

Patent Abstracts

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4,280,113

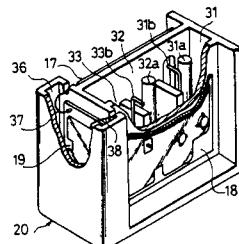
Jul. 21, 1981

Filter for Microwaves

Inventor: Mitsuo Sekiguchi.
Assignee: Alps Electric Co., Ltd
Filed: Dec. 27, 1979.

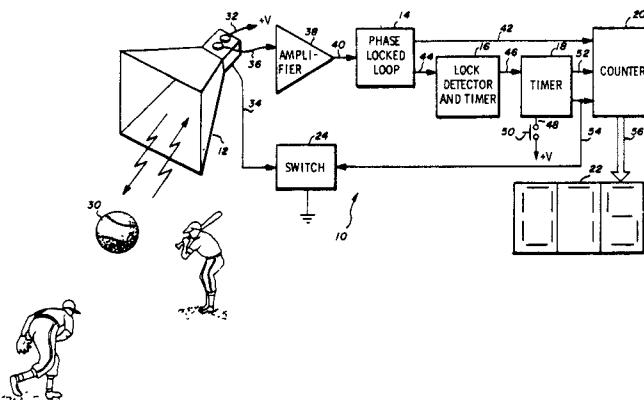
Abstract—In a microwave filter including a plurality of resonator cavities, at least one of the windows between cavities for coupling them is formed near the end portions of the resonance rods in the cavities, and a part of one of the coupling loops for transmitting signals of microwave frequencies is coplanar with the opening thereby to form an attenuation pole capable of abrupt attenuation of any image frequency.

7 Claims, 9 Drawing Figures



from the lock signal, a predetermined period after synchronization is achieved and for developing a latch signal a predetermined period thereafter, a circuit for counting the cycles of the internal oscillator which are developed after the occurrence of the reset signal until the occurrence of the latch signal to develop a sum signal indicative of the relative velocity of the object, and a circuit for displaying the sum signal.

10 Claims, 4 Drawing Figures



4,276,548

Jun. 30, 1981

Microwave Speed Meter

Inventor: Erno B. Lutz
Assignee: Solfan Systems, Inc.
Filed: Jun. 4, 1979.

Abstract — A meter for measuring the relative velocity of an object, including a diplexer for illuminating the object with a beam of microwave energy and for developing from energy reflected from the object a difference signal having a frequency which is proportional to the relative velocity of the object, a phase-locked loop for synchronizing the frequency of an internal oscillator with that of the difference signal and for developing a lock signal when synchronization is achieved, a lock detector and timer and a timer for developing a reset signal

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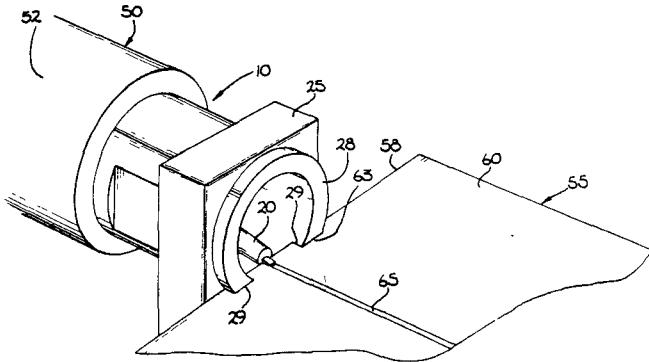
Electrical Coupler

Inventor: Robert L. Eisenhart.
Filed: Feb. 21, 1979.

Abstract—An electrical coupler for transmitting high frequency electrical signals from a coaxial transmission to a microstrip transmission line. The coupler is adapted to match the characteristic impedance of the two media and the electromagnetic field patterns of the two media at the interfaces therewith. The coupler provides a transition having a very low reflection at frequencies at

least up to 18 GHz. The preferred embodiment transitions utilize a cylindrical outer conductor and an inner conductor which is centered relative to the outer conductor at the coaxial end of the coupler and gradually shifted offcenter so that it is very near the outer conductor at the microstrip end of the coupler. The characteristic impedance of the coupler is maintained at a constant value by appropriate variation of the inner conductor. Other features are disclosed.

20 Claims, 10 Drawing Figures



4,280,111

Jul. 21, 1981

Waveguide Circulator Having Cooling Means

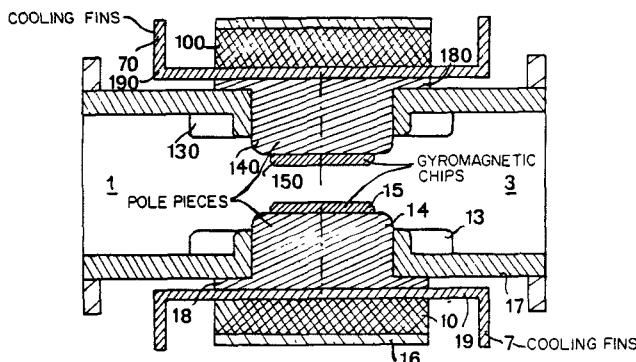
Inventors: Gérard Forterre; Jacques Berthe.
Assignee: Thomson-CSF.
Filed: Dec. 10, 1979.

Abstract—The invention relates to a structure for a wave-guide power circulator.

It consists of a cavity in which emerge the three guides and into which soft iron pole pieces penetrate in contact with their end inside the cavity with gyromagnetic chips and with their wall outside the cavity with a cooling device.

The invention applies to all power circulators in the ultra-high frequency band.

6 Claims, 7 Drawing Figures



4,280,110

Jul. 21, 1981

Millimeter Wave Source Comprising an Oscillator Module and a Variable-Capacity Module

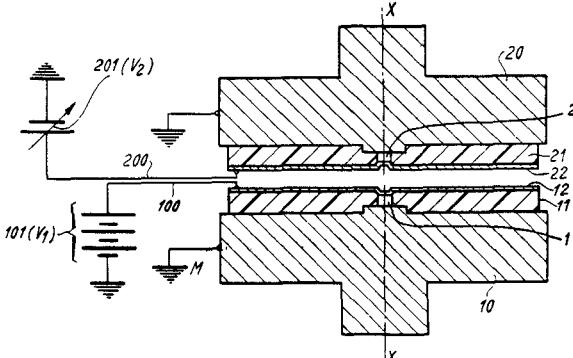
Inventors: Gerard Cachier; Jean Stevance.

Assignee: Thomas-CSF.

Filed: Apr. 11, 1979.

Abstract—A millimeter wave source, wherein an active diode, for example, an avalanche diode, forming the emitter of the source is arranged opposite to a variable capacity diode, so as to have the source frequency-modulated by varying the biasing voltage of the variable capacity diode. In this source, each diode is mounted in a "module" comprising a thermally and electrically conductive support onto which a diode is in contact by one of its electrodes, the other electrode being in contact with a metallization deposited on a thick layer of dielectric material sounding the diode. Owing to the capacitive coupling between the metallizations of both modules, the source can be frequency-modulated with a high efficiency.

5 Claims, 5 Drawing Figures



4,278,955

Jul. 14, 1981

Coupler for Feeding Extensible Transmission Line

Inventor: Clarence D. Lunden.

Assignee: The United States of America as represented by the Secretary of the Air Force.

Filed: Feb. 22, 1980.

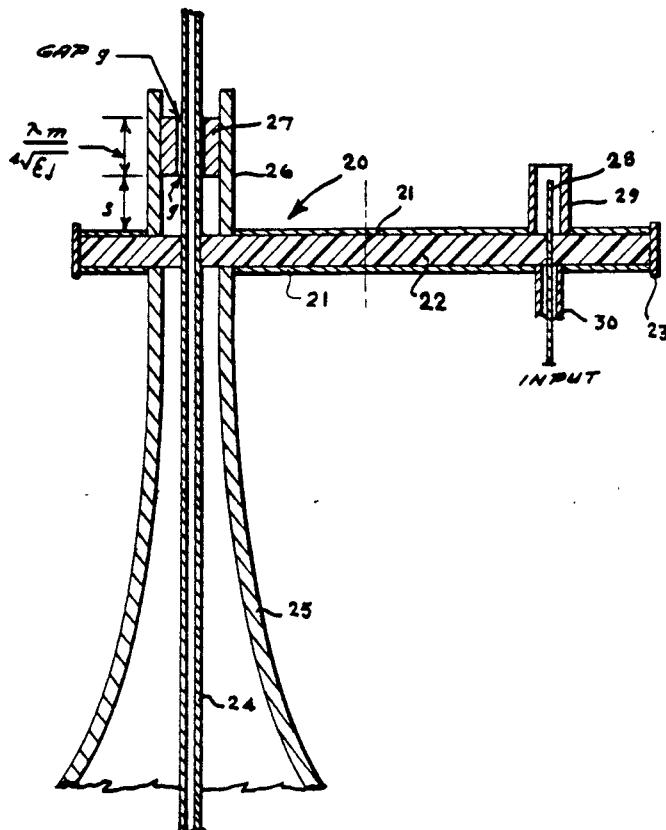
Abstract—An extensible surface wave transmission line is fed through a coupler that utilizes the geometric properties of a planar ellipse. The coupler is in the form of a planar elliptical RF cavity with the RF input signal being fed to the cavity at the location of one ellipse focus point and the extensible output transmission line slidably traversing the cavity at the position of the other

ellipse focus point. The elliptical eccentricity of the RF cavity is chosen such that the direct path between the ellipse foci is one half wavelength less than the ellipse major axis (or any indirect path-length between foci) thereby ensuring constructive addition of all input signals at the coupler output. The coupler is adapted to use in conjunction with aircraft antennas, transit and rail system applications, and electrical cable manufacturing quality control systems.

wall of the longitudinal opening through the waveguide is defined by ceramic leaves, whose extent of projection into the opening is varied for HF attenuation.

32 Claims, 9 Drawing Figures

8 Claims, 11 Drawing Figures



4,278,953

Jul. 14, 1981

Near Millimeter Wavelength Modulator and Tunable Oscillator

Inventors: Raymond Y. Chiao; Harold R. Fetterman; Howard R. Schlossberg.

Assignee: The United States of America as represented by the Secretary of the Air Force.

Filed: March 23, 1979.

Abstract—A modulator and tunable oscillator capable of reliable operation in the near millimeter wavelength region. The modulator is made up of a pair of reflectors and a beamsplitter interposed therebetween with one of the reflectors having variable reflectivity. In addition, the reflectors are spaced apart a preselected distance such that a resonant condition is achieved with respect to an incoming beam of near millimeter wavelength radiation. By applying a signal to the variable reflector a beam of radiant energy is generated at a wavelength at which a nonresonant condition is achieved between the reflectors. This generated beam of radiation is directed out of the modulator by the beamsplitter. The oscillator utilizes the same elements as the modulator and in addition incorporates therein an additional beam splitter and a detector as well as a feedback circuit between the detector and variable reflector.

10 Claims, 2 Drawing Figures

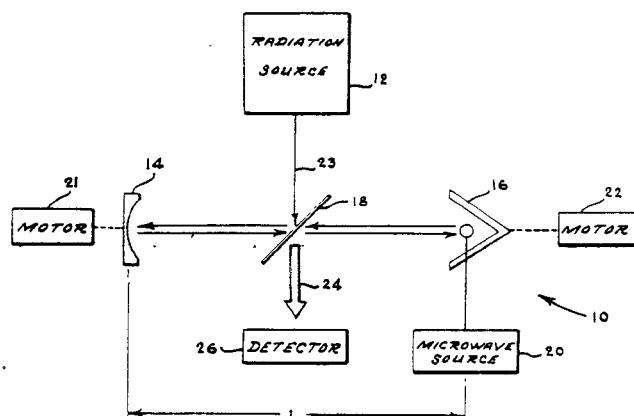
4,278,956

Jul. 14, 1981

HF-Attenuator

Inventors: Georg Spinner; Leo Treczka.
Assignee: Spinner GmbH Elektrotechnische Fabrik
Filed: Jun 8, 1979

Abstract—The disclosure concerns an HG attenuator for a hollow waveguide or a coaxial conductor. A rod of dissipative ceramic material is disposed along the length of the attenuator, so that moving along the length of the attenuator, the ceramic material increasingly defines or replaces at least one wall of the hollow waveguide or at least one of the two opposite sides of the coaxial conductor. A coolant passage may be provided along the rods of ceramic material. The ceramic material may take other forms, such as leaves and annular rings. In another embodiment for use in a waveguide, at least one



4,277,764

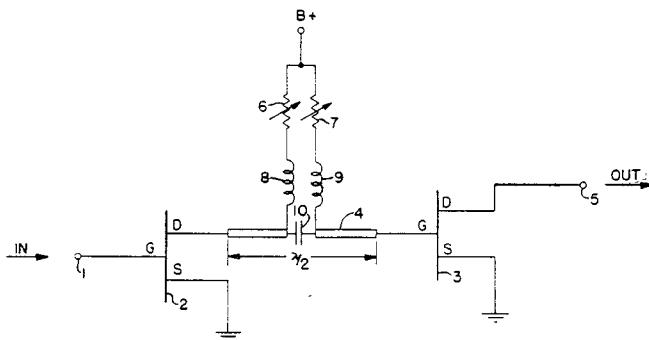
Jul. 7, 1981

Microwave Transistor Stabilization Circuit

Inventors: Charles D. Rosier; Jing-Jong Pan; Donald K. Belcher.
Assignee: Harris Corporation.
Filed: Aug. 9, 1978.

Abstract—A microwave transistor circuit includes a pair of field effect transistors connected in cascade via a standard 50- Ω transmission line having a length equal to one-half the wavelength of the operating frequency range of the circuit. Although the field effect transistors are individually unstable at microwave frequencies, by cascading these transistors the reverse transmission coefficient is sufficiently reduced to render the overall circuit unconditionally stable. In addition, the transmission line is opened to provide physical isolation between the transistors for dc bias isolation and a capacitor is connected therein to provide for RF continuity.

7 Claims, 3 Drawing Figures



4,277,741

Jul. 7, 1981

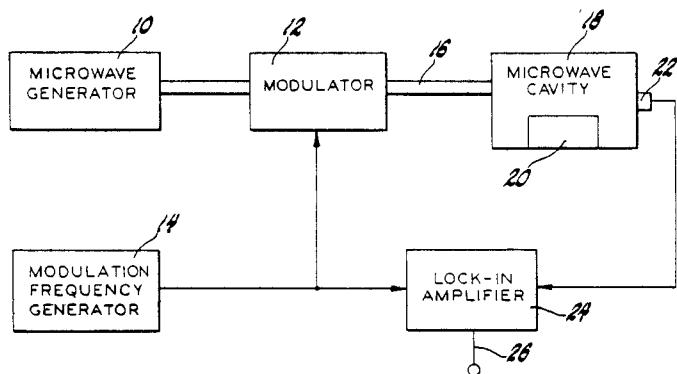
Microwave Acoustic Spectrometer

Inventors: Frederick R. Faxvog; Mark K. Krage.
Assignee: General Motors Corporation.
Filed: Jun. 25, 1979.

Abstract—Magnetic and dielectric properties of a sample are determined by measuring the microwave absorption of the sample. A cavity containing the sample material is coupled to a microwave source and the radiation propagated to the cavity is modulated at a reference frequency. A microphone coupled to the cavity senses the pressure fluctuations resulting from the thermal changes generated in the sample by the absorption of the modulated microwaves and

the microphone signal is analyzed at the reference frequency to provide an electrical output which is a measure of the microwave absorption by the sample material. Both dielectric and magnetic properties of the sample can be measured

3 Claims, 2 Drawing Figures



4,270,106

May 26, 1981

Broadband Mode Suppressor for Microwave Integrated Circuits

Inventor: James D. Woermbke,
Assignee: The United States of America as represented by the Secretary of the
Air Force.
Filed: Nov. 7, 1979

Abstract—Microwave integrated circuits are enclosed in metal boxes. As more functions are added to circuits RF moding increases. One method of minimizing RF moding is to place a post in the box. This invention broadens the band of frequencies controlled by the post method by attaching a lossy RF absorbing pellet to the end of the mode suppression post.

2 Claims, 3 Drawing Figures

