Patent Abstracts

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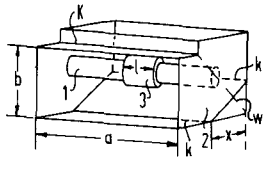
4,272,744 Jun. 9, 1981

Rectangular Waveguide Elbow Bent Across the Broad Side of the Waveguide with Corner Flattening and a Transverse Bar

Inventor: Eberhard Schuegraf.
Assignee: Siemens Aktiengesellschaft.
Filed: Jan. 18, 1980.

Abstract—A rectangular waveguide elbow (E-elbow) bent across the broad side of the waveguide with an outer corner symmetrically flattened by conductive flattening or smoothing plane which provides for elimination of undesirable reflections by providing a cross cylindrical bar at the median between the inner corner and the center of the flattening or smoothing plane and wherein the cylindrical bar has an enlarged portion at its center which extends a portion length of the bar. A second embodiment provides a bar which does not have an enlarged portion but wherein the diameter of the bar ratio to the length of the shorter side of the waveguide is at least 0.258.

3 Claims, 5 Drawing Figures



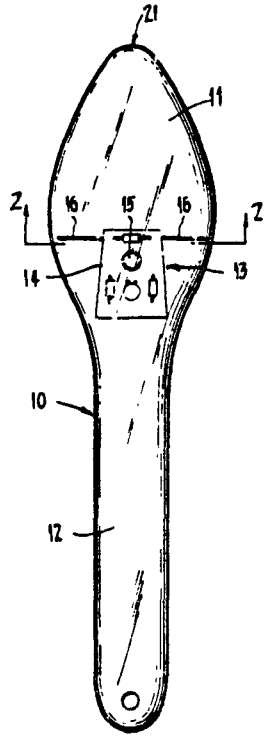
4,272,765 Jun. 9, 1981

Microwave Leakage Detectors

Inventor: Geoffrey T. White.
Filed: Apr. 25, 1979.

Abstract—This invention relates to a microwave leakage detector of the kind suitable for use in a domestic environment for testing leakage from appliances such as microwave ovens by moving the detector along joins or seals of the appliance. The circuitry of the detector is generally known per se. In order to facilitate testing of the detector in the domestic environment the circuitry and associated dipoles are fully encased in a solid block of material in a container having a head portion for accommodating the circuitry and a handle for convenience in use. The container is a clear plastics material enabling a visual warning device associated with said circuitry to be viewed externally and the container has a specific gravity greater than that of water whereby said device is adapted to sink when placed in water Thus testing of the detector may be readily effected by placing it in a container of water within an oven such that the warning device may be viewed externally of the oven. The water absorbs high levels of radiation which would otherwise destroy the circuitry. By moulding the dipoles integrally in a solid block their resonant frequency is altered and thus the length of the dipoles and consequently the size of the detector is reduced. A method of constructing a detector is also claimed.

7 Claims, 5 Drawing Figures



4,270,107 May 26, 1981

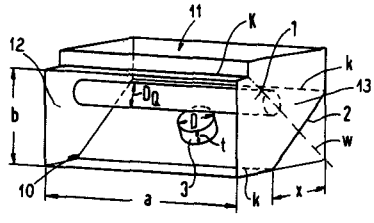
Rectangular Waveguide Elbow Formed with a Truncated Corner and having Pipes Formed Therein

Inventor: Eberhard Schuegraf.
Assignee. Siemens Aktiengesellschaft.
Filed: Sep. 24, 1979.

Abstract—A rectangular waveguide elbow formed with a truncated beveled corner on its outer edge and formed with a conductive cross bar which extends between the narrow walls of the waveguide and which is positioned midway between the inner corner of the waveguide elbow and the center of the truncated wall and further including an extending electrically conducting

cylinder mounted on the interior surface of the truncated wall with its center on the diagonal of the truncated wall. The diameters of the conductive cross member and of the conductive metal cylinder are chosen so as to minimize the reflection factor and thus to reduce the reflection factor over a relatively broad band.

3 Claims, 4 Drawing Figures



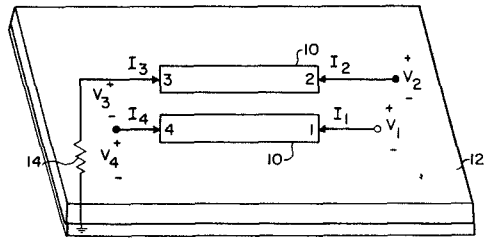
4,275,364 Jun. 23, 1981

Resonant Element Transformer

Inventor: Arthur R. Skatvold, Jr.
Assignee: The United States of America as represented by the Secretary of the Navy.
Filed: Sep. 24, 1979.

Abstract—An impedance matching device is created for transforming electrical impedances. The device has more stability at low impedances. A pair of coplanar coupled transmission line conductors are placed on a dielectric substrate so as to form a four port impedance device. The electrical parameters of the device, such as electrical length and even and odd mode impedance, are selected from design parameters determined by evaluating a determinant matched to a complex load impedance Z_r. A specific example of matching a standard 50 ohm transmission line to an IMPATT diode is disclosed.

8 Claims, 4 Drawing Figures



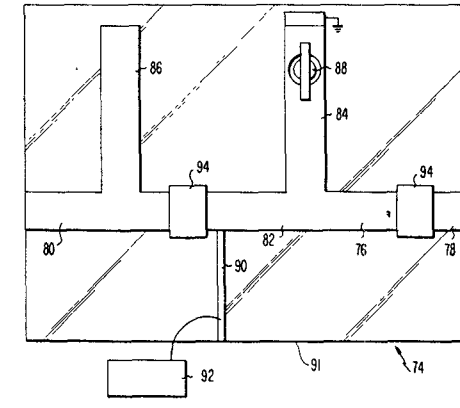
4,275,366 Jun. 23, 1981

Phase Shifter

Inventor: Alfred Schwarzmann.
Assignee: RCA Corporation.
Filed: Aug. 22, 1979.

Abstract—A phase shifter comprises a transmission line having a second terminated transmission line extending therefrom. A single diode is coupled across the second transmission line. The diode is switched between two operating states which changes the effective electrical length of the second transmission line and introduces a phase shift to a signal propagating in the first transmission line.

8 Claims, 8 Drawing Figures



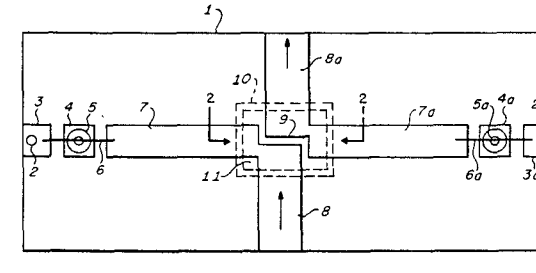
4,275,367 Jun. 23, 1981

Digital Diode Phase Shifter Elements

Inventors: Stanley Gaglione; Gerard L. Hanley.
Assignee: Sperry Corporation
Filed: Feb. 13, 1980.

Abstract—A high frequency diode digital phase shifter element of the transmission line type has a capacitor coupled serially in a primary transmission line conductor. Two shunt switchable elements are coupled by the series capacitor. The switchable element includes short-circuitable lengths of transmission line whose effective electrical lengths can be varied by simultaneously changing the biased state of shunt mounted PIN diodes.

14 Claims, 9 Drawing Figures



4,275,369 Jun. 23, 1981

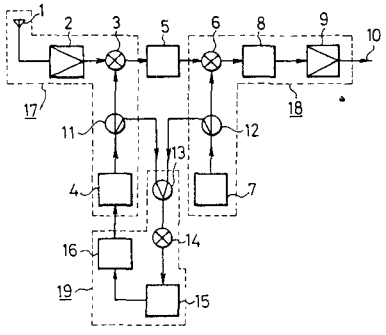
Filter for Microwaves

Inventor: Mitsuo Sekiguchi.
Assignee: Alps Electric Co.
Filed: Jul. 27, 1979.

Abstract—A filter for microwaves includes a plurality of resonator cavities each having a housing formed unitarily with a respective resonance rod. The neighboring resonator cavities are coupled together by means of a coupling

window formed in the wall separating the cavities and a coupling loop, and a hole communicating with the coupling window is formed in the bottom plate of the filter.

4 Claims, 6 Drawing Figures



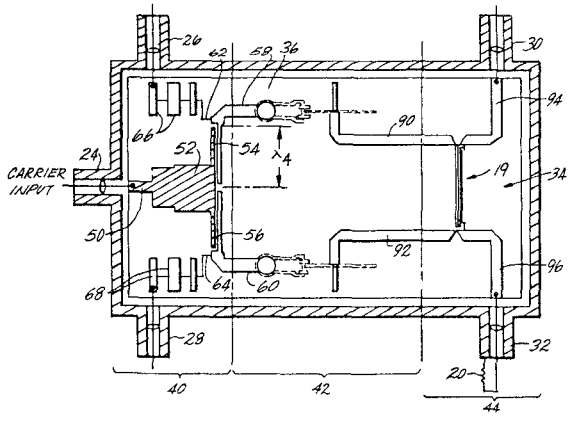
4,276,521 Jun. 30, 1981

Quadriphase Integrated High-Speed Microwave Modulator

Inventor: Roger A. Davidheiser.
Assignee: TRW Inc.
Filed: Dec. 18, 1978.

Abstract—A quadriphase modulator, designed in a planar metal geometry for operation in the microwave frequency range, uses Schottky barrier diodes as the switching elements, and is capable of operating at bit data rates up to 15 percent of the carrier frequency. The microwave circuit employs a microstrip power splitter that couples the carrier signal to two biphase modulators while providing dc isolation. Each biphase modulator includes coplanar-to-slot transmission line transition, with a pair of diodes controlling the phase shift across the transition. The diodes are connected in reverse polarity and the bias for switching the diodes is controlled by the modulating signal The slot lines from the two biphase modulators are coupled through a microstrip transition and through a Lange 90° hybrid to the output load.

4 Claims, 5 Drawing Figures



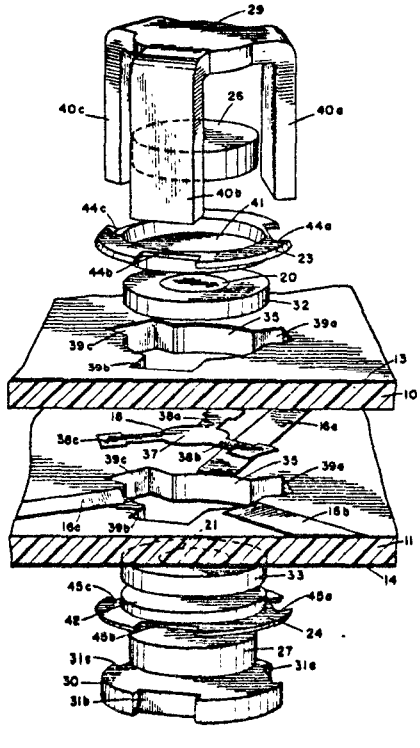
4,276,522 Jun. 30, 1981

Circulator in a Stripline Microwave Transmission Line Circuit

Inventor: Leo E. Coerver.
Assignee: General Dynamics.
Filed: Dec. 17, 1979.

Abstract—A circulator in a stripline microwave transmission line circuit that is disposed in a pattern of printed circuit conductors between a pair of facing dielectric material circuit boards having conductive ground planes on their exposed broad faces. The circulator includes three printed circuit center conductors disposed between the two boards in a symmetrical array extending radially from circular hole aligned through the two boards; a conductive foil having a central portion concentrically disposed within the perimeter of the hole and three radially projecting arms arranged in contact with the radially extending center conductors; a pair of pucks of ferrite material of a predetermined size selected to provide circulation of microwave signals of a predetermined wavelength concentrically disposed in the hole on opposite sides of the conductive foil; a pair of conductive covers in contact with the ground plane conductors and extending to completely enclose the ferrite pucks within the hole; a pair of magnets disposed on opposite sides of the boards in axial alignment with the ferrite pucks for providing a magnetic field through and normal to the central portion of the conductive foil; magnetically permeable material contacting the magnet and concentrically disposed for providing a closed magnetic loop for shielding the circulator; and a pair of high dielectric material rings disposed in the holes for radially enclosing the pucks and making contact with both the pucks and the surfaces of the board defining the holes, wherein the radial thickness of each ring is one-quarter of the predetermined wavelength for impedance matching the circulator to each of the transmission lines defined by the center conductors and the ground planes. The conductive covers are dished to have respective central portions that are recessed below the ground planes to broadly contact the ferrite pucks and maintain the ferrite pucks in contact with the conductive foil.

9 Claims, 3 Drawing Figures



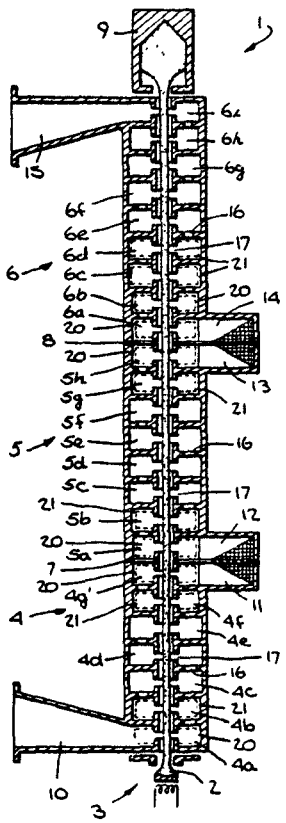
4,258,286 Mar. 24, 1981

Coupled Cavity Type Traveling Wave Tube

Inventor: Takao Kageyama.
Assignee: Nippon Electric Co., Ltd.
Filed: Jul. 13, 1979.

Abstract—A coupled cavity type traveling wave tube wherein selected matching and main cavities in the tube are provided with a layer of high resistance metal to minimize generation of reflected waves and thereby to achieve stable operation with high efficiency.

4 Claims, 3 Drawing Figures



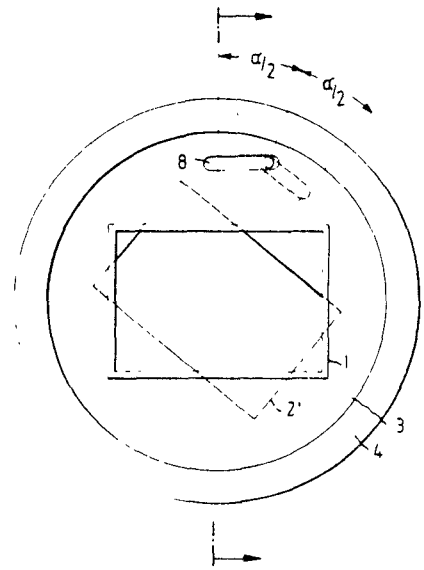
4,260,961 Apr. 7, 1981

Compensator for Two Angularly Offset Joined Wave Guides

Inventor: Konstantinos Beis.
Assignee: Licentia Patent-Verwaltungs-G.m.b.H.
Filed: Dec. 17, 1978.

Abstract—A compensating arrangement for two aligned, angularly relatively offset, end-to-end positioned wave guides of identical cross section. The compensating arrangement has a plate member inserted between face-to-face arranged terminal flanges of the two wave guides. The plate member has an aperture corresponding to the cross-sectional area of the passage defined together by the two wave guides; and two oppositely located capacitive loads extending into the aperture and being symmetrically located with respect to the bisector of the angle defined by the minor transverse axes of the wave guides. The capacitive loads are reactance members for a broad-band compensation for the discontinuity between the angularly offset wave guides.

8 Claims, 6 Drawing Figures



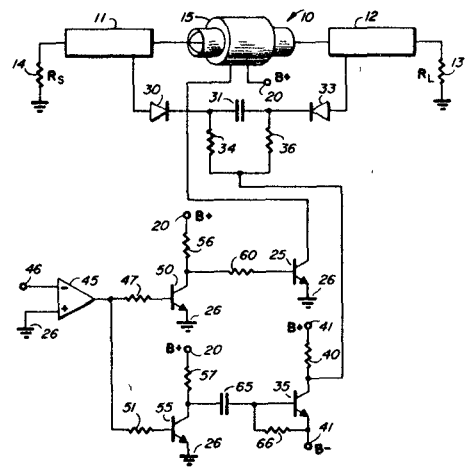
4,249,150 Feb. 3, 1981

High Power RF Relay Switch

Inventors: Robert H. Bickley; James E. Olivenbaum.
Assignee: Motorola Inc.
Filed: Apr. 30, 1979.

Abstract—A reed relay having p-i-n diodes connected in parallel therewith and forward biased for conduction when the reed relay is actuated, said p-i-n diodes being reversed biased once the reed relay closes so that they are removed from the circuits.

5 Claims, 5 Drawing Figures



4,270,224 May 26, 1981

Microwave Down Converter

Inventors: Jacques Blondel; Jean-René Mahieu.
Assignee: Thomson-CSF.
Filed: Feb. 28, 1980.

Abstract—The converter consists of a waveguide through which passes at right-angles a dielectric wafer for a microstrip. On each side of the waveguide this strip forms a microstrip line section. In the waveguide two chip diodes in series connecting the middles of the large walls of the guide have their common point connected to the strip.

3 Claims, 10 Drawing Figures