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.

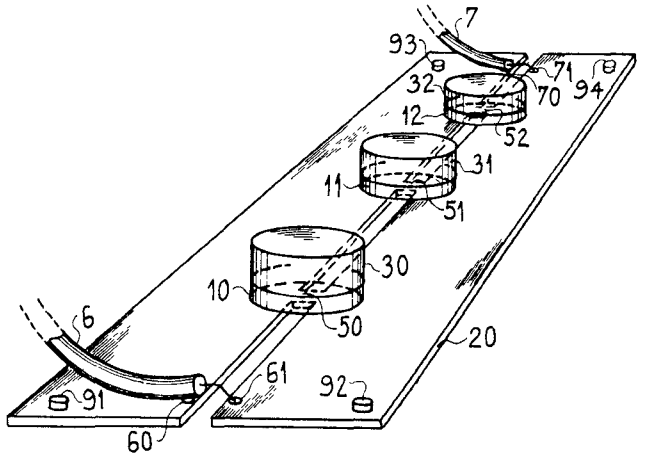
4,319,208 Mar. 9, 1982

Microwave Filter Incorporating Dielectric Resonators

Inventors: Pierre de Bayser; Pierre Fraise; Yves Le Nohaic.
Assignee: Thomson-CSF
Filed Jul 18, 1979.

Abstract—The filter is of the type comprising a waveguide and an electromagnetically coupled dielectric resonator A slot constituting the waveguide is cut in a metal plate forming part of the filter. The resonator is separated from the metal plate by a dielectric support

4 Claims, 4 Drawing Figures



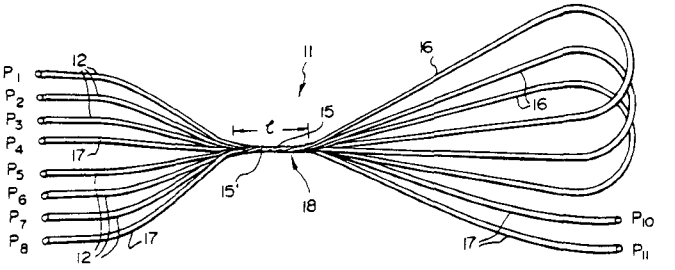
4,330,170 May 18, 1982

Low-Loss Star Couplers for Optical Fiber Systems

Inventors: Derwyn C. Johnson, Brian S. Kawasaki, Kenneth O. Hill.
Assignee: Canadian Patents & Development Limited
Filed. Nov 26, 1979.

Abstract—The low-loss reflection star coupler has a bundle of multimode optical fibers which is folded on itself and fused over a predetermined length to form a bundle loop. During the fusion process, the fibers are elongated into biconical tapers in the fused section A hybrid transmission-reflection star includes one or more further fibers having only one biconical tapered section which is fused to the fused section of the fiber bundle

5 Claims, 3 Drawing Figures



4,330,765 May 18, 1982

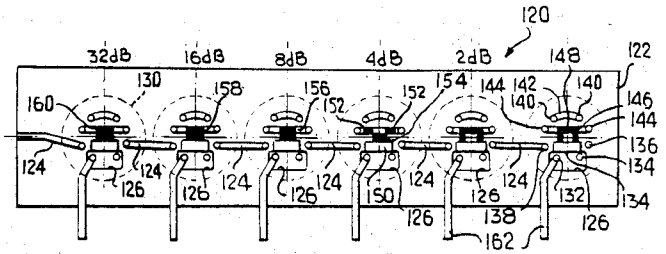
Switchable Microwave Step Attenuator With Compensation for Linear Operation Over Wide Frequency Range

Inventor: Robert J. Patukonis.
Assignee Weinschel Engineering Co , Inc
Filed: Jun. 5, 1980.

Abstract—A programmable microwave card-type step attenuator is compensated for switch capcitance to render its attenuation response effectively insensitive to frequency over most of its dB range and comprises a plurality of cascaded attenuator sections disposed on a microstrip card with each attenuator section including a deposited film microstrip resistive network adapted to be switched into or out of the signal line by a miniature relay switch, a minimum loss transmission line being inserted into the signal line when the resistive network is switched out Each of the microstrip resistive networks includes a reactive element connected thereto to compensate the frequency response of the resistive networks due to deviations from the optimum electrical length, thereby minimizing the frquency sensitivity of the attenuation characteristic of the section. Inductive effects are achieved by use of suitably shaped conductive areas or by removal of portions of the resistive networks. Capacitive effects are achieved by use of capacitances integrally formed with the resistive network In addition, a window opening arrangement is provided which enables the required electrical connections of the attenuator circuit to be achieved with minimal length conductors. Compensation at the low levels of attenuation, i e , 1 dB, 2 dB, and perhaps 4 dB, cannot be effectively compensated by the aforesaid method alone and the attenuator may further

comprise resistance stubs added to the minimum loss line to provide an additional increase in loss with frequency that parallels the attenuation sensitivity with frequency of the uncompensated lower dB attenuator networks.

27 Claims, 11 Drawing Figures



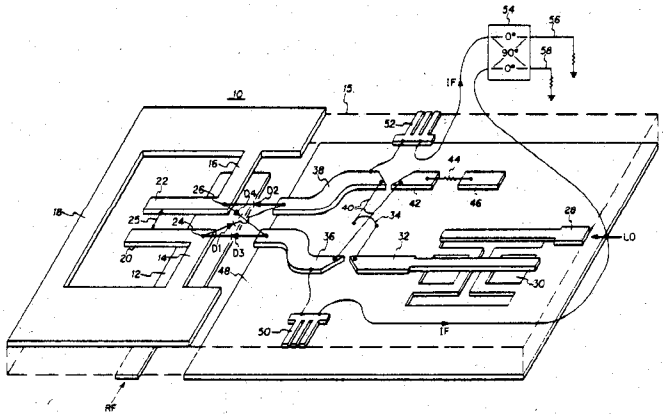
4,330,868 May 18, 1982

Balun Coupled Microwave Frequency Converter

Inventor: Ben R. Hallford.
Assignee: Rockwell International Corp.
Filed: Dec. 15, 1980.

Abstract—A microwave frequency converter is provided by a single mixer of the diode-quad bridge type which circulates generated image frequency within the bridge. The bridge is connected between balun coupled RF microstrip conductors and unbalanced LO microstrip conductors. There is zero connection length between the diode pairs to reduce conversion loss by preventing a phase shift between the image frequencies. Mutual isolation is provided between the RF, LO, and IF signals over a broad frequency range. In an alternate utilization, the converter accepts transposed RF and LO signals, for broader bandwidth operation. The circuit may also be implemented as an up converter.

45 Claims, 8 Drawing Figures



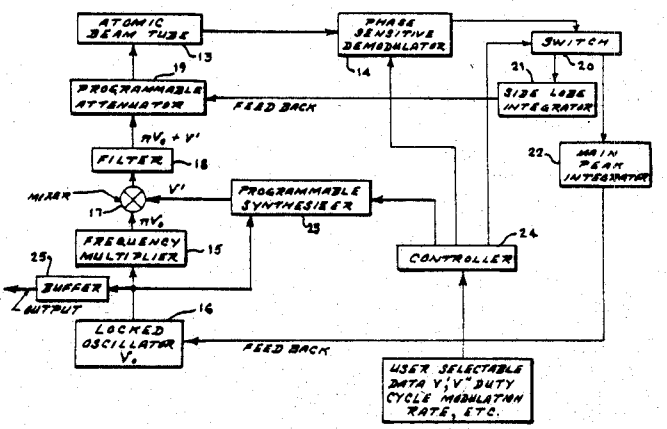
4,331,933 May 25, 1982

Microwave Power Level Stabilizing Circuit for Cesium Beam Frequency Standards

Inventors: David W. Allan,
Michael Garvey.
Assignee: The United States of America as represented by the Secretary of the Air Force.
Filed: Jun. 19, 1980.

Abstract—Perceived atomic resonance frequency error resulting from microwave power level changes in atomic clocks is eliminated by controlling the device's microwave power source output in response to deviations from a fixed frequency relationship between the main atomic peak and a sidelobe peak of the atomic beam frequency spectrum. This is accomplished by a microwave power control servo system that includes a time sharing interrogation circuit for detecting and monitoring the frequencies of the main atomic peak and the sidelobe peak and a comparator that compares the frequencies of the main atomic and sidelobe peaks and generates a feedback control signal in response to frequency differences between the two that deviate from a fixed difference frequency. The feedback signal is used to control the microwave power source output in a manner that constrains the main atomic peak and the sidelobe peak at a fixed offset frequency.

5 Claims, 6 Drawing Figures



4,331,935 May 25, 1982

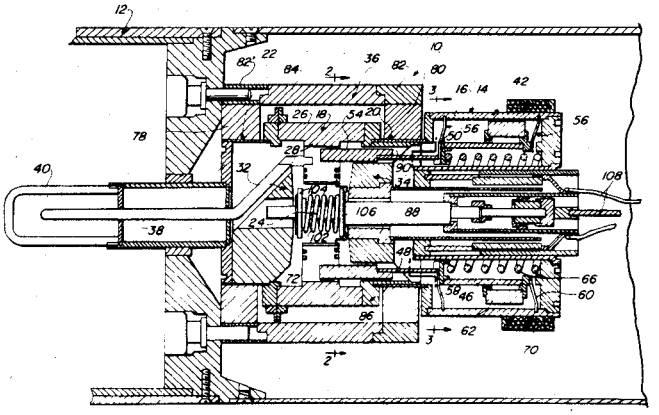
Tuning Apparatus for a Radio Frequency Power Device

Inventor: Geoffrey Thornber.
Assignee: Brunswick Corporation.
Filed: Aug. 14, 1979.

Abstract—A turning assembly is disclosed for selectively oscillating the frequency of an electromagnetic field within a hermetically sealed device, which device includes a rigid, hermetically sealed housing, apparatus for generating the electromagnetic field therewithin, and elements for defining a cavity within the housing for establishing the frequency of the electromagnetic field. The tuning assembly includes electrically conductive members mounted for linear movement within the cavity to selectively vary the volume of the cavity to oscillate the established frequency. Elements disposed within the rigid housing are provided for mounting the electrically conductive members, and are adapted for oscillatory movement at a pre-determined mechanical resonant frequency to move the electrically conductive members in the described linear

manner. Finally, a power source is provided exterior to the rigid housing and is magnetically coupled to the mounting elements for exciting the mounting elements.

4 Claims, 10 Drawing Figures



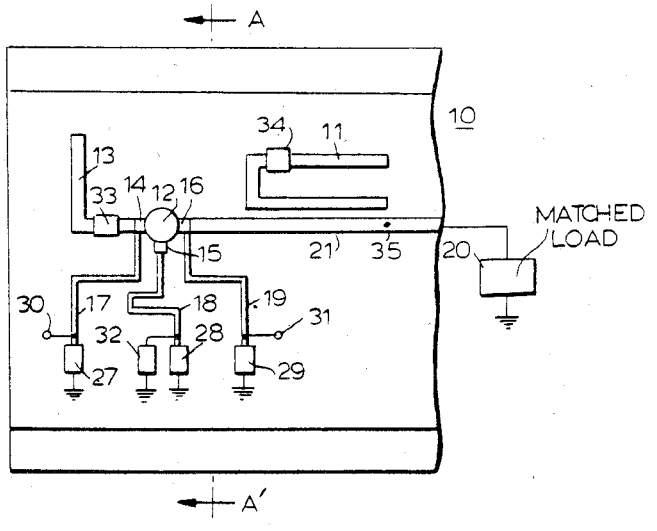
4,333,062 June 1, 1982

Temperature Stabilized MIC Solid-State Oscillator

Inventor Tomoki Uwano.
Assignee: Matsushita Electric Industrial Co., Ltd.
Filed: Dec. 27, 1979.

Abstract—A temperature-stabilized MIC solid state oscillator in the form of a planar transmission circuit has two strip line resonators respectively having chip capacitors inserted serially in the middle of the strip lines. Both of the chip capacitors have linear capacitance temperature characteristics. One strip line resonator operates as a band rejection filter and as a load circuit of an oscillating device. The other strip line resonator operates as a serial resonator to ground a port of the oscillating device that should be grounded. The oscillating frequency characteristics versus temperature are compensated in an excellent manner due to the provision of the two strip line resonators.

2 Claims, 6 Drawing Figures



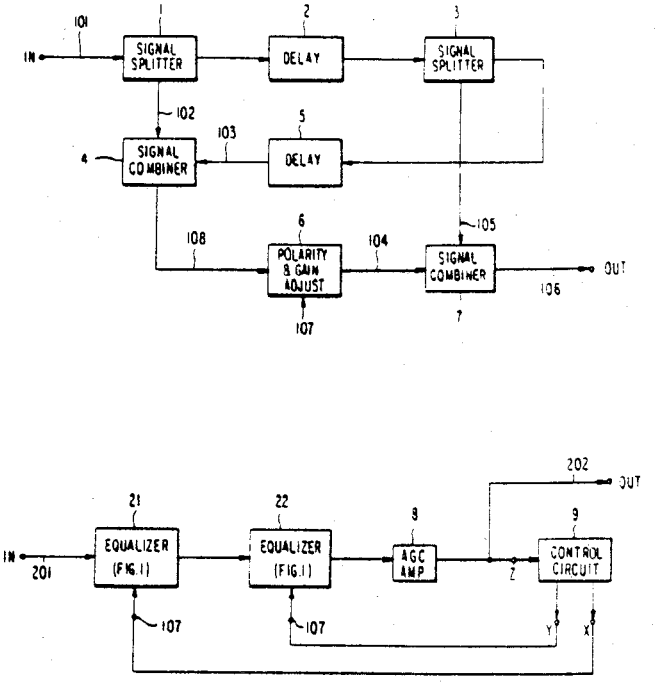
4,333,063 June 1, 1982

Amplitude Equalizer

Inventors: Toshihiko Ryu; Yutaka Koizumi.
Assignee: Nippon Electric Co., Ltd.
Filed: Dec. 2, 1980.

Abstract—An amplitude equalizer is provided for equalizing amplitude distorted signals within a predetermined frequency band. The amplitude equalizer comprises first means for splitting signals into first and second split signals. A first delay device receives one of the two split signals, and a second signal splitter splits the output of the first delay device into third and fourth split signals, the third split signal being applied to a second delay device having a delay equal to the delay of the first delay device. The output of the second delay device is combined with the second output from the first signal splitter in a first signal combiner, the output of which is applied to a circuit for adjusting the polarity and gain of the signal applied thereto. The output of the polarity and gain adjusting circuit is applied to a second signal combiner which combines the adjusted signal with the fourth output from the second signal splitter to thereby provide equalized signals. As organized above, the equalizer can provide for arbitrary selection of the desired frequency regions and maximum equalized amplitude by simply varying either the amplitude or attenuation factor, and by properly choosing the delay time. Further, equalization of secondary and higher order distortion can be achieved by virtue of constant delay over the entire frequency region.

4 Claims, 7 Drawing Figures



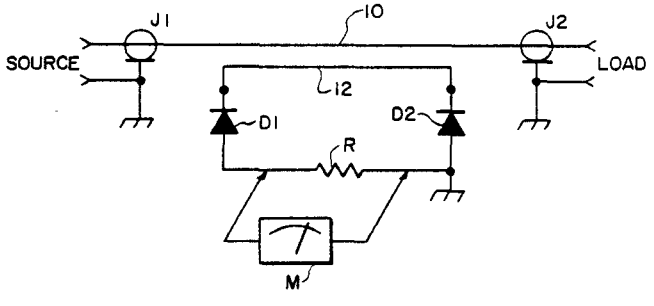
4,334,187 June 8, 1982

Phase Sensor for R. F. Transmission Lines

Inventor: Charles M. DeSantis.
Assignee: The United States of America as represented by the Secretary of the Army
Filed. Sep. 11, 1980.

Abstract—A phase sensing device is described which is useful for indicating the resonance condition of a complex load impedance (such as an antenna), with a high degree of accuracy over the frequency range from 3 to 100 MHz. The device uses readily available transmission line and solid state components to provide a ± indication of the phase condition of the load; a zero crossing indicates resonance. Such a signal is useful for controlling an automatic turning mechanism that could be used in a tunable antenna. The extremely broad-band operation and no physical connection to the main RF line are salient features of the device. The components are a transmission line coupler with a short pick-up wire mounted adjacent to the center conductor, two diodes with like electrodes (cathodes) connected to opposite ends of the pick-up wire, a carbon resistor between the other electrodes of the diodes, and a zero center meter across the resistor.

2 Claims, 2 Drawing Figures



4,334,201 June 8, 1982

Yig Bandpass Filter Interconnected by Means of Longitudinally Split Coaxial Transmission Lines

Inventor: David H. Shores.
Assignee: Tektronix, Inc.
Filed: Sep. 21, 1978

Abstract—An electronically tunable YIG microwave filter with a two-piece housing is described. The two-piece housing makes possible the fabrication of small holes deep within the filter housing for mounting the filter components. This filter uses the center conductors of its input and output coaxial cables as input and output coupling loops.

6 Claims, 6 Drawing Figures