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.

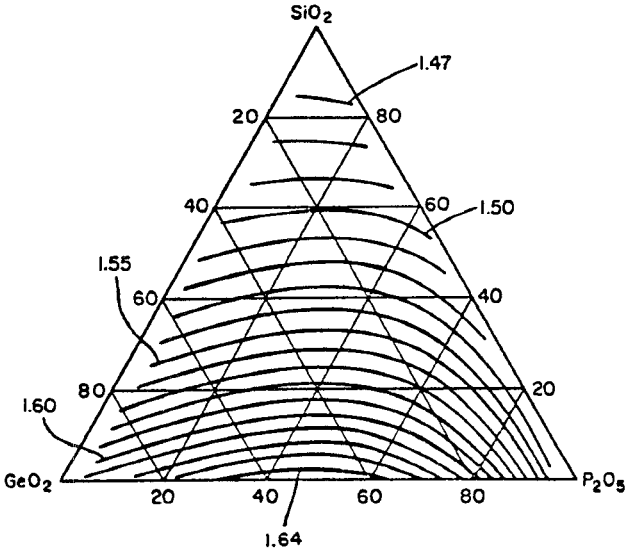
4,339,173 Jul. 13, 1982

Optical Waveguide Containing P_2O_5 and GeO_2

Inventors: Ishwar D. Aggarwal; Eric N. Randall.
Assignee: Corning Glass Works
Filed. Sept. 8, 1975.

Abstract—An optical waveguide having a cladding of high purity glass and a core of high purity glass doped with an amount of P_2O_5 and GeO_2 to increase the refractive index thereof to a predetermined level. The ratio of P_2O_5 to GeO_2 is such that the softening point temperature of the core is compatible with that of the cladding. The core glass has a cation impurity level not exceeding 10 parts per million

18 Claims, 6 Drawing Figures



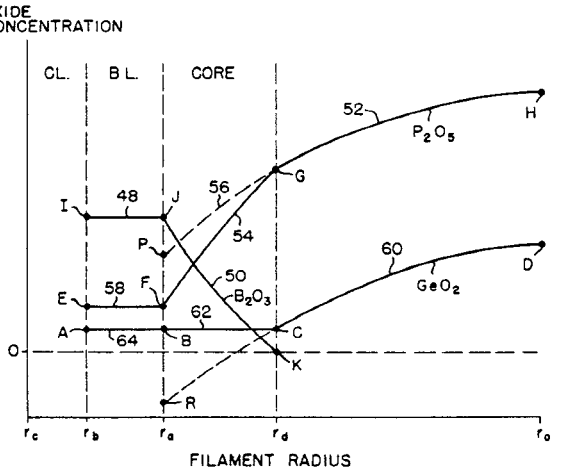
4,339,174 Jul. 13, 1982

High Bandwidth Optical Waveguide

Inventor: Philip S. Levin.
Assignee: Corning Glass Works.
Filed: Feb. 1, 1980.

Abstract—An optical waveguide filament comprising a cladding layer, a core and a barrier layer disposed between the core and cladding. The barrier layer comprises silica doped with B_2O_3, P_2O_5 and GeO_2 The core consists of an inner region and an outer region, the boundary between which is referred to as the core break-point. In the outer region of the core, the concentration of B_2O_3 decreases linearly from its barrier layer level to zero at the core break-point, the P_2O_5 increases at a rapid rate from the barrier layer level to a first concentration level at the core break-point and the GeO_2 remains at a constant value between zero and the barrier level In the outer region of the core, the GeO_2 increases from some level up to the barrier layer level to a greater value at the filament axis in a power law fashion. The P_2O_5 also increases in a power law fashion from the value thereof at the core break-point to a higher value at the filament axis, the increase in concentration of P_2O_5 in the outer core region increasing at a rate greater than the concentration of P_2O_5 would increase if the power law P_2O_5 gradient extended into the outer core region

23 Claims, 8 Drawing Figures



4,340,272 Jul. 20, 1982

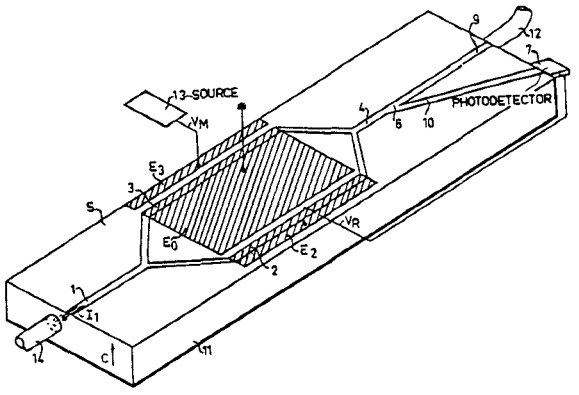
Light Intensity Modulator in an Integrated Optical Circuit with Feedback Means

Inventors: Michel Papuchon; Claude Puech.
Assignee: Thomson-CSF
Filed: Apr 2, 1980.

Abstract—The invention relates to a light intensity modulator, in integrated optics and an integrated optical circuit comprising such a modulator. The modulator comprises a two-arm interferometer in which there is created by electro-optical effect, a phase shift controlled by a modulating voltage between the light waves propagated in the two arms. It is characterized by a feedback loop comprising a light separator placed on the output guide of the interferometer, and a photodiode collecting the fraction of output intensity from the separator and supplying an electric voltage which is superimposed in the

interferometer on the modulating voltage. Thus linearization of the output intensity-modulating voltage response curve is obtained.

11 Claims, 8 Drawing Figures



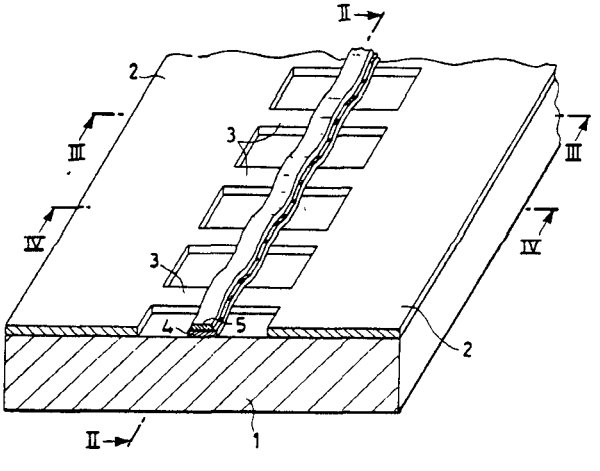
4,340,873 Jul. 20, 1982

Periodic Transmission Structure for Slow Wave Signals, for Miniaturized Monolithic Circuit Elements Operating at Microwave Frequency

Inventor: Ezio M. Bastida.
Assignee: CISE Centro Informazioni Studi Esperienze S.p.A.
Filed: May 30, 1980.

Abstract—The transmission structure comprises at least two parallel conducting bands placed on a support of seminsulating semiconductor material. Said conducting bands are electrically interconnected by concentrated capacities, which are spaced apart at predetermined distances, which are less than the wavelength of the signal to be transmitted.

6 Claims, 10 Drawing Figures



4,340,875 Jul. 20, 1982

Transversal Filter

Inventor: Kevin S. English.
Assignee: Australian Telecommunications Commission.
Filed: Jan. 4, 1980.

Abstract—A transversal filter having an overall impulse response of the form

$$h(\tau) = f(\tau)^* \sum_{i=0}^{N-1} h \cdot \delta(\tau - \tau_i)$$

and producing, from an applied input $x(t)$ an output

$$y(t) = \int_0^\infty h(\tau) \cdot x(t-\tau)\, d\tau$$

where $y(t)$ is obtained by lowpass filtering of a waveform $z(t)$ in use generated in the filter, where $z(t)$ takes the form

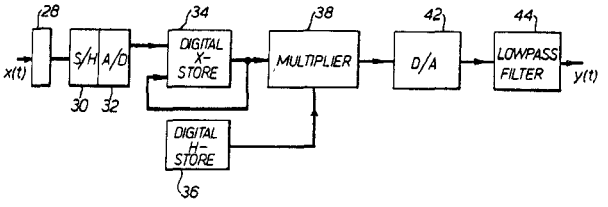
$$z(t) = x_{k-i} h_i, (k-i)T + \tau_i \leqslant t < (k-i+1)T + \tau_{i-1}$$

$$x_k = x(kT)$$

where

h_i set of stored coefficients,
$f(\tau)$ impulse response accounting for fixed linear filtering at the input and output, independent of the settings h_i, and
$\delta(\tau - \tau_i)$ Dirac delta function defined as a function of time interval τ and of a set of time delays τ_i, where τ_i is not equal to iT.

11 Claims, 11 Drawing Figures



4,342,969 Aug. 3, 1982

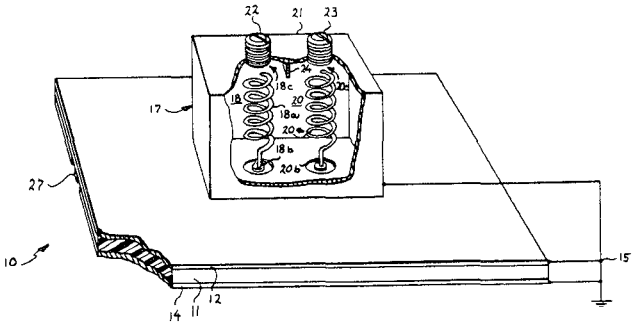
Means for Matching Impedances Between a Helical Resonator and a Circuit Connected Thereto

Inventors: Richard T. Myers; David L. Roberson.
Assignee: General Electric Company.
Filed: Oct. 6, 1980.

Abstract—Impedance matching between a helical resonator of a helical resonator filter and a circuit connected thereto is accomplished by the provision of a microstrip transmission line including a microstrip stub printed on a printed circuit board, the microstrip stub being short in comparison to the wavelength at the resonant frequency of the filter whereby the microstrip stub assumes the characteristics of an inductive impedance. A first electrical end of the microstrip stub is connected to a first terminal of the helical resonator and to a first terminal of the circuit and a second electrical end of the microstrip

stub is connected to a second terminal of the helical resonator and to a second terminal of the circuit

6 Claims, 4 Drawing Figures



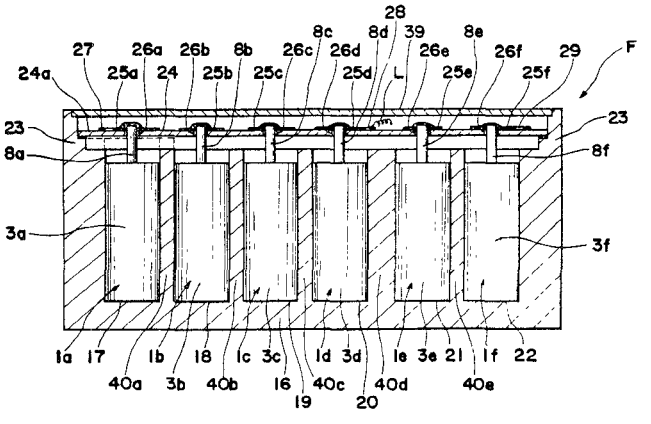
4,342,972 Aug. 3, 1982

Microwave Device Employing Coaxial Resonator

Inventors: Toshio Nishikawa; Youhei Ishikawa; Sadahiro Tamura; Haruo Matsumoto.
Assignee: Murata Manufacturing Co., Ltd.
Filed: Oct. 1, 1980.

Abstract—The disclosure relates to an improved microwave device which includes a casing of electrically conductive material, at least two coaxial resonators, for example, $\frac{1}{4}$ wavelength coaxial TEM resonators each having dielectric member disposed between an inner conductor and an outer conductor of the coaxial resonator and a terminal electrode secured in the inner conductor to provide a terminal portion projecting from an end face of each of the coaxial resonators. The resonators are accommodated in the casing so as to be electrically connected and mechanically secured to the casing. A dielectric plate member connecting input and output terminals of the device is provided. At least two coupling electrodes spaced predetermined intervals from each other are provided on the dielectric plate member. The microwave device is arranged to obtain coupling electrostatic capacity mainly between the coupling electrodes provided on the main flat surface of the dielectric plate member.

14 Claims, 10 Drawing Figures



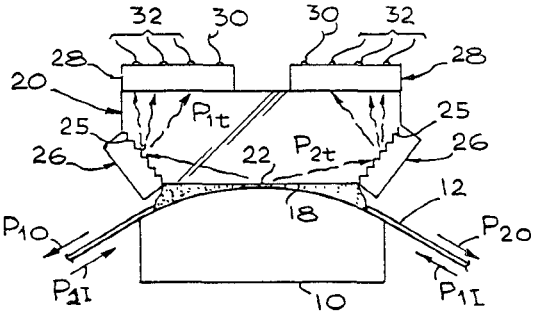
4,343,532 Aug. 10, 1982

Dual Directional Wavelength Demultiplexer

Inventor: John P. Palmer.
Assignee: General Dynamics, Pomona Division.
Filed: Jun. 16, 1980.

Abstract—A dual directional, wavelength demultiplexer including an optical fiber mounted and adhered to a curved surface having a clad single-fiber core, a planar surface extending partially into and along the fiber through the cladding, a prism mounted on the surface having two reflective surfaces positioned to received multiple signals from the fiber travelling in opposite directions, optical gratings positioned at the reflective surfaces effective to diffract the demultiplex the signals, and photodiode arrays mounted adjacent the prism to receive the demultiplexed reflected signals.

18 Claims, 7 Drawing Figures



4,344,030 Aug. 10, 1982

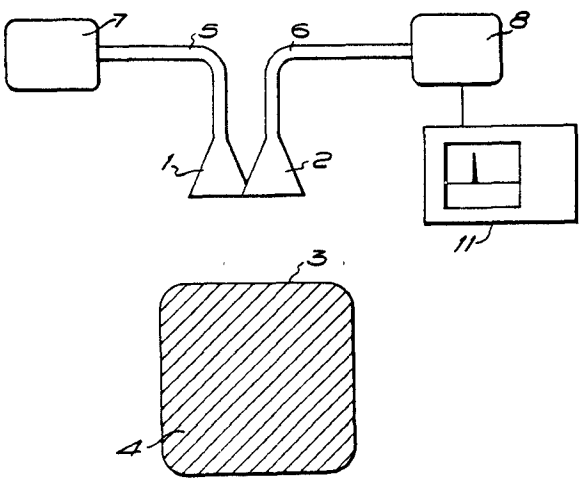
Remote Detector of Flaws in Surfaces using Micro-Waves

Inventors: Alan P. Anderson; John C. Jackson.
Assignee: Lambda Industrial Science Limited.
Filed: Jan. 21, 1980.

Abstract—The invention relates to non-destructive testing for flaws in the surface of, particularly, billets, strip or sheet. There have been many systems developed for the detection of flaws in the surface of a workpiece such as visual techniques employing ferromagnetic materials in a fine suspension including an ultra violet dye, and techniques employing the eddy current effect, both of which suffer in that they are unsatisfactory when a workpiece is moving or when a workpiece is hot Attempts have been made to employ micro-waves but such attempts have essentially required a very close spacing between the detector-receiver and the surface being scanned again making such equipment unsuitable for use with a moving workpiece or when a workpiece is hot. The invention overcomes these problems by providing equipment comprising a source of plane-polarized micro-wave radiation adapted for direction at a surface to be scanned and detection means for plane-polarized micro-wave

radiation reflected from the surface, the polarization directions of the transmitter and the receiver being perpendicular to each other.

8 Claims, 5 Drawing Figures



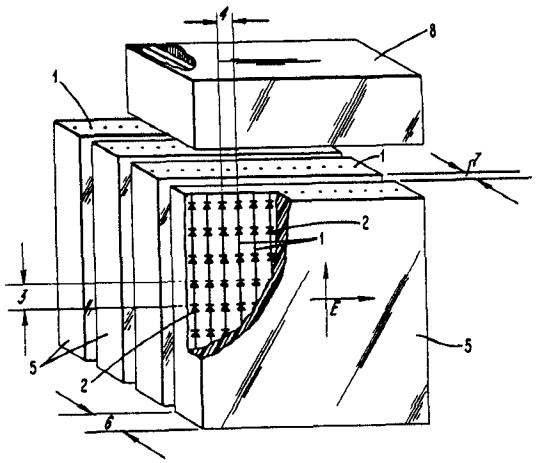
4,344,077 Aug. 10, 1982

Adaptive Spatial Microwave Filter

Inventors: Claude Chekroun;
Yves C. Michel; Henri Sadones.
Assignee: Societe d'Etude du Radant.
Filed: Jan 31, 1980.

Abstract—Process to attenuate or cancel certain side lobes of a microwave antenna pattern by using a network of parallel wires loaded with resistances that are adjustable at will, arranged as a filter in front of the antenna. Application of this process to the elimination of the effects of active or passive interferences, as well as to the localization of jammers. Adaptive filter for microwave antennas.

12 Claims, 5 Drawing Figures



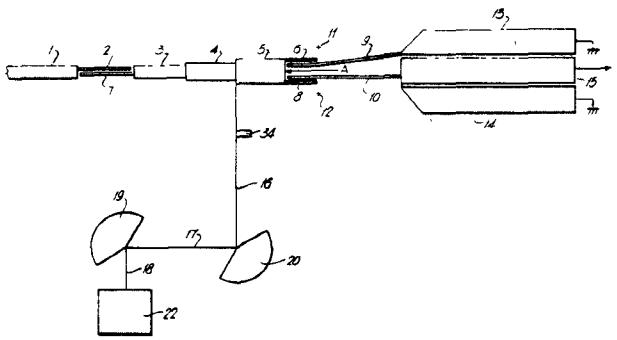
4,334,202 Jun. 8, 1982

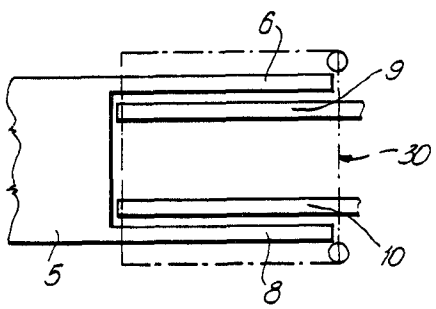
Broadband Frequency Divider

Inventors: William D. Cornish;
François A. Gauthier.
Assignee: Her Majesty the Queen in right of Canada, as represented by Minister of National Defence of Her Majesty's Canadian Government
Filed: Sept. 23, 1980.

Abstract—A microwave frequency divider operable in 8-16 GHZ range. A circuit resonant at a subharmonic frequency is formed by a pair of input microstrip transmission lines coupled to a pair of output microstrip transmission lines. Each input line is terminated by a varactor diode. The input signal is supplied to the resonant circuit by a pair of microstrip lines functioning as a two stage quarter wave transformer. A metal plate positioned over the resonant circuit and closely spaced from it functions to extend the upper end of the frequency range. A bias supply line for the diode has a portion passing through a resistive foam block to remove spurious signals. A movable stub is positioned along the bias supply line to extend the lower end of the frequency range.

4 Claims, 4 Drawing Figures





4,345,210 Aug. 17, 1982

Microwave Resonant System with Dual Resonant Frequency and a Cyclotron Fitted with such a System

Inventor: Duc T. Tran.
Assignee: C.G.R. MeV.
Filed: May 28, 1980.

Abstract—The invention discloses a resonant system for accelerating charged particles of the cyclotron type allowing this cyclotron to operate successively at two resonant frequencies f_1 and $f_2 = mf_1$ ($m = 2$ for example) without modifi-

cation of the structure, this resonant system comprising a sealed enclosure connected to ground and in which is disposed at least one hollow electrode or "Dee" having the shape of a sector, the enclosure and the "Dee" being associated with a resonant element formed from a tubular external conductor closed at one of its ends by a metal plate and whose other end opens into the enclosure and, placed inside this external conductor, two internal conductors connected together, at one of their ends, by means of a connecting element determining with the external conductor a capacity C variable in value, for adjusting the operating frequencies f_1 and f_2 of the cyclotron and more particularly the ratio f_1/f_2.

11 Claims, 18 Drawing Figures