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.

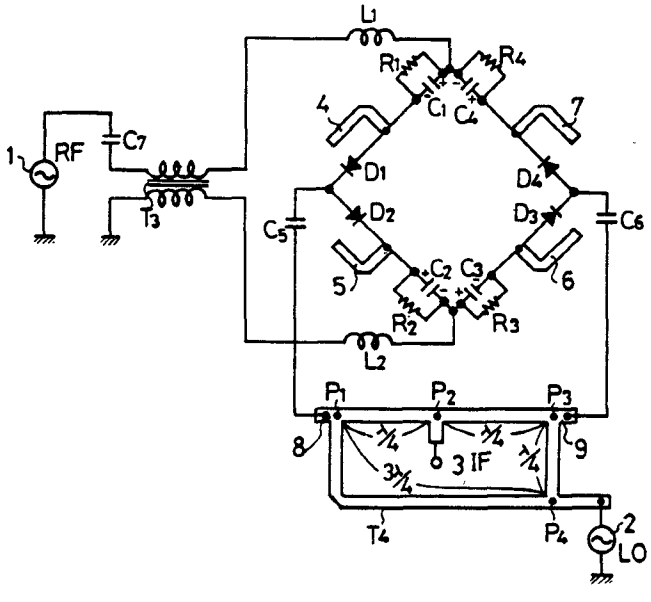
4,306,311 Dec. 15, 1981

Double-Balanced Mixer Circuit

Inventor: Sadao Igarashi. Soma
Assignee: Alps Electric Co., Ltd.,
Filed: July 2, 1979.

Abstract —A double-balanced mixer circuit includes a diode ring, wherein each side of the diode ring is provided with a stripline to bypass high frequency signals.

15 Claims, 5 Drawing Figures



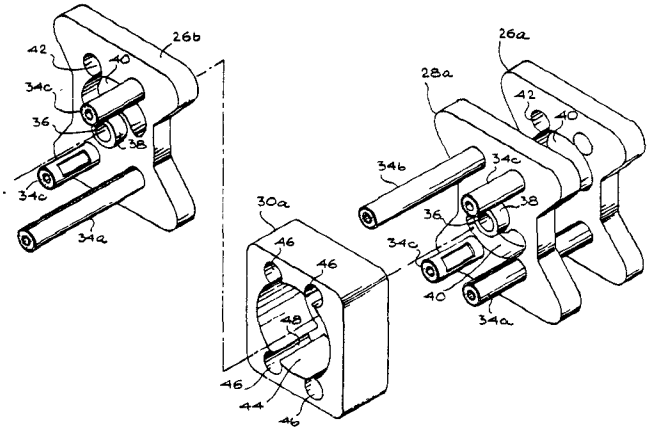
4,307,322 Dec. 22, 1981

Coupled Cavity Traveling Wave Tube Having Improved Loss Stabilization

Inventors: Edwin G. Chaffee;
Ronald W. Herriott.
Assignee: Litton Systems, Inc.
Filed: Aug. 6, 1979.

Abstract —A coupled cavity traveling wave tube is disclosed which includes a plurality of pole piece members and hollow spacer members which are alternately arrayed to define a plurality of cavities. The pole piece members each has a central aperture and a coupling slot through which microwave energy is coupled between adjacent cavities. The tube includes a plurality of first loss elements each of which is positioned in both of two respective adjacent cavities, with each of the first loss elements having its first end in contact with the front face of a respective one of the alternate pole piece members, its central portion pass through an aperture in the next intervening pole piece member in which it is coupled to the coupling slot in that pole piece member, and its second end in contact with the rear face of the next alternate pole piece member. The tube further includes a plurality of second loss elements each of which is positioned in both of two respective adjacent cavities, with each of the second loss elements having its first end in contact with the front face of a respective one of the intervening pole piece members, its central portion pass through an aperture in the next alternate pole piece member in which it is coupled to the coupling slot in that pole piece member, and its second end in contact with the rear face of the next intervening pole piece member.

17 Claims, 3 Drawing Figures



4,307,352 Dec. 22, 1981

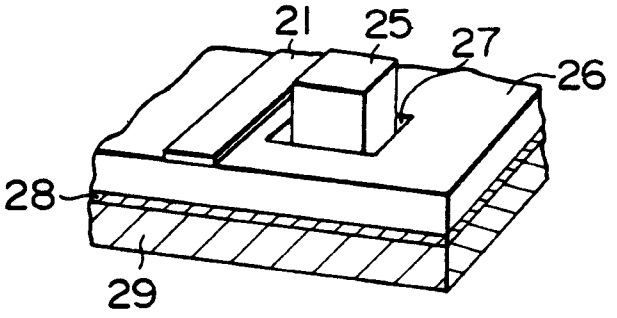
Micro-Strip Oscillator with Dielectric Resonator

Inventors: Keiro Shinkawa; Chuichi Sodeyama.
Assignee: Hitachi, Ltd.
Filed: Oct. 12, 1979.

Abstract —A microwave oscillator circuit comprises a micro-strip line having a substrate of a dielectric material, a semi-conductor such as a Gunn diode or an FET, and a dielectric resonator connected to the micro-strip line as a resonator circuit. A hole is formed in the substrate beside the micro-strip line, or the substrate is cut off to provide a recess. Through this hole or recess, as

the case may be, the dielectric resonator is directly secured to the metal casing supporting the micro-strip line on the opposite side thereof or to the grounding conductor of the micro-strip line.

3 Claims, 10 Drawing Figures



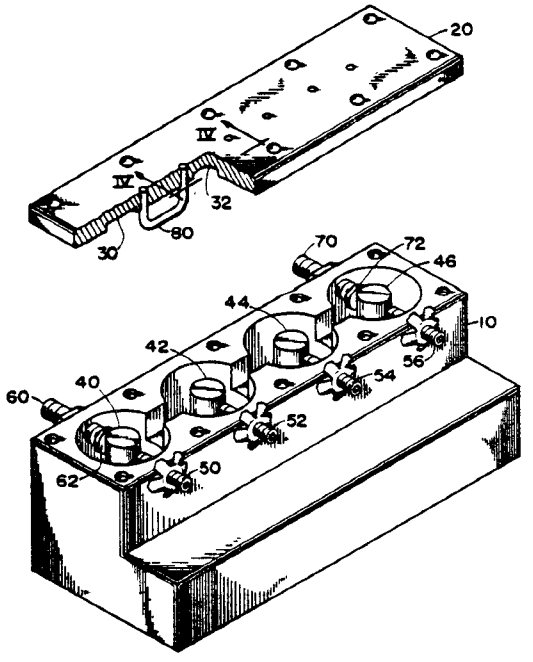
4,307,357 Dec. 22, 1981

Foreshortened Coaxial Resonators

Inventor: Robert W. Alm.
Assignee: Tektronix, Inc.
Filed: Mar. 4, 1980.

Abstract — A coaxial-structure filter which utilizes a flat depression machined in the bottom surface of the filter cover as the resonant frequency determining element in a resonant cavity is disclosed. The depression is directly above the cavity resonator post when the cover is installed and provides a lumped capacitance from the post to the cover. The resonator post is machined flush with the resonator's top wall thereby placing the critical mechanical dimensions associated with the frequency determining elements in a more desirable location than prior methods (i e., in the filter cover).

13 Claims, 4 Drawing Figures.



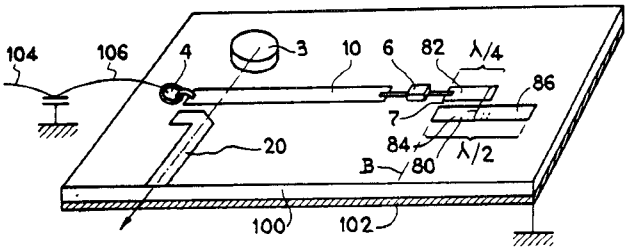
4,311,970 Jan. 19, 1982

Microwave, Solid-State, Stabilized Oscillator Means

Inventors: Alain Bert; Bernard Le Clerc.
Assignee: Thomson-CSF.
Filed: Sept. 10, 1979.

Abstract — Stabilization on a desired frequency *fo* of a solid-state oscillator is obtained by means of an additional damping load 6 preventing oscillations outside a narrow band about this frequency. In order to prevent losses in said load, the load in question is cut out at frequency *fo* by a stop band filter 7 mounted in the transmission line to which is connected the oscillator, a negative resistance diode 4, arranged in series with the load and terminated on a reactive impedance. Realization may be carried out by way of microband technology for devices operating at 10 gigahertz with an output power of several watts.

3 Claims, 6 Drawing Figures



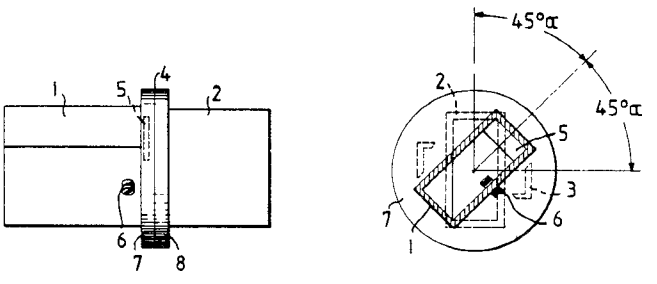
4,311,973 Jan. 19, 1982

Waveguide Junction

Inventors: Erich Nuding; Gerhard Hirsch.
Assignee: Licentia Patent-Verwaltungs GmbH.
Filed: Nov. 2, 1978.

Abstract — A junction for connecting together two waveguides whose major transverse axes are inclined to one another, composed of elements connecting the frontal faces of the waveguides in such a manner that their major axes are adjustable inclined to one another, flanges covering the nonoverlapping frontal faces of the two waveguides, and reactance components disposed at the point of discontinuity produced by the angular off-set between the waveguides for compensating for such discontinuity over a broad frequency band

6 Claims, 6 Drawing Figures



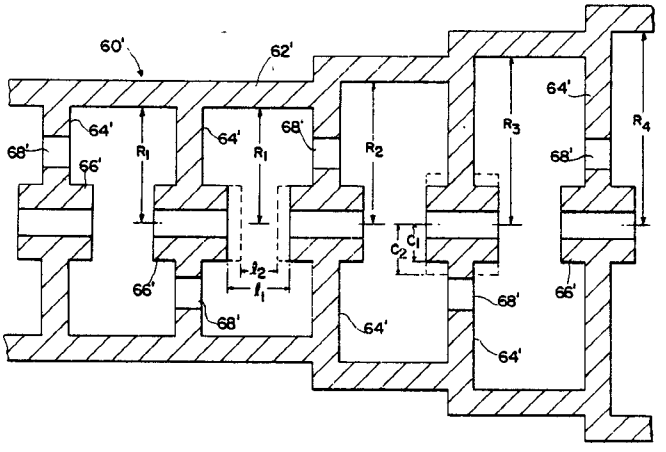
4,315,194 Feb. 9, 1982

Coupled Cavity Traveling Wave Tube With Velocity Tapering

Inventor: Denis J. Connolly.
Assignee: The United States of America as represented by the Administrator of the National Aeronautics and Space Administration.
Filed: Feb. 20, 1980

Abstract — A coupled cavity traveling wave tube (10, 10') is provided having a velocity taper, i.e., gradual velocity reduction, which affords beam-wave resynchronization and thereby enhances efficiency. The required wave velocity reduction is achieved by reducing the resonant frequencies of the individual resonant cavities as a function of the distance from the electron gun (16, 16'), through changes in internal cavity dimensions. The required changes in cavity dimensions can be accomplished for example, by gradually increasing the cavity radius (R_2, R_3, R_4) or decreasing the gap length (l_1, l_2), from cavity to cavity. With this approach the velocity reduction is carried out without an increase in circuit resistive losses and the upper and lower cut off frequencies are reduced in approximately the same manner.

6 Claims, 7 Drawing Figures



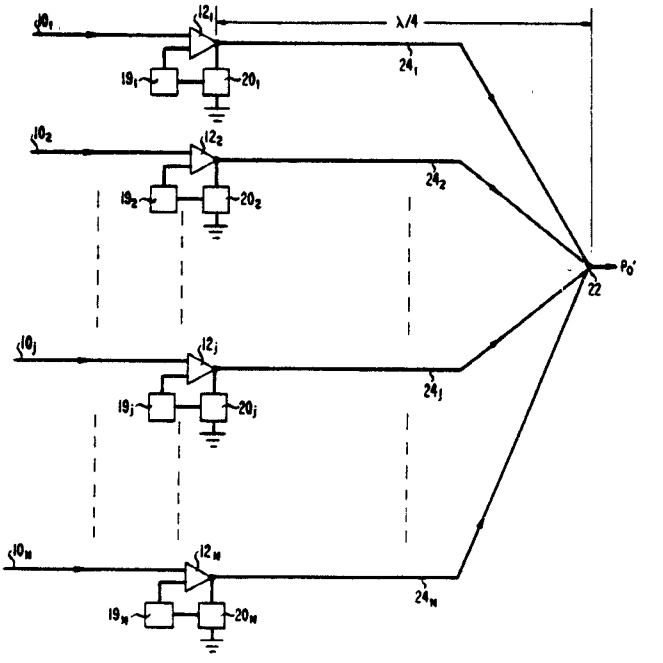
4,315,222 Feb. 9, 1982

Power Combiner Arrangement for Microwave Amplifiers

Inventor: Adel A. M. Saleh.
Assignee: Bell Telephone Laboratories Inc.
Filed: Mar. 6, 1980.

Abstract — The present invention relates to an N-way non-hybrid power combiner arrangement for microwave amplifiers. In operation, sensing means ($19_1, 19_2, \ldots, 19_N$) are coupled in a one-to-one relationship with the individual amplifiers ($12_1, 12_2, \ldots, 12_N$) to monitor amplifier performance and sense amplifier failure. In one embodiment of the present invention, shorting devices ($20_1, 20_2, \ldots, 20_N$) are disposed adjacent to the outputs of the individual amplifiers and coupled to the associated sensing means in a one-to-one relationship. In an alternative embodiment, open-circuiting devices ($30_1, 30_2, \ldots, 30_N$) are disposed at a predetermined distance from the amplifier outputs along the transmission lines ($24_1, 24_2, \ldots, 24_N$) and coupled to their respective sensing means. Upon identifying amplifier failure, the sensing means coupled to that particular amplifier activates either its associated short-circuiting or open-circuiting device, which in turn uncouples the failed amplifier and the transmission line associated therewith.

7 Claims, 4 Drawing Figures



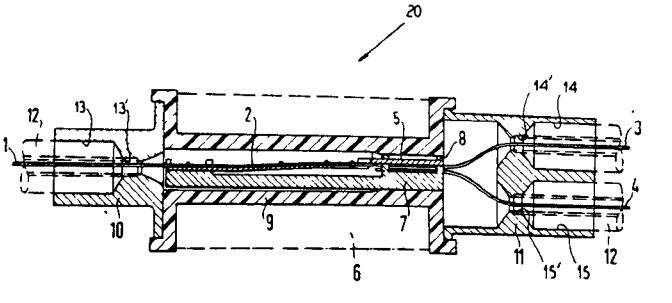
4,318,587 Mar. 9, 1982

Electrically Actuated Switch for Light Waveguides

Inventor: Erwin Grassl.
Assignee: Siemens Aktiengesellschaft.
Filed: Jan. 18, 1980.

Abstract — An electrically actuated switch for opening and closing an optical connection between at least a first and second light waveguide characterized by a common basic member supported in a housing of the switch at one end with the remaining portion of the member being free of the housing, a mobile switching blade supporting one of the waveguides being mounted on the basic member, a fixed support for the other waveguide being mounted on the member and an electrical coil being positioned to create a magnetic field to change the position of the switching blade between a rest and a second position to open and close the connection between the two waveguides. Preferably, the electrical coil telescopically receives a coil member which has an internal surface for mounting the one end of the common basic member which is preferably a one piece member. The mounting of the basic common member reduces the influence of thermal stresses and external forces on the parts which stresses or forces might change or shift the accurate position of the end faces of the light waveguides which are to be coupled to one another in the switching operation.

4 Claims, 1 Drawing Figure



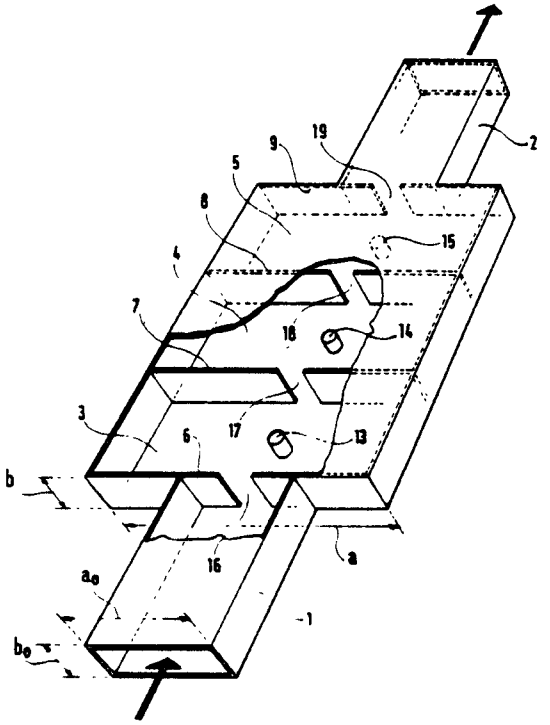
4,320,367 Mar. 16, 1982

Hyperfrequency Filter.

Inventor: Jean-Pierre Boujet.
Assignee: Compagnie Industrielle des Telecommunications Cit-Alcatel.
Filed: Mar. 27, 1980.

Abstract—A hyperfrequency filter comprises a series connection of an inlet length of waveguide (1), a plurality *n* of resonant cavities (3,4,5) and an outlet length of waveguide (2). All these units are of rectangular cross-section and they are interconnected by coupling irises (16,17,18,19). Each resonant cavity includes a dielectric tuning screw (13,14,15) for adjusting the resonant frequency of the cavity. Each tuning screw is located in the middle of one of the largest faces of its resonant cavity.The longer dimension *a* of the cross-section of each cavity is longer than the longer dimension of the cross-section of the waveguide lengths so that the optimum width of the coupling irises is substantially at its minimum possible value for a given set of design conditions on the other filter parameters. This has the effect of broadening the range of frequencies over which a given structure can be tuned without detrimental repercussions on the frequency characteristic of the filter.

1 Claim, 3 Drawing Figures



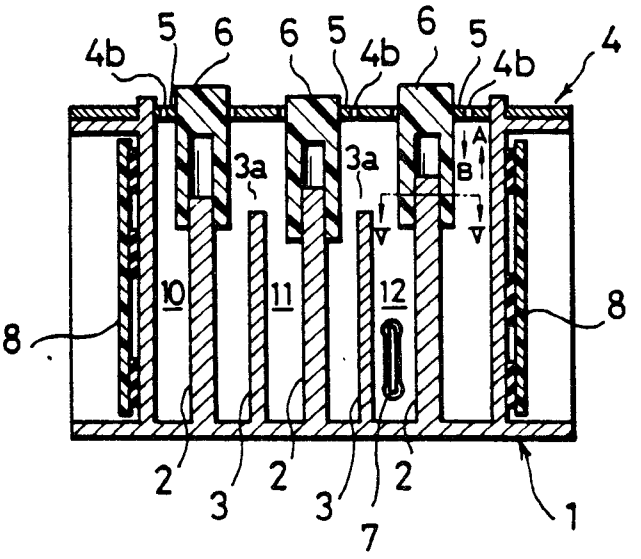
4,320,368 Mar 16, 1982

Filter for Microwaves

Inventor: Mitsuo Sekiguchi.
Assignee: Alps Electric Co., Ltd.
Filed: Apr. 4, 1980

Abstract—A microwave filter includes a plurality of resonator cavities which are separated by walls and which have respective resonator rods, and trimming caps made of a dielectric substance are fixed to the respective resonator rods.

10 Claims, 5 Drawing Figures



4,327,963 May 4, 1982

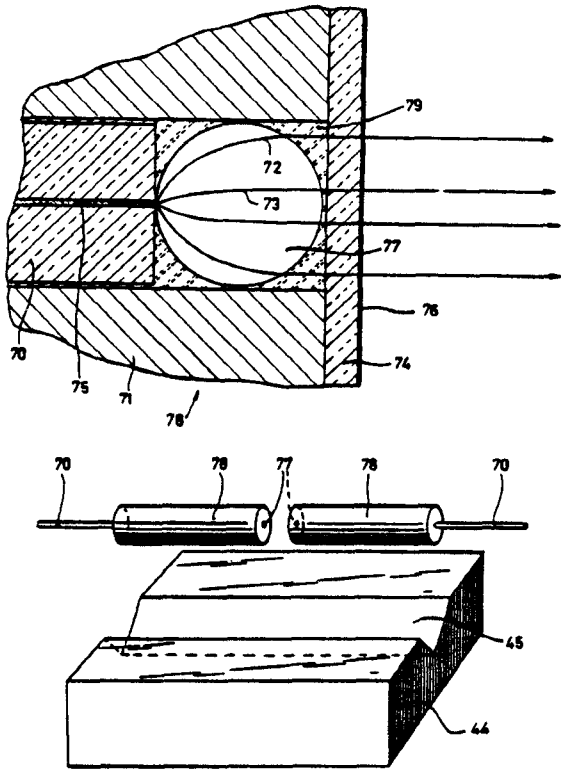
Coupling Element with a Lens for an Optical Transmission System

Inventors: Giok D. Khoe; Joannes P. M. Gieles; Gerard Kuyt.
Assignee U.S. Philips Corp.
Filed: Nov. 19, 1979.

Abstract—A coupling element for an optical transmission system, in which the coupling element comprises a convex lens having a refractive index which is dependent on the radius *r* of a shell in the lens, and a holder. Use is preferably made of lenses having a refractive index $N_{(r)} = N_1 \cdot (2-(R/Ro)^2)1/2$, where N_1 is the refractive index of the core of an optical fiber (approximately 1 55)

and *Ro* is the radius of the lens. The coupling of monomode fibers via lenses of this kind can be effected with large dimensional tolerances.

3 Claims, 10 Drawing Figures



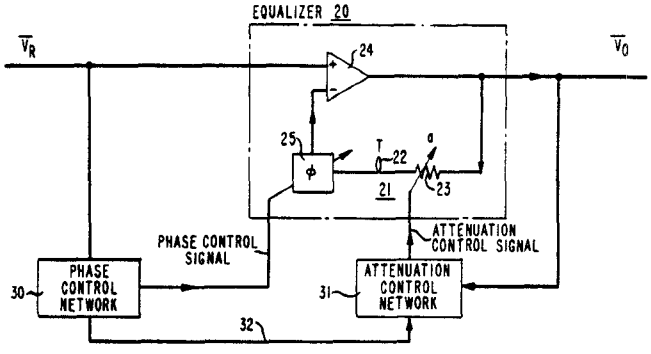
4,330,764 May 18, 1982

Multipath Fade Equalizer

Inventor: Hotze Miedema.
Assignee: Bell Telephone Laboratories, Inc
Filed: June 11, 1980.

Abstract —An adaptive multipath fade equalizer is disclosed comprising differencing means (24) for forming a difference between an input equal to said equalizer and a component of the equalizer output signal and a feedback loop (21) for coupling said component of output signal to the differencing means. The feedback loop includes a fixed delay T(22), a variable attenuator (23) and a variable phase shifter (25). A phase control network (30) and an attenuation control network (31) compare selected portions of the frequency spectrum of the signal and adjust the variable controls to minimize the effects of multipath fades upon the signal It is an advantage of the equalizer that it automatically adjusts for changes in the frequency and depth of the fade notch.

9 Claims, 11 Drawing Figures



4,337,446 Jun. 29, 1982

Apparatus for Processing Microwave Electrical Energy

Inventors: Henry M. O'Bryan, Jr.; John Thomson, Jr.
Assignee: Bell Telephone Laboratories, Inc.
Filed: June 16, 1980.

Abstract —A process is described for the preparation of ceramic dielectrics for microwave applications which yield high quality (Q) factors, high dielectric stability and excellent mechanical stability. The procedure is particularly useful where the size of the ceramic dielectric structures is large (average diameter greater than one inch).

8 Claims, 3 Drawing Figures