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.

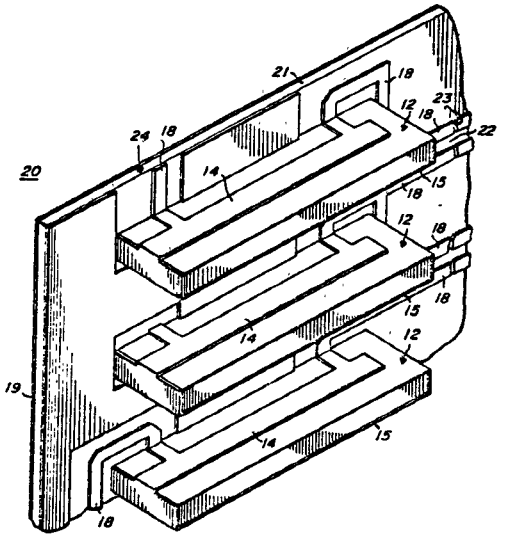
4,419,632 Dec. 6, 1983

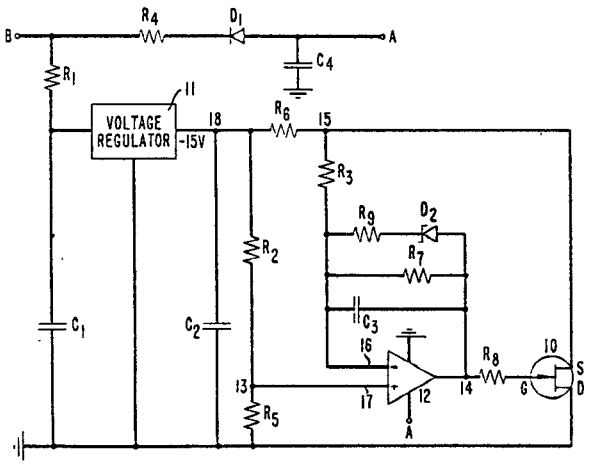
Bias Circuit for Microwave FET's

Inventor: James E. Morris.
Assignee: Bell Telephone Laboratories, Inc.
Filed: Dec. 11, 1981.

Abstract—Disclosed is a circuit for biasing FET's which limits unwanted gate current. A first resistor (R_8) is coupled in series with the gate and the output (14) of a differential amplifier (12). Means such as a second resistor (R_9) and a Zener diode (D_2) are coupled to the first resistor and one input of the differential amplifier. Means such as a third resistor (R_3) is also coupled to one input of the amplifier. When excessive gate current appears, the voltage across the first resistor is such as to cause sufficient current flow through the diode and second and third resistors to unbalance the amplifier. This keeps the gate-to-source voltage of the FET at a region of gate current below some maximum value.

9 Claims, 6 Drawing Figures





4,428,644 Jan. 31, 1984

Alignment of Optical Components

Inventors: Alastair M. Glass, Ivan P. Kaminow, and Donald H. Olson.
Assignee: Bell Telephone Laboratories, Inc.
Field: Sept. 21, 1981.

Abstract—A means for aligning components of an optical system without the use of conventional optical equipment is disclosed. This means includes the use of a pair of electrodes in proximity with the light guiding portion of a pyroelectric system element. The absorption of light in the waveguide produces a current in the pyroelectric material that is monitored at the electrodes. Alignment of the system components is achieved by adjusting their relative position to increase the monitored signal.

4 Claims, 6 Drawing Figures

4,429,289 Jan. 31, 1984

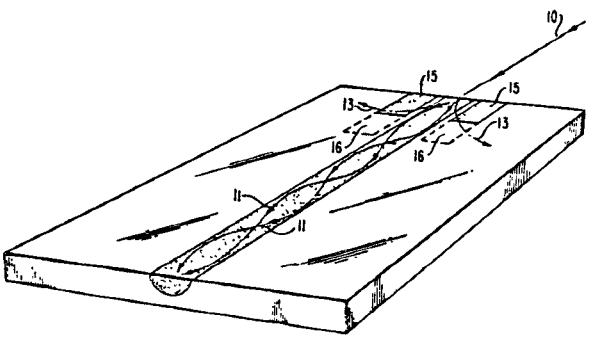
Hybrid Filter

Inventors: Robert J. Higgins, Jr., and Harvey N. Turner, Jr.
Assignee: Motorola, Inc.
Filed: June 1, 1982.

Abstract—A hybrid filter comprising a plurality of removably mountable resonator modules, each constructed of microstrip, and mounted parallel to each other and perpendicular to the substrate so as to isolate the resonators for single-mode operation; the inter-resonator coupling is provided by adjustable capacitor coupling gaps on the host substrate.

5 Claims, 3 Drawing Figures

4,429,290 Jan. 31, 1984

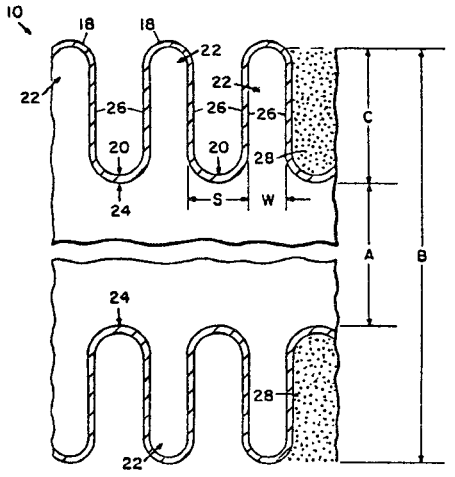


Flexi-Bend Corrugated Waveguide

Inventor: Joseph M. Devan.
Assignee: The United States of America as represented by the Secretary of the Navy.
Filed: Oct. 29, 1979.

Abstract—An unsymmetrically corrugated TE_{01} mode circular waveguide bend. Unsymmetrical corrugations approximately one-quarter wavelength deep are utilized to suppress energy transfer to other modes inherent in smooth wall circular guide bends. The corrugations are comprised of a plurality of adjacent internal ridges and valleys having substantially parallel walls such that the distance between the parallel walls of the internal ridges are at least twice the distance betwen the parallel walls of the internal valleys.

11 Claims, 2 Drawing Figures



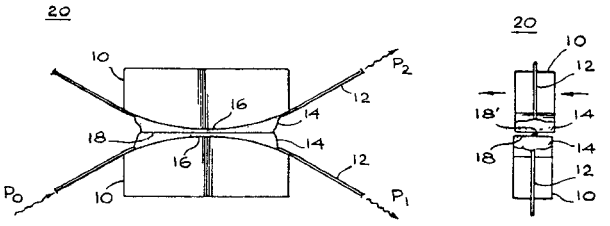
4,431,260 Feb. 14, 1984

Method of Fabrication of Fiber Optic Coupler

Inventor: John P. Palmer.
Assignee: General Dynamics, Pomona Division.
Filed: Jan. 23, 1981.

Abstract—A low-loss bidirectional optical coupler is provided by mounting together and joining with epoxy resin two like fiber optic elements in face-to-face relationship along a common plane. Each of the elements is fabricated by affixing a portion of an optical fiber with epoxy resin along the curved surface of a solid support form. After the epoxy securing the fiber to the form is cured and hardened, a planar surface extending partially into and along the fiber is established by lapping and polishing the element to a carefully controlled depth. The techniques employed and the resulting devices permit coupling between pairs of individual fibers joined in the manner described.

6 Claims, 9 Drawing Figures



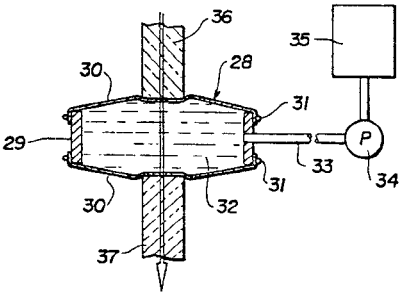
4,431,262 Feb. 14, 1984

Conformable Optical Couplers

Inventor: Walter E. Tolles.
Filed: Oct. 6, 1981.

Abstract—To reduce substantially the level of background light which will limit the sensitivity of any photometric measurements and to avoid using optical cements and greases and their inconveniences, optical components as employed in photometric measuring systems are coupled by an optically clear compliant member which is forced into conforming contact with two opposing optical elements. The invention finds application in photometers and densitometers, spectrophotometers, fluorometers, and nephelometers. The invention may also be employed in lieu of the usual immersion oil of a high-power microscope.

4 Claims, 6 Drawing Figures



4,431,974 Feb. 14, 1984

Easily Tuned Impatt Diode Module

Inventor: Donnie L. Landt.
Assignee: Rockwell International Corporation.
Filed: Feb. 22, 1982.

Abstract—An improved microwave circuit is disclosed for enabling impedance tuning for power coupling in IMPATT diode and other similar oscillator and amplifier circuits. An electrically conductive support plate forming a ground plane is machined to form a channel for slidably receiving an air-stripline transmission line and a resonator therein. An IMPATT diode is positioned within the channel through an opening extending through the support plate generally perpendicular to the channel and is positioned in contact with the resonator. An electrically conductive bias filter is coupled to the resonator and to an adjusting mechanism for moving the resonator along the channel and providing a dc bias to the diode for oscillation. An electrically conductive cover member retains a spring biased electrically nonconductive projection for maintaining the resonator in contact with the diode. By controlling the adjusting mechanism and the position of the air-stripline within the channel, the real and imaginary parts of diode impedance can be adjusted to change the frequency and match the impedance of the diode to a conventional transmission line or coupling circuit.

12 Claims, 5 Drawing Figures

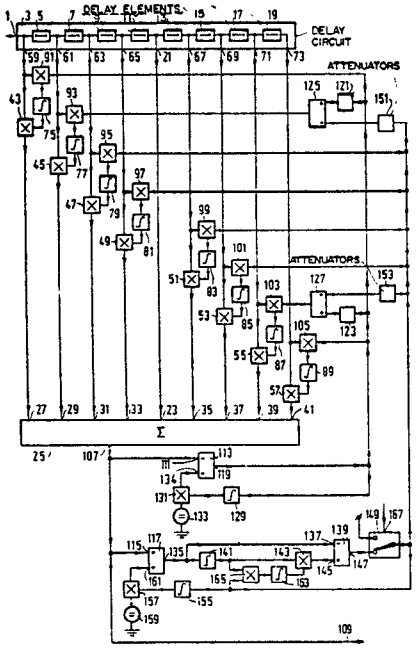
4,431,976 Feb. 14, 1984

Adaptive Filter

Inventor: Johannes O. Voorman.
Assignee: U.S. Philips Corporation.
Filed: Nov. 9, 1981.

Abstract—In order to make an adaptive filter, having a delay circuit, (3) taps of which include amplitude control circuits (43,45,47,49,51,53,55,57) which are controlled by an error signal (output of 149), more suitable for use in television receivers, a number of said amplitude control circuits (45,55) are controlled by both the error signal (output from 149, 151, 125 and 153, 127, respectively) and an inverse version of a signal corrected by the filter (output 119, 121, 125 and 123, 127, respectively).

7 Claims, 2 Drawing Figures



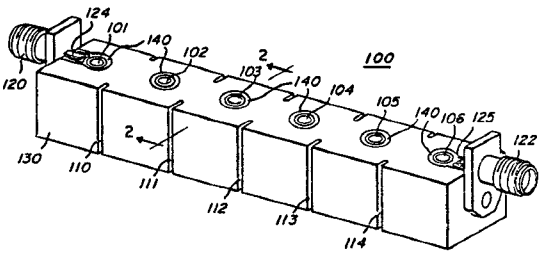
4,431,977 Feb. 14, 1984

Ceramic Bandpass Filter

Inventors: Raymond L. Sokola and Charles Choi.
Assignee: Motorola, Inc.
Filed: Feb. 16, 1982.

Abstract—A unique ceramic bandpass filter is disclosed that is comprised of a dielectric block having one or more holes extending from its top surface to its bottom surface and further having input and output electrodes each disposed on the dielectric block at a predetermined distance from a corresponding hole. The dielectric material is preferably a ceramic comprised of BaO, TiO_2, and ZrO_2. If there is only one hole in the dielectric block, the input and output electrodes may be arranged around that hole. If there are two or more holes in the dielectric block, one electrode may be located near the hole at one end and the other electrode may be located near the hole at the opposite end of the dielectric block. The dielectric block is entirely plated with copper or silver with the exception of portions near each hole and the input and output electrodes. Each plated hole is essentially a coaxial resonator. Coupling between adjacent coaxial resonators provided by the plated holes can be adjusted by slots or additional holes located therebetween. Two or more of unique ceramic bandpass filters can be intercoupled to provide a filter with greater selectivity or a multi-band filter for combining and/or frequency sorting two or more signals into/from a composite signal.

48 Claims, 13 Drawing Figures



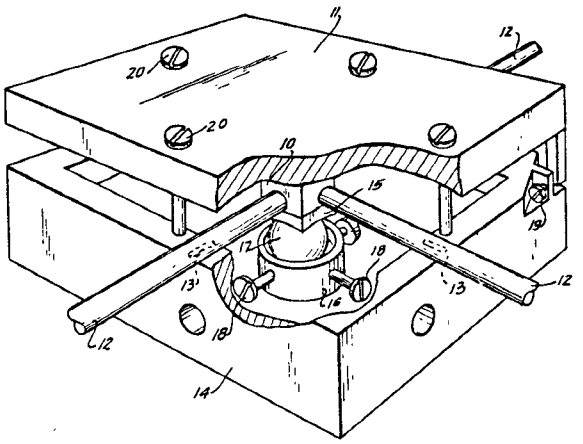
4,432,601 Feb. 21, 1984

Apparatus and Method for Coupling and Decoupling of Optical Fiber Waveguides

Inventor: Lothar Mannschke.
Assignee: Te Ka De Felten & Guilleaume Fernmeldeanlagen GmbH.
Filed: Feb. 17, 1981.

Abstract—An apparatus and method for coupling and decoupling of optical radiation, in particular for laser light in optical fiber waveguides. The optical fiber waveguides are positioned in V-grooves and brought to a beam splitter. The beam splitter is adjusted by independent carriage guides and rotary guides, in order to separate a part of the radiation, which is representatively predetermined and required for control purposes.

17 Claims, 2 Drawing Figures



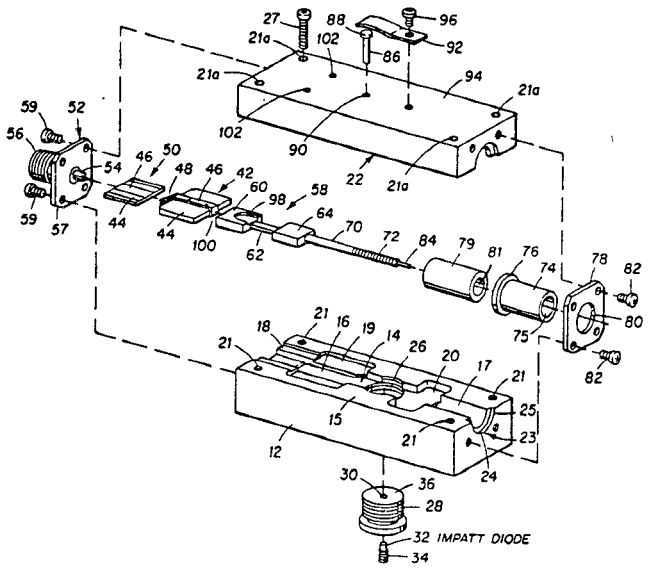
4,433,313 Feb. 21, 1984

Apparatus for Microwave Directional Coupling Between a Waveguide and a Stripline

Inventors: Jacques Saint and Gérard Collignon.
Assignee: Societe d'Etude du Radant.
Filed: Sept. 9, 1981.

Abstract—A method and apparatus for directionally coupling two technically different microwave transmission lines, one being a waveguide and the other a stripline, in which a central conductor of the stripline is plunged into waveguide through a slot in a wall of the waveguide and loaded by capacitors or inductors. The width of the central conductor and values of the capacitors and inductors determines the desired coupling coefficient.

15 Claims, 7 Drawing Figures



4,434,409 Feb. 28, 1984

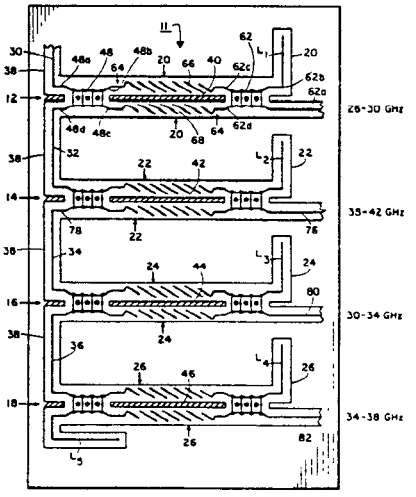
Millimeter-Wave Suspended Substrate Multiplexer

Inventors: Alfred R. Hislop and David Rubin.

Assignee: The United States of America as represnted by the Secretary of the Navy.
Filed: Jan. 21, 1982.

Abstract—A millimeter-wave suspended substrate multiplexer is disclosed which is comprised of a plurality of hybrid-filter-hybrid channel dropping sections. The components of the multiplexer are enclosed in a metallic housing forming a cavity surrounding the multiplexer components. Each of the hybrid-filter-hybrid sections is comprised of first and second 90° hybrid couplers which are connected by a pair of identical bandpass filters. Spurious waveguide energy propagation modes which would otherwise be generated in the cavity surrounding the 90° suspended hybrid couplers are eliminated by the use of a plurality of mode suppression pins extending between the top and bottom portions of the metallic housing and passing through the branch lines of the couplers.

13 Claims, 2 Drawing Figures



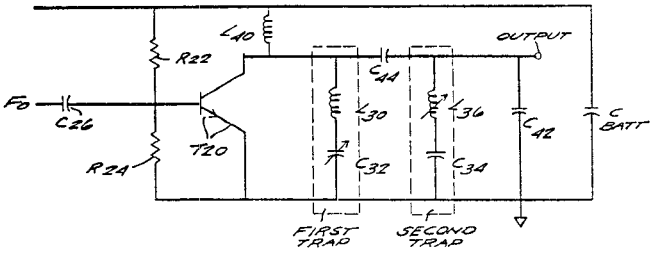
4,433,315 Feb. 21, 1984

Tunable Coupling Network

Inventor: Johannes J. Vandegraaf.
Assignee: General Electric Company.
Filed: Nov. 24, 1981.

Abstract—A tunable coupling network for a frequency multiplier stage providing a passband for a desired harmonic of a fundamental frequency and rejection notches for undesired harmonic frequencies. The passband of the network can be tuned by changing the value of at least one circuit element to track the desired harmonic of the fundamental frequency over a range of fundamental frequencies. In so doing, the rejection notches also move so that they maintain fixed ratios with respect to the passband frequency as the passband moves. In one embodiment the network comprises first and second tunable circuits each including a variable reactive element. The first resonant circuit includes a variable capacitor and two fixed inductors. The second resonant circuit includes a variable inductor and two fixed capacitors. The two resonant circuits are coupled by an interstage coupling capacitor.

6 Claims, 3 Drawing Figures



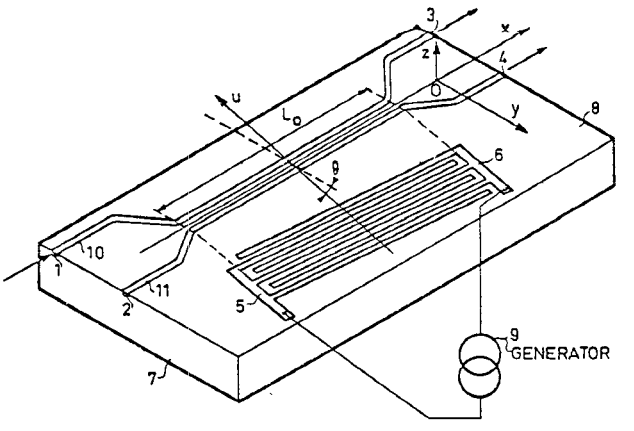
4,433,895 Feb. 28, 1984

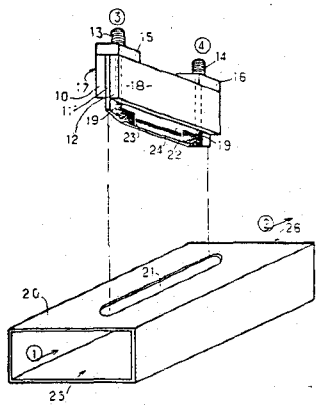
Integrated Optical Structure with Velocity Matched Directional Coupling

Inventors: Claude Puech, Michel Papuchon, and Hervé Arditty.
Assignee: Thomson-CSF.
Filed: Aug. 20, 1981.

Abstract—An integrated optical structure creating directional coupling between two waveguides in which an index disturbance accompanying the guide photons is caused to act on two closely spaced waveguides, this disturbance being produced by a progressive elastic wave with sloping wavefronts emitted by an electromechanical transducer

15 Claims, 11 Drawing Figures





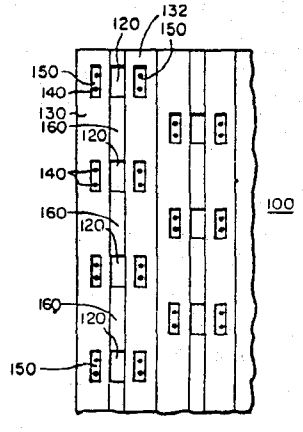
4,433,314 Feb. 21, 1984

Dielectric Waveguide Phase Shifter

Inventor: Jerome J. Green.
Assignee: Raytheon Company.
Filed: June 11, 1981.

Abstract—A nonreciprocal latching phase-shifter uses a slab of a high-dielectric constant material embedded in ferrite to substantially concentrate the electromagnetic energy within the dielectric slab, thus eliminating the need for a conductive waveguide, and to provide for a small amount of energy leakage into the adjacent ferrite whose state of magnetization can be varied, thus providing for a variable phase-shift. In one embodiment, parallel high-K dielectric strips are sandwiched between grooved ferrite sheets to provide a low-cost phase-shifter array.

28 Claims, 12 Drawing Figures



4,434,410 Feb. 28, 1984

Coaxial Resonator

Inventors: Hideyuki Miyake and Tosiaki Nakamura.
Assignee: Matsushita Electric Industrial Co., Ltd.
Filed: July 16, 1982.

Abstract—The disclosure is directed to an improved coaxial resonator such as a $\lambda/4$ coaxial resonator or the like to be used for an electrical filter or oscillator, etc. which operates, for example, in UHF ranges. The coaxial resonator includes a stator electrode provided on the resonator main body, a rotor of a dielectric material formed with a rotor electrode confronting the stator electrode and rotatably mounted on the resonator main body so as to vary capacity between the stator electrode and the rotor electrode through rotation of the rotor for alterations of the resonance frequency.

5 Claims, 14 Drawing Figures