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,

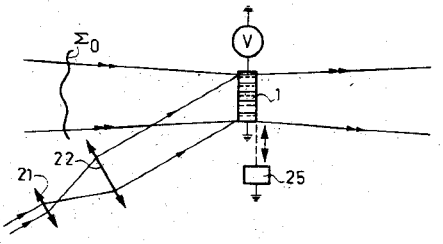
4,505536 Mar. 19, 1985

Optical Device for Real-Time Amplification of the Radiant Energy of a Beam

Inventors: Jean-Pierre Huignard and Abdellatif Marrakchi El Fellah.
Assignee: Thomson-CSF.
Filed: Mar. 2, 1982.

Abstract—An object beam and a reference beam incident on a photosensitive recording material interfere with each other to form a refractive-index strata grating. An energy transfer takes place between the reference beam and the object beam in the presence of a transverse electric field applied to the terminals of the material. A displacement of the interference fringes within the medium permits operation under optimum energy transfer conditions.

14 Claims, 10 Drawing Figures



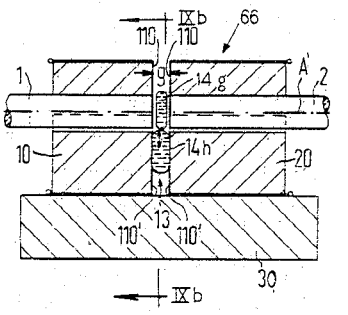
4,505,539 Mar. 19, 1985

Optical Device or Switch for Controlling Radiation Conducted In an Optical Waveguide

Inventors: Franz Auracher, Hermann Buerk, Rudolf Keil, Michael Stockmann,
Kaspar Weingand, and Karl-Heinz Zeitler.
Assignee: Siemens Aktiengesellschaft.
Filed: Sept. 7, 1982.

Abstract—An optical device, such as the switch, for controlling the passage of a light beam into and out of an end face of a waveguide such as a glass fiber includes utilizing either a layer or drop of liquid material to control the light passage. The liquid material can be a layer, which has changeable optical properties, which can occur by applying a magnetic field, heat or electrical field or the material can be a layer of electrolyte material which will precipitate a reflective layer or electrochromic layer in response to an application of an electrical field. In another embodiment, the liquid material may be moved into and out of engagement with the end face to change the reflective nature of the end face and to cause decoupling of light from the end face or block the transmission of light.

19 Claims, 23 Drawing Figures



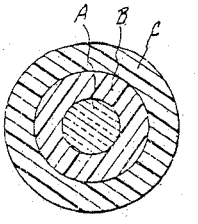
4,505,542 Mar. 19, 1985

Thermostatic Fiber-Optic Waveguides

Inventor: Raymond Clarke.
Assignee: Raychem Corporation.
Filed: Sept. 23, 1982.

Abstract—Fiber-optic waveguides exhibiting a blackout phenomenon can be used for temperature sensing. A temperature sensing waveguide can be used in such applications as maintaining a material within a selected temperature range, freeze protection, viscosity control of liquids in pipelines, leak detection of cryogenic fluids, fire detection, application of heat-recoverable materials, and fluid level detection. Novel waveguides exhibiting blackout at selected temperatures for use in these applications are described. Among the novel waveguides are those having a cladding comprising a polyalkylphenyl siloxane and those having a cladding comprising a cross-linked polymethylalkyl siloxane. Also described are wavguides where only a section of the waveguide exhibits blackout and methods for making such waveguides.

11 Claims, 11 Drawing Figures



0018-9480/86/0100-0197$01.00 ©1986 IEEE

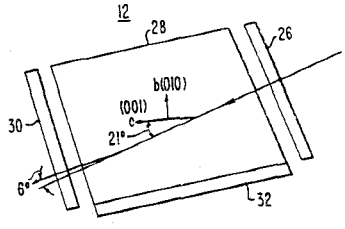
4,505,550 Mar. 19, 1985

Infrared Acoustooptic Tunable Filter

Inventor: Kenneth B. Steinbruegge.
Assignee: Westinghouse Electric Corp.
Filed: Feb. 2, 1982.

Abstract—An improved infrared acoustooptic tunable filter is provided by an acoustooptic birefringent crystal having polished, uncoated input and output faces normal to the radiation incident-on or diffracted-by the crystal, respectively, and wherein crystallographic axis is oriented at about 21 degrees to the incident infrared radiation, rf transducer means coupled to the crystal for tuning or selecting a narrow bandwidth infrared wavelength of interest, and input and output wire grid polarizer are aligned with the crystal. The input wire grid polarizer is aligned to polarize the input infrared radiation in the same plane as the plane of the b-c crystalline axes of the crystal. The output wire grid polarizer is disposed with the parallel conductors aligned transversely to the conductors of the input polarizer, so that only the selected or tuned bandwidth of interest is transmitted through the output polarizer.

3 Claims, 4 Drawing Figures



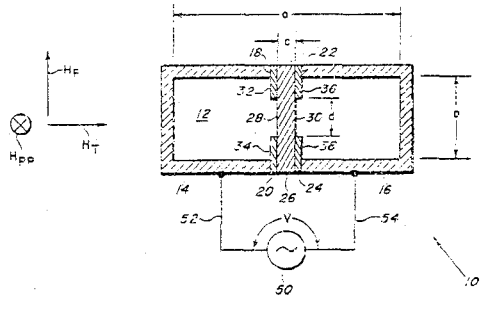
4,506,234 Mar. 19, 1985

Amplitude and Phase Modulation in Finlines by Electrical Tuning

Inventor: Carmine Vittoria.
Assignee: The United States of America as represented by the Secretary of the Navy.
Filed: June. 17, 1983.

Abstract—A finline waveguide device for modulating signals passing therethrough. The device comprises a finline waveguide including two channel members longitudinally extending in the direction of signal propagation through the device. The channel members are physically and electrically separated by a ferrite dielectric slab which is oriented in a longitudinally extending plane parallel to the electric field lines of the signal passing through the device. A magnetic field is applied to the ferrite slab to magnetically bias the slab to ferromagnetic resonance. A voltage is applied across the ferrite slab to alter the ferromagnetic resonance characteristics of the slab. The phase and amplitude of the signal passing through the waveguide are modulated in response to the applied voltage.

18 Claims, 1 Drawing Figure



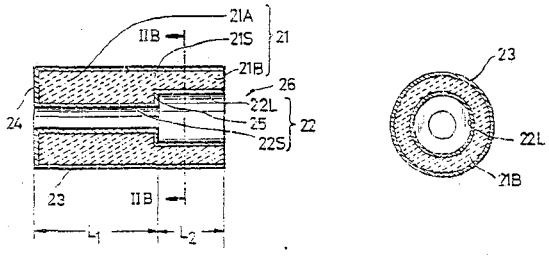
4,506,241 Mar. 19, 1985

Coaxial Dielectric Resonator Having Different Impedance Portions and Method of Manufacturing the Same

Inventors: Mitsuo Makimoto, Yukichi Aihara, Sadahiko Yamashita.
Assignee: Matsushita Electric Industrial Co.
Filed: Nov. 30, 1982.

Abstract—A coaxial dielectric resonator for VHF-UHF band comprises a generally cylindrical dielectric body having a thick portion, a thin portion and a stepped portion interposed between the thick and thin portion. The outer and inner surfaces of the dielectric body are respectively covered by outer and inner conductors. Thus the resonator can be regarded as a series circuit of two lines having different impedance from each other. The axial length of the thick and thin portions may be changed so as to change electrical characteristics. With the provision of thick and thin dielectric portions, the spurious resonance frequencies may be set to values other than integral multiples of the fundamental resonance frequency. The stepped portion may be rounded or replaced with a tapered portion so that impedance gradually changes at the stepped or tapered portion from the thick portion to the thin portion or vice versa.

13 Claims, 19 Drawing Figures



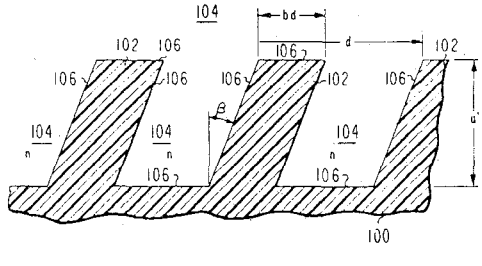
4,506,949 Mar. 26, 1985

Diffractive Color Separation Filter

Inventor: Karl H. Knop.
Assignee: RCA Corporation.
Filed: May 27, 1983

Abstract—The use of a rhomboid-shaped phase grating to derive, from polychromatic input light, plus-one, minus-one and zero diffraction order output beams each of a different independent color.

11 Claims, 5 Drawing Figures



4,507,629 Mar. 26, 1985

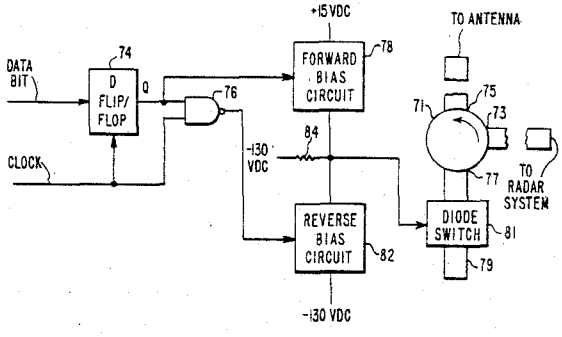
Microwave Phase Shifter

Inventor: Gilbert H. Frank.
Filed: Mar. 1, 1983.

Abstract—A phase shifter utilizing a circulator and electronic switches to change the length of a transmission line is disclosed. More specifically, a section of transmission line terminated in a short circuit is coupled to one port of a circulator. Energy exiting the port is reflected by the short circuited transmission line to introduce a phase delay in the signal. A PIN diode is utilized to provide a switchable short across the transmission line to reduce its electrical length thereby reducing the phase delay.

2 Claims, 5 Drawing Figures

4,507,631 Mar. 26, 1985

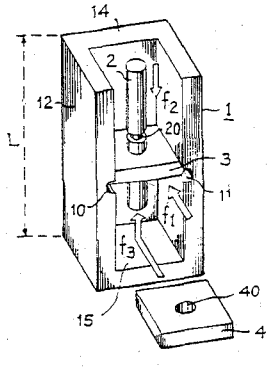


Device Comprising a Cavity and a Linear Resonator Fixed Within Said Cavity, and a Method of Assembly of Said Device

Inventors: Daniel Louet and Gilbert Darnois.
Assignee: Thomson-CSF.
Filed: Dec. 22, 1982.

Abstract—The device comprises a cavity, a resonator placed within the cavity and a support plate for fixing the position of the resonator within the cavity. Recesses are formed in the cavity and the resonator at the point at which they are in contact with the support plate. The support plate is of thermocompressible material. The cavity comprises at least two parts and one of these parts is in contact with the support plate; in order to mount the resonator within the cavity this latter part is assembled with the support plate, the resonator, mechanical locking members and a piston so that the support plate is thus completely surrounded. The assembly is heated to the temperature chosen for thermocompression, whereupon the support plate is compressed by means of the piston. The thermocompressible material then fills the recesses and ensures rigid positioning of the resonator after cooling.

5 Claims, 5 Drawing Figures



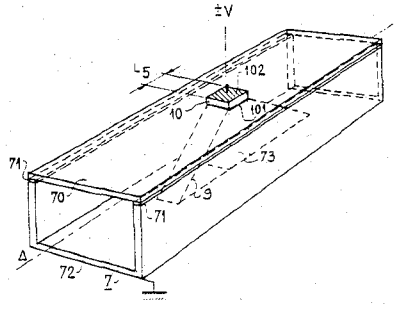
4,507,632 Mar. 26, 1985

Electromagnetic Wave Switch

Inventors: Michel Baril and Gilles Sillard.
Assignee: Thomson-CSF.
Filed: Aug. 23, 1982.

Abstract—An electromagnetic wave switch is provided formed from a profiled wave-guide associated with a pin diode, filling completely the profiled part of said guide, having a high breakdown voltage and a low thermal resistance.

6 Claims, 6 Drawing Figures



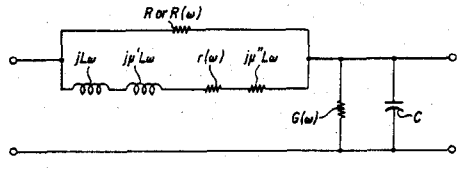
4,510,468 Apr. 9, 1985

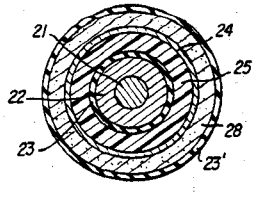
RF Absorptive Line with Controlled Low-Pass Cutoff Frequency

Inventor: Ferdy Mayer.
Filed: Sept. 30, 1982.

Abstract—A transmission line for the transmission of electrical energy and signals, including at least one electrical conductor exhibiting high-frequency skin effect; a low conductivity magnetic composite layer surrounding the at least one conductor and exhibiting and inductance characteristic; a resistive layer coupled to the magnetic composite layer and having a predetermined capacitance relative to ground potential, the resistive layer exhibiting a longitudinal resistance characteristic matched at least to the inductance characteristic of the magnetic composite layer to obtain a correspondingly determined low-pass frequency characteristic wherein within a predetermined transition frequency range, current flow switches from the at least one conductor to the resistive layer.

41 Claims, 18 Drawing Figures





4,510,469 Apr. 9, 1985

Selective Waveguide Mode Converter

Inventor: David F. Bowman.
Assignee: RCA Corporation.
Filed: May 31, 1983.

Abstract — A mode converter is disclosed which selectively generates a predetermined higher order mode(s) from an incident fundamental mode. This mode converter comprises a dielectric region having an effective-dielectric-constant/thickness profile which is the same as the amplitude profile of the desired higher order mode(s).

8 Claims, 14 Drawing Figures