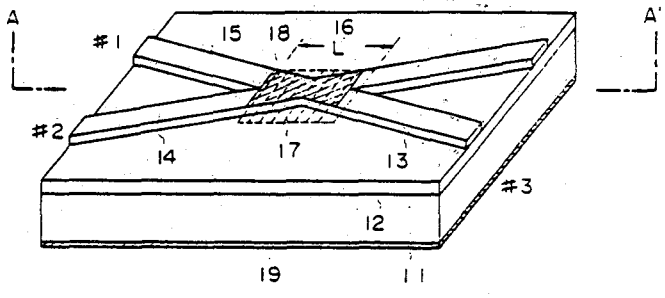
4,874,216 Oct. 17, 1989

Variable-Waveguide Optical Branching Filter

Inventors: Katsuyuki Utaka, Kazno Sakai, Yuichi Matsushima, and Shigeyuki Akiba.
Assignee: Kokusai Denshin Denwa Kabushiki Kaisha.
Filed: June 23, 1988.

Abstract—A variable-waveguide optical branching filter is disclosed, in which a diffraction grating is formed in the cross region of two crossing waveguides, only light of a particular wavelength which is determined by the period of the diffraction grating is branched to a desired one of the waveguides, and the refractive index of the cross region is changed by control of a voltage or a current, or by way of irradiation with light, thereby changing the wavelength of light to be branched.

7 Claims, 4 Drawing Sheets



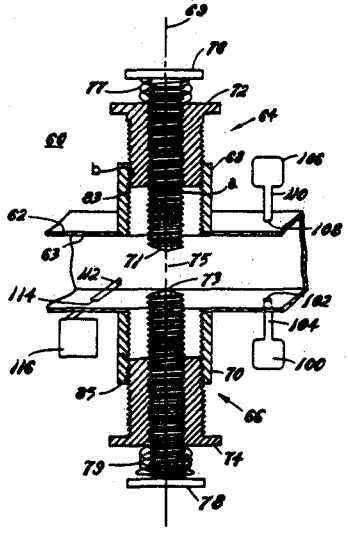
4,875,022 Oct. 17, 1989

High-Power Microwave Expander for Producing Fast Rise Time Pulses

Inventors: Mark D. Berry, Robert J. Tan, and Robert V. Garver.
Assignee: The United States of America as represented by the Secretary of the Army.
Filed: Mar. 28, 1988.

Abstract—A high-power microwave expander is provided which decreases the rise time of RF pulses. The expander is a transmission line in which internal conductors are separated and tapered to provide a spark gap with high isolation characteristics at low power. The arcing threshold of the spark gap can be adjusted by varying the internal pressure of the transmission line, injecting a gas such as helium into the transmission line and by providing free electrons in close proximity to the spark gap.

28 Claims, 7 Drawing Sheets



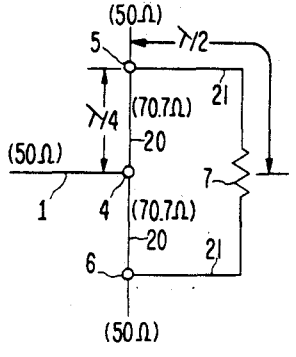
4,875,024 Oct. 17, 1989

Low-Loss Power Splitter

Inventor: Thomas E. Roberts.
Assignee: Ford Aerospace Corporation.
Filed: Dec. 5, 1988.

Abstract—Apparatus for dividing and combining electromagnetic energy, particularly at microwave frequencies. An input port (4) is positioned generally equidistant from each of n output ports (5, 6; 31, 32, 33 $\cdots$), where n is a finite integer greater than 1. n quarter-wavelength impedance transforming conductors (20; 41, 42, 43 $\cdots$) couple the input port (4) to the n output ports (5, 6; 31, 32, 33 $\cdots$), respectively. Positioned between each pair of adjacent output ports (5, 6; 31, 32, 33) is an isolation resistor (7). A pair of half-wavelength unity impedance transformers (21) couples each isolation resistor (7) to its two associated output ports (5, 6; 31, 32, 33 $\cdots$), respectively. The invention allows greater geometrical freedom than prior art splitters, and offers a lower loss for a given frequency.

7 Claims, 3 Drawing Sheets



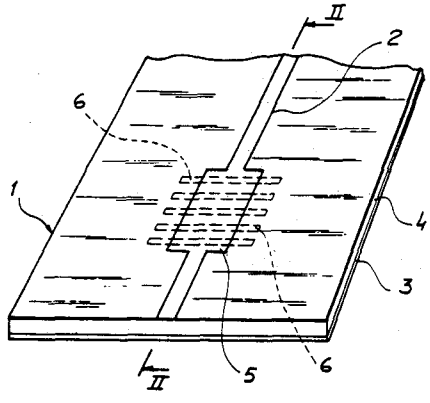
4,875,025 Oct. 17, 1989

Microstrip Transmission Line for Coupling to a Dielectric Resonator

Inventor: Carlo Buoli.
Assignee: Siemens Telecomunicazioni S.p.A.
Filed: Apr. 29, 1987.

Abstract—The structure includes a conductive path and a ground plane applied to opposite faces of an insulating support. The ground plane has parallel slots placed under the conductive path and transversely thereto.

8 Claims, 2 Drawing Sheets



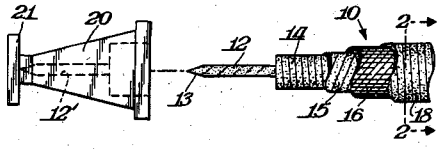
4,875,026 Oct. 17, 1989

Dielectric Waveguide Having Higher Order Mode Suppression

Inventors: Jeffrey A. Walter, Kailash C. Garg, and Joseph C. Rowan.
Assignee: W. L. Gore & Associates, Inc.
Filed: Aug. 17, 1987.

Abstract—A dielectric waveguide for the transmission of electromagnetic waves is provided comprising a core of polytetrafluoroethylene (PTFE), one or more layers of PTFE cladding overwrapped around the core, a mode suppression layer of an electromagnetically lossy material covering the cladding and an electromagnetic shielding layer covering the mode suppression layer. The mode suppression layer is preferably a tape of carbon-filled PTFE. Another electromagnetically lossy material layer may be placed around the shield to absorb any extraneous energy.

13 Claims, 1 Drawing Sheet



4,875,027 Oct. 17, 1989

Waveguide Twist

Inventor: Georg Spinner.
Filed: Sept. 22, 1988.

Abstract—A waveguide twist includes at least three waveguide sections which are connected to each other and rotatable about their longitudinal axis usually by a same angle. Each waveguide section with the exception of the first waveguide section and the last waveguide section supports externally a lever which has two axial ends engaging in grooves of adjoining waveguide sections so as to be longitudinally displaceable to allow distribution of the total angle of rotation over the waveguide sections.

13 Claims, 4 Drawing Sheets