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.

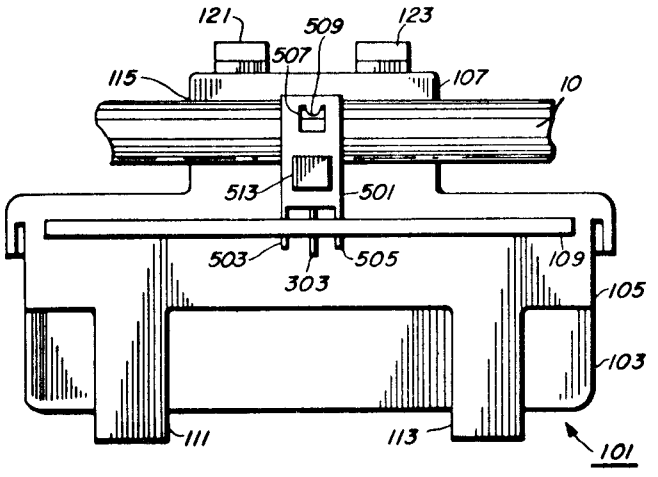
4,266,842 May 12, 1981

Transmission Line Active Coaxial Tap

Inventors: Robert F. Dillon, Jr.; James J. Hall; Leon N. Zamfirescu.
Assignee: Zerox Corporation.
Filed: Sep. 17, 1979.

Abstract—A coaxial cable tap is utilized to couple transmitting and receiving devices to a transmission line. An electrical probe (**301**) is inserted into a coaxial cable (**10**) to separate the outer braided conductor (**12**) and to contact the center conductor (**14**) of the cable. A mounting block (**401**) is mounted in a metal clip or band (**501**) to support the electrical probe (**501**) and provide electrical contact. The metal band (**501**) has two prongs (**509, 511**) to pierce the outer cover and contact the outer braided conductor of the cable. This apparatus is then mounted in a connector box (**101**) for support, protection and connection to the transmitting/receiving devices.

2 Claims, 9 Drawing Figures



4,267,531 May 12, 1981

High-Frequency Terminating Impedance

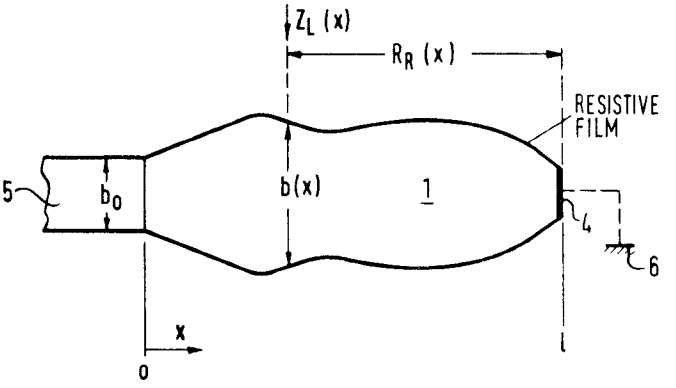
Inventors: Georg Spinner; Manfred Lang.
Filed: May 18, 1979.

Abstract—The invention relates to an HF terminating impedance in strip conductor technique in which the resistive layer is enclosed between two ceramic plates which are clamped from the outside by metallic heat dissipating plates, the freedom from reflection of the terminating impedance being ensured by the lateral edge lines of the resistive layer satisfying the condition

$$Z_L(x) = Z_L = \int_0^x R\,dx.$$

To ensure an intimate heat conduction contact between the resistive layer and the ceramic plates and the ceramic plates and the adjoining clamping plate without introducing bending stresses into the ceramic plates which might cause fracture, at the contact surfaces a soft metal foil, preferably of lead, is inserted which is prevented from cold flow by a rolled-in grating or netting, in particular of bronze or copper. The ceramic plates may be made plane parallel (for smaller powers) or wedge-shaped, by which the advantage can be achieved that per unit length substantially the same power density is obtained and because of the favorable heat dissipation via the ceramic plates and the metal plates clamping them a high permanent power can be taken up with compact construction.

8 Claims, 9 Drawing Figures



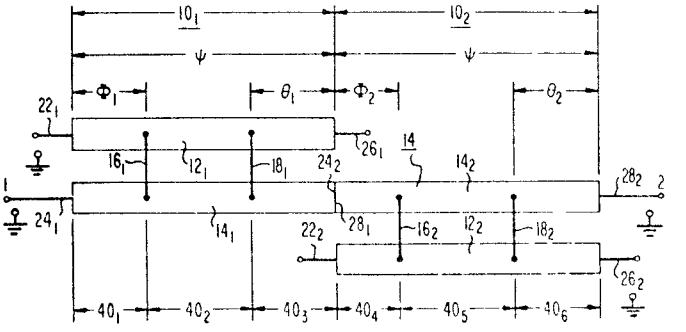
4,267,532 May 12, 1981

Adjustable Microstrip and Stripline Tuners

Inventor: Adel A. M. Saleh.
Assignee: W L. Keefauver.
Filed: Oct. 11, 1979.

Abstract—The present invention relates to a class of adjustable microstrip and stripline tuners. An exemplary tuner comprises a pair of tuning elements, where each tuning element further comprises a pair of parallel spaced-apart conductive strips of equal length and at least one movable bridging wire connecting the two strips. The movement of the bridging wire will vary the output impedance of the tuning element, and a complementary arrangement of a pair of tuning elements will form a tuner capable of matching any impedance falling within the Smith chart.

2 Claims, 15 Drawing Figures



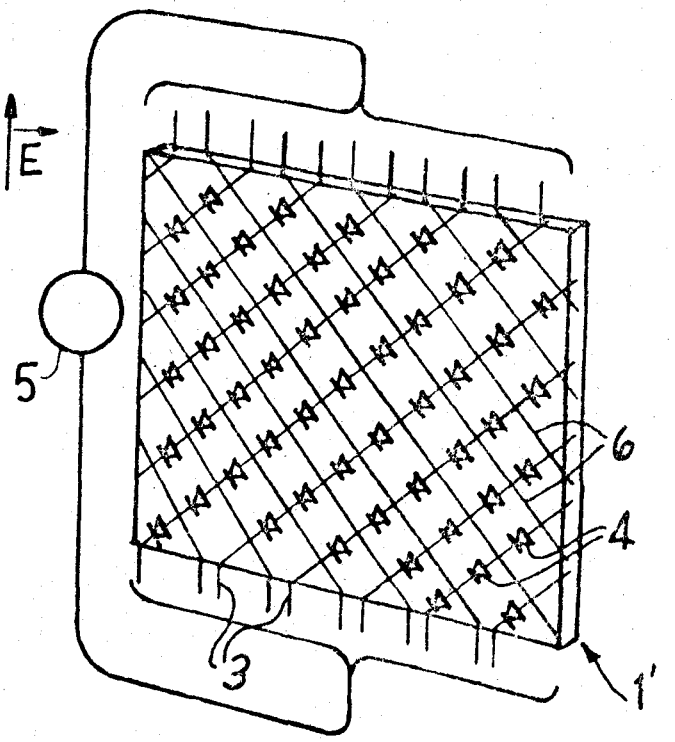
4,266,203 May 5, 1981

Microwave Polarization Transformer

Inventors: Lucien Saudreau; Jean-Paul Biansan.
Assignee: Thomson-CSF.
Filed: Feb. 22, 1978.

Abstract—A microwave polarization transformer comprises a number of dielectric plates each having embedded therein one or two networks of parallel conductive wires in which switchable diodes are inserted. The plates are perpendicular to the direction of propagation of the waves on which they act and so oriented that the general direction of the wires of each network includes an angle of 45° with the direction of the electric field of the linearly polarized incident wave.

13 Claims, 5 Drawing Figures



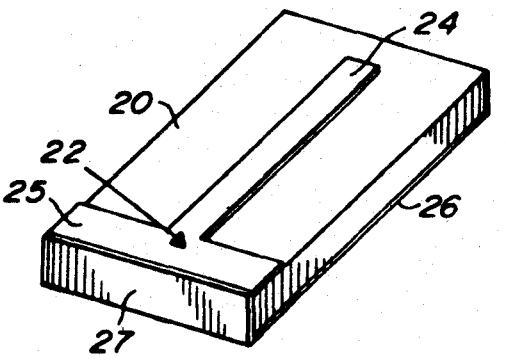
4,266,206 May 5, 1981

Stripline Filter Device

Inventors: Brian E. Bedard; Bertho K. Boman.
Assignee: Motorola, Inc.
Filed: Aug. 31, 1978.

Abstract—Stripline filters and the like have one or more elongated resonator conductors positioned on a dielectric substrate which is backed by a ground plane conductor, with the response frequency being dependent primarily on the length of the resonator. A wide apron conductor is connected to the grounded end of the resonator and to the ground planes. The resonator and apron can be formed by use of a mask such that errors in alignment of the mask do not change the length of the resonator or the point of connection to the grounding apron. The apron, because of its width, has low transmission line impedance to the ground plane which is not changed by changes in configuration or position of the mask, so that it effectively grounds the resonator at the end thereof connected to the apron. A second dielectric substrate backed by a ground plane conductor may be placed on the resonator conductor. The filter may have a plurality of resonators connected to grounding aprons, and a plurality of resonators can be connected to the same apron. In this case it may be desired to place a notch or cut-out in the apron between the connection of the resonators thereto, to interrupt spurious couplings between such resonators through the apron.

12 Claims, 4 Drawing Figures



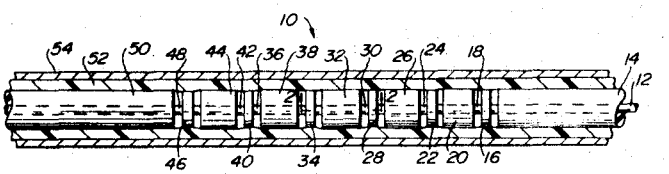
4,266,207 May 5, 1981

Coaxial Cable Band-Pass Filter

Inventor: Robert H. Schafer.
Assignee: UTI Corporation.
Filed: Nov. 7, 1979.

Abstract—The band-pass filter coupling element of a coaxial cable is in the form of a laminent of dielectric material having a conductive layer on opposite faces. Each end face is metallurgically joined to an end face of a center conductor. A sleeve of dielectric material surrounds each center conductor. A seamless tube of dielectric material surrounds the filter elements and the dielectric sleeves. A monolithic jacket of electrically conductive metal surrounds said seamless tube.

5 Claims, 2 Drawing Figures



4,266,208 May 5, 1981

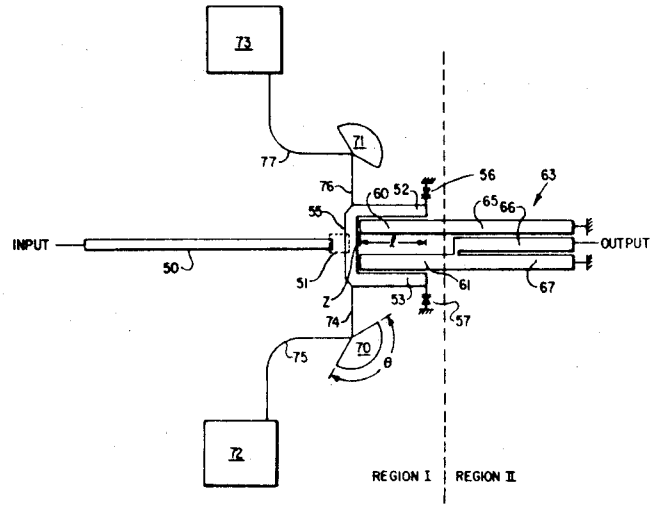
Broadband Microwave Frequency Divider for Division by Numbers Greater than Two

Inventor: William D. Cornish.
Assignee: Her Majesty the Queen in right of Canada, as represented by the Minister of National Defense.
Filed: Apr. 16, 1979.

Abstract—Frequency division of microwave signals may be done using heterodyne conversion but there are limits to the ultimate instantaneous bandwidth that can be down-converted using this method and any frequency

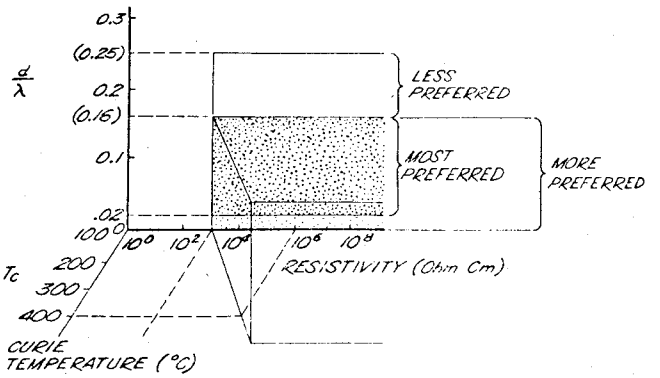
aberrations of the local oscillator show up at the output. It is also known to down-convert microwave signals by using a varactor divide-by-two system. However, to divide by factors greater than two, these dividers must be cascaded which results in losses that must be compensated by amplifiers. The present invention alleviates the foregoing problems by providing a single-stage analog microwave frequency divider which will divide microwave signals by four. The divider comprises a substrate having an input microstrip transmission line capacitively coupled to a resonator formed of first and second spaced apart parallel microstrip transmission lines of predetermined length. One end of each of these lines are joined together by a transverse microstrip transmission line and the other end of each of these lines is connected to substrate ground via an associated varactor diode. The first and second microstrip transmission lines are electromagnetically coupled to third and fourth microstrip transmission lines and the third and fourth microstrip transmission lines are connected in series to a stripline balun comprising an output of the divider.

4 Claims, 6 Drawing Figures



predetermined temperatures in spite of wide fluctuations in microwave power or power uniformity.

50 Claims, 19 Drawing Figures



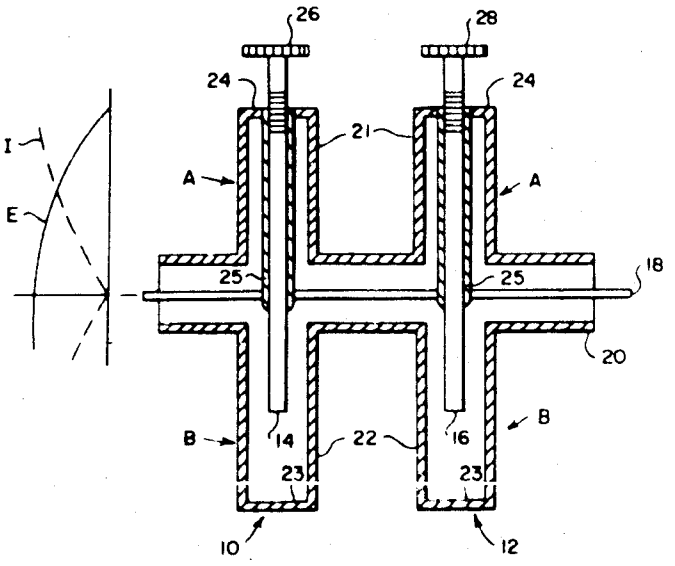
4,262,266 Apr. 14, 1981

Coaxial Stub Tuner

Inventor: Chern, Shy-Shiun.
Assignee: California Institute of Technology.
Filed: Oct. 2, 1979.

Abstract—A coaxial stub tuner assembly is comprised of a short circuit branch diametrically opposite an open circuit branch. The stub of the short circuit branch is tubular, and the stub of the open circuit branch is a rod which extends through the tubular stub into the open circuit branch. The rod is threaded at least at its outer end, and the tubular stub is internally threaded to receive the threads of the rod. The open circuit branch can be easily tuned by turning the threaded rod in the tubular stub to adjust the length of the rod extending into the open circuit branch.

6 Claims, 3 Drawing Figures



4,266,108 May 5, 1981

Microwave Heating Device and Method

Inventors: George R. Anderson; Walter R. Ott; Edward J. Smoke; Ross A. Easter; Jeffrey J. Sholl.
Assignee: The Pillsbury Company.
Filed: Mar. 28, 1979.

Abstract—A microwave heating device is comprised of a microwave reflective member having positioned adjacent thereto magnetic microwave absorbing material. The absorbing material, by being magnetic, will heat by coupling of the magnetic component of microwave radiation. The thickness of the absorbing material is such that at the Curie temperature the material will reflect at least about 65% of the incident microwave radiation. The absorbing material has a volume resistivity value R, at room temperature, in ohm·cm of greater than about the value where $\text{Log}\,R=(Tc/100)+2$ where Tc is the Curie temperature (°C) of the material. By the proper combination of thickness, high resistivity and Curie temperature, the device is temperature self-limiting in a microwave field and can be used to heat objects in contact with the device to

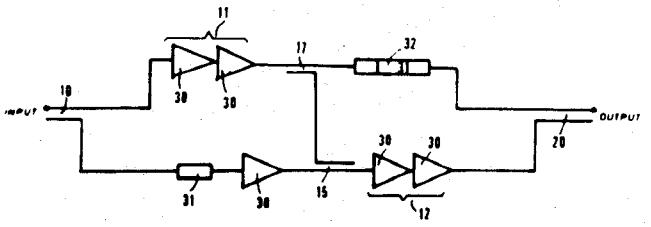
4,258,328 Mar. 24, 1981

Feed Forward Microwave Amplifier for Communication Systems

Inventors: Julien Prevot; Jean-Claude Raux.
Assignee: Societe Lignes Telegraphiques et Telephoniques.
Filed: Mar. 1, 1979.

Abstract—A microwave wide band feed forward amplifier consists of modular amplifying units and modular delay units adjusted to compensate said modular amplifying unit, two said amplifying units constitute the main amplifier, another two the error signal amplifier and a single module amplifier is connected between the input and the error signal amplifier. Wide band compensation of the 3rd harmonic level is obtained at high level.

3 Claims, 8 Drawing Figures



4,253,005 Feb. 24, 1981

Microwave Suppression Apparatus

Inventors: Paul J. Gordon; E. Eugene Eves, II; Richard H. Edgar.
Assignee: Raytheon Company.
Filed: Sep. 17, 1979.

Abstract—A microwave suppression apparatus having two lengthwise tunnels and a plurality of septums that sequentially move through both tunnels in a continuous loop. The septums form microwave seals with inner wall portions of the tunnels to prevent the leakage of microwave energy through an access opening in an energized enclosure. A conveyor which carries a product through the access opening to the energized enclosure also passes through one of the two tunnels of the suppression apparatus.

13 Claims, 3 Drawing Figures