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.

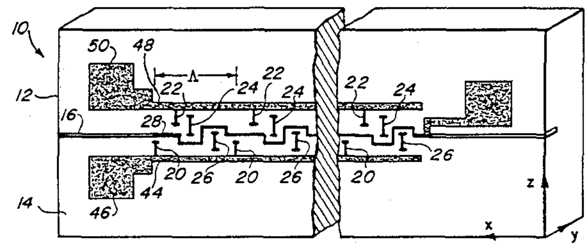
4,761,049 Aug. 2, 1988

Optical Waveguide Device for Frequency Shifting and Mode Conversion

Inventors: William K. Burns, Nicholas J. Frigo, and Robert P. Moeller.
Assignee: The United States of America as represented by the Secretary of the Navy.
Filed: Sept. 30, 1986.

Abstract—Successive waveguide regions in a birefringent waveguide host electric fields oriented transverse to any optical wave propagated through the waveguide. A scheme of cascaded electrodes biased by voltage(s) applied to the electrodes dictate instantaneous field polarity. Cascaded electrodes are sited in nonopposed, noninterleaved relation on opposite sides of a long electrode partially overlapping the waveguide.

36 Claims, 2 Drawing Sheets



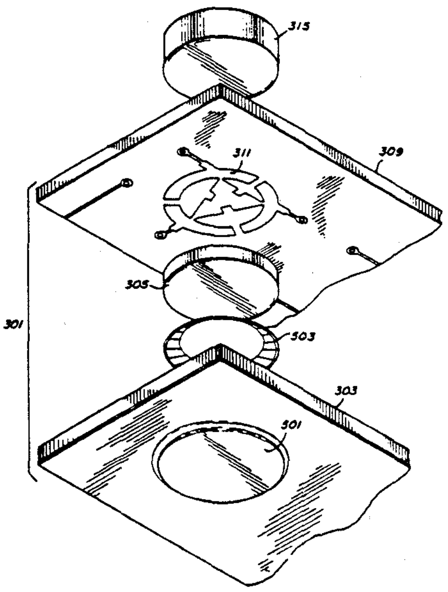
4,761,621 Aug. 2, 1988

Circulator/Isolator Resonator

Inventors: Robert C. Kane and Carl Kotecki.
Assignee: Motorola, Inc.
Filed: June 30, 1986.

Abstract—A microstrip resonator (311) for a circulator/isolator is disclosed employing radial (815, 817, and 819) and circumferential (821, 823, and 825) slots to load the resonator and reduce the frequency of resonance. A resonator of small physical size is thus formed having a discontinuous outer ring (segments 807, 809, and 811) and a central triangle portion (827) each electromagnetically coupled to a ferrite element.

5 Claims, 9 Drawing Sheets



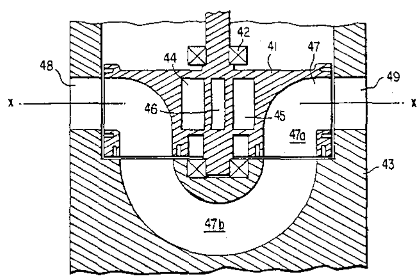
4,761,622 Aug. 2, 1988

Waveguide Switching Apparatus

Inventors: David J. Cracknell and Raymond P. Smith.
Assignee: The General Electric Company, p.l.c.
Filed: Oct. 30, 1986.

Abstract—Waveguide switching apparatus includes a stator and a rotor arranged to rotate relative to it. The rotor includes passages therethrough arranged to make connections between channels in the stator depending on the relative position of the rotor and stator. One passage is defined partly by the rotor and partly by the stator. This reduces the inertia of the rotor compared with a conventional switch in which all passages are entirely contained within the rotor, and thus improves switching accuracy. A passage in the rotor may have a dimension, in a plane transverse to the axis of rotation, which varies along its length, being smallest at its mid-length. Curved passages in the rotor may be arranged such that tangents to their center lines at their ports are nonradial. This enables the diameter of the rotor to be smaller than would otherwise be required. In another aspect of the invention, an asymmetric circumferential slot arrangement is included in the rotor.

38 Claims, 8 Drawing Sheets



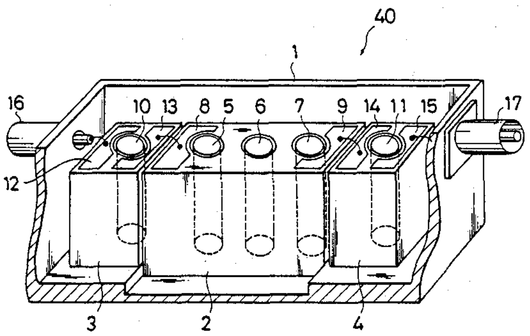
4,761,624 Aug. 2, 1988

Microwave Band-Pass Filter

Inventors: Sadao Igarashi and Moriaki Ueno.
Assignee: Alps Electric Co., Ltd.
Filed: Mar. 20, 1987.

Abstract —A microwave band pass filter comprises a band-pass filter of the coaxial type which is formed by connecting plural coaxial type resonators in series through capacitors, and another band-pass filter of the comb line type connected in series to the coaxial type band-pass filter, wherein lower cutoff frequencies for the coaxial type band-pass filter are included in a passband for the comb line type band-pass filter while higher cutoff frequencies for the comb line type band-pass filter are included in a passband for the coaxial type band-pass filter, so that the skirting characteristic can be made sharp at high and low bands even with fewer resonator stages.

3 Claims, 4 Drawing Sheets



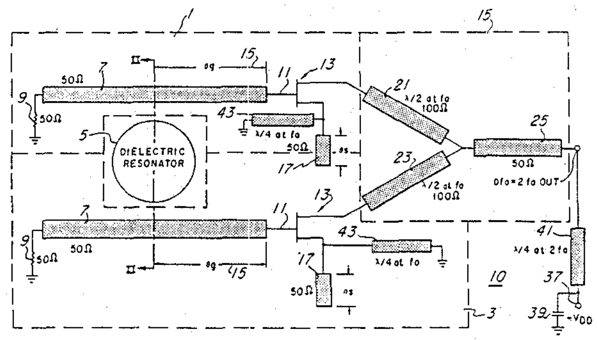
4,763,084 Aug. 9, 1988

Push-Push Dielectric Resonator Oscillator

Inventors: Anthony M. Pavio, Jr., and Mark A. Smith.
Assignee: Texas Instruments Incorporated.
Filed: Apr. 9, 1987.

Abstract —A push-push broadband dielectric resonator oscillator circuit that operates in the *K*- and *Ka*-band frequency range has two oscillator circuits that oscillate at the same fundamental frequency. An antiphaseal relationship is maintained between the two oscillators through the use of a dielectric resonator and the desired frequency is obtained by vectorially combining the output signals of the two oscillators that have the antiphase relationship to obtain an output frequency that is twice the fundamental frequency of operation of each of the individual dielectric resonator oscillator circuits.

4 Claims, 2 Drawing Sheets



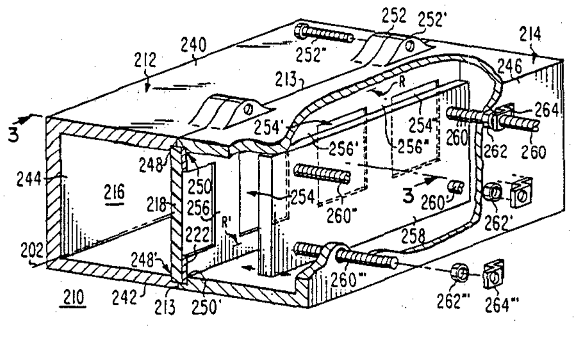
4,761,625 Aug. 2, 1988

Tunable Waveguide Band-Pass Filter

Inventor: Arvind K. Sharma.
Assignee: RCA Corporation.
Filed: June 20, 1986.

Abstract —A waveguide band-pass filter includes a fenestrated conductive septum which may be printed on a dielectric circuit board. The center frequency is tuned by a dielectric plate parallel with the septum and contiguous with the fenestrations which is movable in a direction orthogonal to the septum.

20 Claims, 10 Drawing Sheets



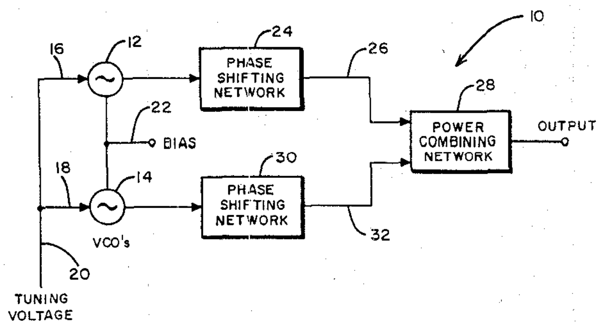
4,763,085 Aug. 9, 1988

Mutually Injection Locked Millimeter-Wave Voltage-Controlled Oscillators with Power Combiner

Inventor: John R. Lamberg.
Assignee: Honeywell, Inc.
Filed: Aug. 10, 1987.

Abstract —Disclosed is a circuit for power combining electromagnetic energy in the millimicrowave frequency band where the electromagnetic energy is produced by two substantially identical varactor tuned microstrip oscillators where the power combining circuit has less than perfect isolation properties allowing a fraction of the output of one to be fed back to the other so that the two become locked in frequency.

8 Claims, 1 Drawing Sheet



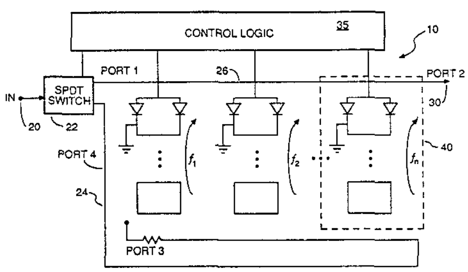
4,763,089 Aug. 9, 1988

Microwave Multiband Filter

Inventor: Chuck Y. Pon.
Assignee: Dalmo Victor, Inc.
Filed: Oct. 8, 1987.

Abstract—A multiband microwave filter that can selectively transmit a broad-band signal or any discrete or combination of predefined frequency bands The filter has two transmission lines, with an output port at one end of a first one of the transmission lines. A switch selectively transmits an input signal to one of the transmission lines The filter also has a plurality of narrow-band directional filters, each of which is used to transmit signals in a corresponding frequency band from one of the transmission lines to the other. Each directional filter includes at least one diode for enabling and disabling the operation of the direction filter in accordance with a bias voltage applied to the diodes. By controlling the switch and applying appropriate bias voltages to each of the diodes, the microwave filter can selectively transmit a broad-band signal or any discrete or combination of the frequency bands transmitted by the directional filters.

4 Claims, 7 Drawing Sheets



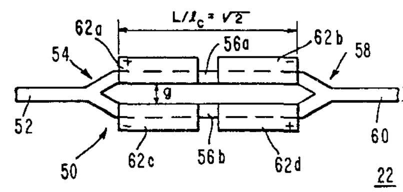
4,763,974 Aug. 16, 1988

Δβ-Phase Reversal Coupled Waveguide Interferometer

Inventor: Suwat Thaniyavarn.
Assignee. TRW Inc
Filed. Aug 13, 1987.

Abstract—An improved electro-optic coupled waveguide interferometer (50) is provided The device comprises a single input (52), a Y-junction splitter (54), two interferometric arms (56*a*, 56*b*), a Y-junction combiner (58), a single output (60) and multiple equal-length sections of electrodes (62*a*–*d*) with alternating applied voltage polarities. The device of the invention permits use of much smaller Y-junction branching angle, which reduces scattering losses, or a shorter branching waveguide section, which allows construction of a device having an overall shorter length than prior art interferometers. The device takes advantage of a close placement of the interferometer arms, which results in a transfer of optical energy and facilitates a single-gap electrode structure for efficient push-pull operation The use of multiple-section electrodes restores the high modulation depth otherwise destroyed by the close placement of the interferometric arms.

19 Claims, 3 Drawing Sheets



4,764,726 Aug. 16, 1988

Low-Distortion RF Switching Circuit Without dc Bias

Inventors: George J. Misic and Paul T. Orlando
Assignee· Picker International, Inc
Filed: Sept 5, 1986

Abstract—During a transmit cycle portion, a radio frequency transmitter (*C*) continuously generates an ac biasing signal and selectively generates a radio frequency signal. The ac biasing signal gates a first switch (10) and a second switch (32) such that the radio frequency signals from the transmitter are conducted to a magnetic resonance probe (*E*) but are blocked from being conducted to a receiver (*F*). A first filter (20) prevents the bias signals from being applied to the probe. The second switch includes a pair of crossed diodes (34, 36) which are gated conductive by the ac bias signal. A filter (72) passes the radio frequency signals but not the bias signals to ground to prevent the radio frequency signals from reaching the receiver. A filter (80) allows the bias signals to be applied across a load (88) such that the transmitter sees the load at the bias signal frequency. Another filter (40) prevents the bias signal from reaching the transmitter. An additional switch (50) provides further isolation between the receiver and the transmitter during the transmit cycle portion. During the receive cycle portion, radio frequency signals received by the probe pass through the filters (20, 40) directly to the receiver but are blocked by switch (10) from passing to the transmitter.

27 Claims, 3 Drawing Sheets