Patent Abstracts

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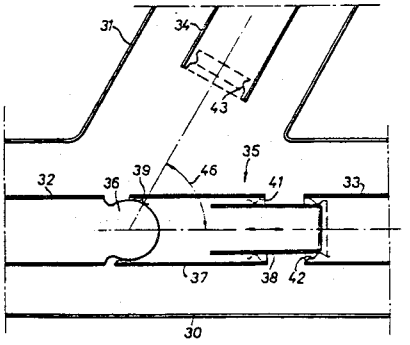
4,441,089 Apr. 3, 1984

Change-Over Switch for Coaxial Conductors

Inventor: Gianni Olgiati.
Assignee: BBC Brown, Boveri & Company, Limited.
Filed: July 2, 1981.

Abstract—The new change-over switch having a connecting element which is articulated to an inner conductor and which connects the connecting element selectively to one of two other conductors. The contacts between the connecting element and the one or the other inner conductors are designed as tulip-shaped contacts, thus permitting a hitherto unobtainable small loss factor and low reflection. During connecting-over, the switching element is pulled in the axial direction out of one tulip-shaped contact, pivoted and pushed into the other tulip-shaped contact. For this movement, the connecting element is designed as two-part telescopic tube. A crank is preferably used for pushing together, pivoting and re-extending the telescopic tube, as is necessary for switching-over.

5 Claims, 4 Drawing Figures



4,441,091 Apr. 3, 1984

Low-Loss Leakage Transmission Line

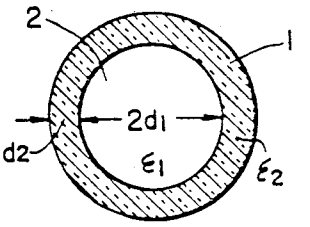
Inventors: Shigeo Nishida, and Mitsunobu Miyagi, Koichi Mikoshiba.
Assignee: Hitachi Cable Ltd.
Filed: July 22, 1982.

Abstract—A low loss leakage transmission line including a cylindrical dielectric tube the wall thickness d_2 of which is selected to satisfy

$$d_2 \cong \sqrt{\frac{\epsilon_1}{\epsilon_2 - \epsilon_1}} \cdot \frac{n\lambda_0}{4},$$

where ϵ_1 is the dielectric constant of the internal space within the tube, ϵ_2 is the dielectric constant of the material which forms the tube, and n is a postive odd integer. A loss layer may be disposed around the cylindrical dielectric tube to capture any lost wave energy. In one embodiment, a plurality of cylindrical dielectric tubes of different dielectric constants are coaxially arranged with the wall thickness of each of the tubes satisfying the above formula.

5 Claims, 3 Drawing Figures



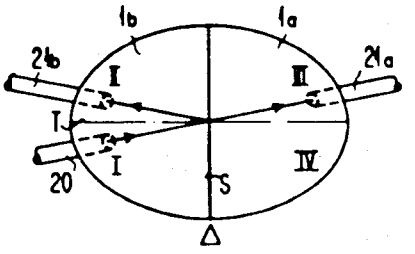
4,441,784 Apr. 10, 1984

Paraboloidal Coupler for Light Wave Guides

Inventor: Hans-Erdmann Korth.
Assignee: International Business Machines Corp.
Filed: Apr. 30, 1981.

Abstract—A self-focussing coupler for optical fibers includes a transparent body having the configuration of a paraboloid of revolution. One or more optical fibers are connected to the body at or near the point of focus. A flat face is formed at a normal to the axis of symmetry. A coupler assembly is formed by bringing the faces of two couplers together. Different optical components (beam splitting plates, bandpass filters, etc.) may be placed in an interface gap and bypass fibers may be added to alter the functions of the coupler assembly.

10 Claims, 8 Drawing Figures



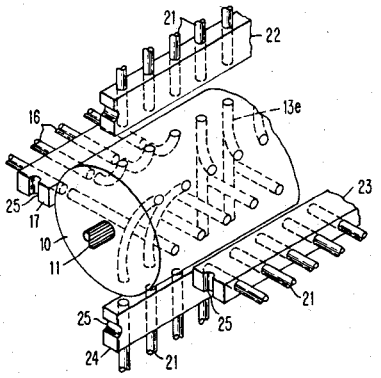
4,441,785 Apr. 10, 1984

Rotary Fiber Optic Switch

Inventor: James R. Petrozello.
Assignee: International Business Machines Corporation.
Filed: Oct. 29, 1981.

Abstract—Electronic signals which are converted to light signals by means of a light emitting diode or laser diode are channeled through a fiber optic group and enter a rotary fiber optic switch. A rotatable drum channels and distributes the light signals to intended output locations by means of light conductive elements in the drum. Selecting the desired position of the drum by means of a detent switch or by mechanically rotating the drum by a light actuated mechanism determines the channel orientation of the device. The output signals emerge from the light conductive elements in the drum and are transmitted through output fiber optic groups to a photo diode or photo transistor where they are converted into electronic signals for normal electronic I/O processing.

3 Claims, 6 Drawing Figures



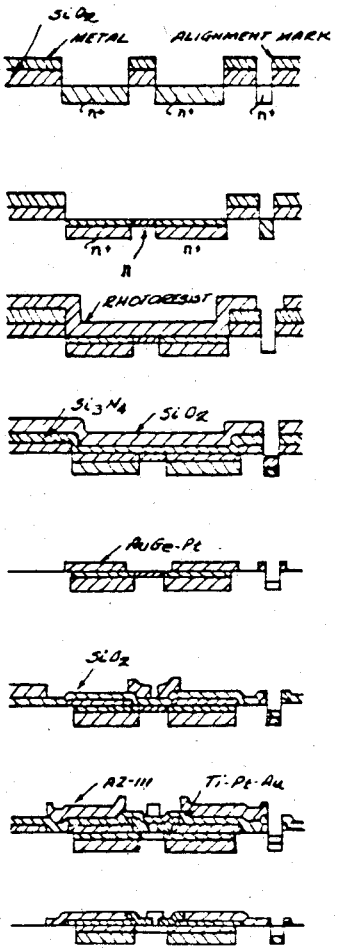
4,442,590 Apr. 17, 1984

Monolithic Microwave Integrated Circuit with Integral Array Antenna

Inventors: Ronald J. Stockton and Robert E. Munson.
Assignee: Ball Corporation.
Filed: June 22, 1982.

Abstract—A monolithic microwave integrated circuit including an integral array antenna. The system includes radiating elements, feed network, phasing network, active and/or passive semiconductor devices, digital logic interface circuits and a microcomputer controller simultaneously incorporated on a single substrate by means of a controlled fabrication process sequence.

1 Claim, 13 Drawing Figures



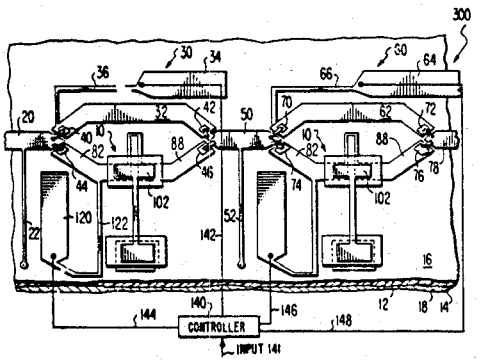
4,443,772 Apr. 17, 1984

Switching Microwave Integrated Bridge T Group-Delay Equalizer

Inventor: Alfred Schwarzmann.
Assignee: RCA Corporation.
Filed: Dec. 10, 1981.

Abstract—A microwave group delay equalizer in microstrip form comprises a dielectric substrate having a ground plane on one surface and on the other surface two conductive strips oriented end to end and spaced apart by a narrow gap and connected together by a relatively narrow inductive conductive strip of substantially greater length than the gap between the first two strips. A dielectric layer overlies the adjacent ends of the first two conductor strips. A fourth conductor strip is disposed over the dielectric layer to provide capacitive coupling between the first and second conductors. The fourth conductor is connected to a grounded capacitor by a fifth relatively narrow inductive conductive strip.

7 Claims, 6 Drawing Figures



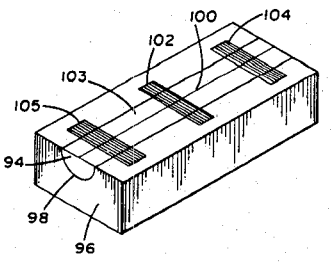
4,444,460 Apr. 24, 1984

Optical Fiber Apparatus Including Substrate Ruggedized Optical Fibers

Inventor: David W. Stowe.
Assignee: Gould Inc.,
Filed: May 26, 1981.

Abstract—Optical devices having one or more rigidly supported optical fibers and a method of making thereof are provided in which one or more optical fibers are interfaced with a rigid support material by molecular restructuring of interfacing surface areas of the fibers and the support material. The rigidly supported optical fiber may be fabricated by assembling a longitudinal outer surface portion of the fiber in juxtaposition with a rigid support material having a lower melting point than the fiber. This assembly may be heated to allow partial softening of the support material along the outer surface of the fiber to allow fusing therebetween. The assembly may then be cooled below the melting point of the support material to provide a ruggedized fiber-optic assembly comprising an optical fiber fused to a rigid support material. Various optical devices may be formed from combinations of such rigidly supported optical fibers.

16 Claims, 21 Drawing Figures



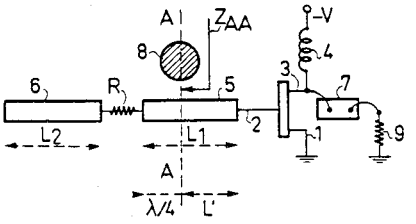
4,445,097 Apr. 24, 1984

Microstrip Transistor Oscillator with Dielectric Resonator Stabilization

Inventors: Jean-Jacques Godart and Bernard Le Clerc.
Assignee: Thomson-CSF.
Filed: Sept. 14, 1981.

Abstract—A device using a dielectric resonator with a very low temperature coefficient in a very high frequency transistor oscillator (3 to 10 GHz) so as to benefit both from the very high power available and the maximum frequency stabilization due to the resonator. In the case of a FET, the gate is connected to one end of a line coupled to a dielectric resonator at a point along the line situated at a quarter wavelength from the other end of the line, which in turn is connected through a discrete resistor to a half wavelength open circuit line. Thus, the oscillation is damped when the frequency varies from the resonant frequency of the resonator.

6 Claims, 4 Drawing Figures



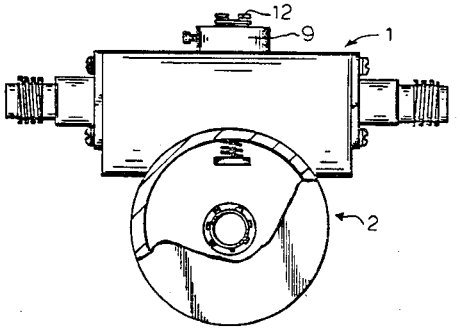
4,445,100 Apr. 24, 1984

Coupling Block Assembly with Band-Reject Filter

Inventor: Frank Decker.
Assignee: Electronics, Missiles & Communications, Inc.
Filed: Jan. 28, 1982.

Abstract—A band-reject filter comprises a resonator with an adjustable resonator rod which is mounted in proximity to a co-axial assembly. The coupling rod passes thru the inner conductor of the co-axial assembly and extends into the resonator. At the end of the rod inside the resonator there is a coupling disc. Means are provided to adjust the distance between the resonator rod and the disc. The frequency rejected by the filter can be adjusted by either adjusting the length of the resonator rod or by adjusting the distance between the disc and the resonator rod.

3 Claims, 5 Drawing Figures



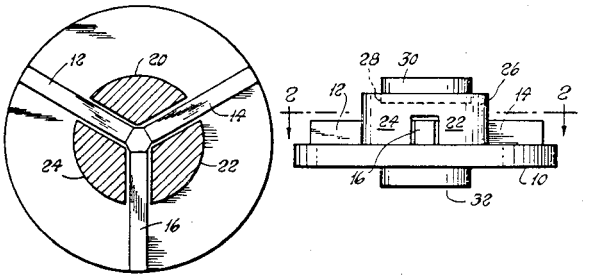
4,446,448 May 1, 1984

Biasing Magnet Holder-Tuning Cap for Dielectric Waveguide Circulator

Inventor: Richard A. Stern.
Assignee: The United States of America as represented, by the Secretary of the Army.
Filed: Aug. 13, 1982.

Abstract—A Y-junction dielectric waveguide circulator is provided with a dielectric support plate. At the vertex of adjacent dielectric waveguides are positioned metal tuning legs. These tuning legs are spaced from the waveguides and extend higher than them. Preferably the tuning legs are made integral with a cap positioned above the circulator junction. This cap also serves as a holder for the upper biasing magnet. The lower magnet is centered under the junction and bonded to the bottom of the support plate.

8 Claims, 5 Drawing Figures



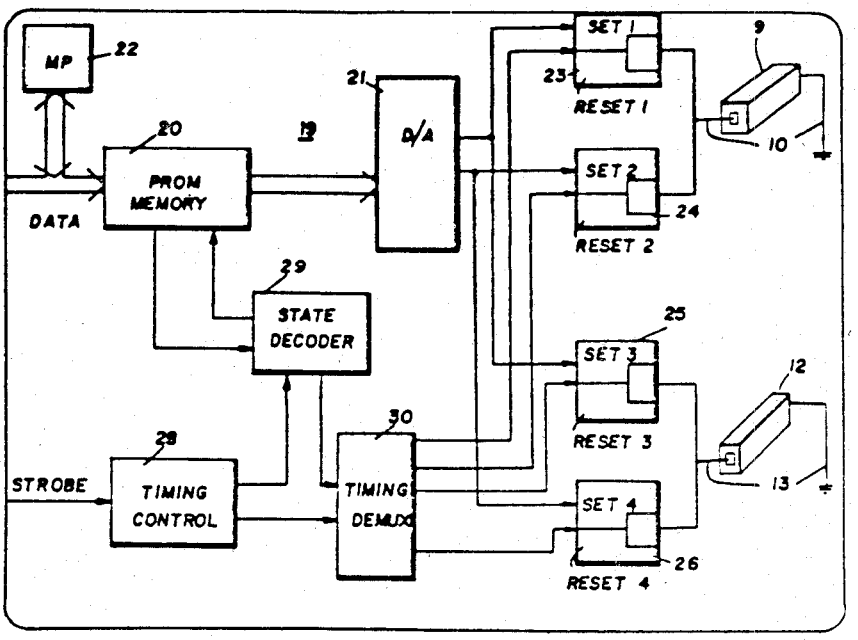
4,445,098 Apr. 24, 1984

Method and Apparatus for Fast-Switching Dual-Toroid Microwave Phase Shifter

Inventors: Thomas E. Sharon and Roger G. Roberts.
Assignee: Electromagnetic Sciences, Inc.
Filed: Feb. 19, 1982.

Abstract—The present invention is for an apparatus and method of fast-switching a dual-toroid microwave ferrite phase shifter. A first circuit is provided for controllably switching the ferrite in one of the toroids between a saturated partially saturated states. A second conduit is provided for controllably switching the ferrite in the other of the toroids between a saturated and partially saturated states. A control circuit is provided for controlling the first and second circuits such that the ferrite in at least one of the toroids is maintained in the saturated state at any given time such that any desired phase shift may be achieved with only one switching operation for each toroid. The present invention provides new reference states such that there are two reciprocal phase states for any given phase state such that a reciprocal phase state may always be achieved with only one switching operation for each toroid.

79 Claims, 56 Drawing Figures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22
20
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DATA
19
21
D/A
SET 1
23
RESET 1
9
10
SET 2
24
RESET 2
29
STATE DECODER
25
SET 3
RESET 3
12
30
28
STROBE
TIMING CONTROL
TIMING DEMUX
SET 4
26
RESET 4
13