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.

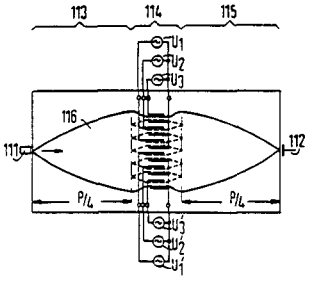
4,418,980 Dec. 6, 1983

Planar Waveguide Lens, Its Utilization, and Method for Its Manufacture

Inventors: Rudolf Keil, Franz Auracher, and Michael Stockmann.
Assignee: Siemens Aktiengesellschaft.
Filed: June 2, 1981.

Abstract—A planar waveguide lens is characterized in that the same is a gradient lens, whereby the refractive index profile transversely to the lens axis extends approximately parabolically. The lens may be constructed to be multi-mode or may be constructed to be single-mode in the spatial direction perpendicular to the lens axis and perpendicular to the axis in which the indicated change of the refractive index profile extends. Grid structures are provided for dividing the light. The grid structures may be permanent, electro-optically produced or acousto-optically produced. For single mode fibers, the grid structures are produced by acoustic surface waves, while for multi-mode fibers, the grid structures are produced by way of acoustical volume waves.

17 Claims, 13 Drawing Figures



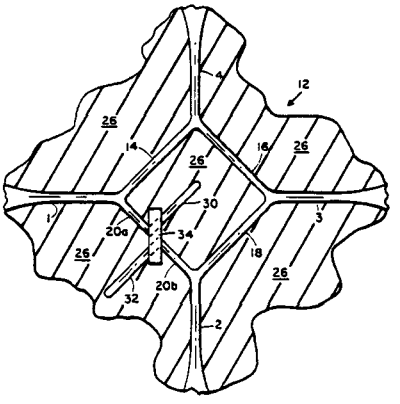
4,419,635 Dec. 6, 1983

Slotline Reverse-Phased Hybrid Ring Coupler

Inventor: John Reindel.
Assignee: The United States of American as represented by the Secretary of the Navy.
Filed: Sept. 24, 1981.

Abstract—A slotline directional coupler is disclosed that introduces a 180° phase reversal in one of the arms of the coupler in order to isolate opposite ports of the coupler. One of the arms of the coupler is split and a quarter wave shorted slotline is added to each portion of the split coupler arm. The split coupler arm is bridged by a short conductive strap that, in a first embodiment, is grounded on both ends to the slotline ground plane or in a second embodiment, is extended to appear as though grounded. In the first embodiment, the conductive strap is separated from the ground plane by air. In the second embodiment the dielectric substrate of the coupler separates the strap from the ground plane. The conductive strap serves as a slotline-to-microstrip-to-slotline transition which introduces a 180° phase shift in a signal propagating through it.

11 Claims, 6 Drawing Figures



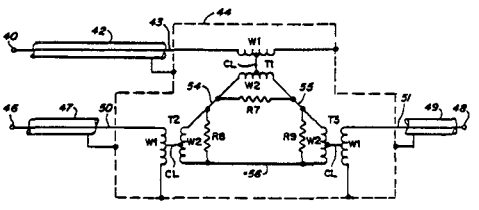
4,419,636 Dec. 6, 1983

Low-Frequency Wide-Band Signal Coupler

Inventor: Hong Yu.
Filed: Oct. 22, 1981.

Abstract—One circuit is a low frequency, wide band multi-directional tap that exhibits good match characteristics with low through loss. The circuit has input and output terminals conductively interconnected, a tap output terminal, an inductive winding having n_1/n_2 series turns and a series resistor coupling from the tap on the inductive winding to the tap output terminal. The other circuit is a low frequency, wide band multi-directional signal splitter that also exhibits good match characteristics with low through loss. The circuit has an input terminal and two output terminals interconnected by three core transformers each having an isolation resistor associated therewith.

6 Claims, 6 Drawing Figures



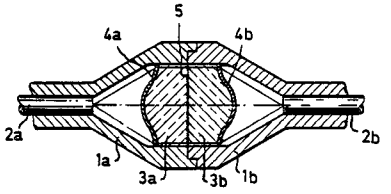
4,420,219 Dec. 13, 1983

Optical Waveguide Connector Using Aspheric Lenses

Inventor: Franz Muchel.
Assignee: Carl-Zeiss-Stiftung.
Filed: Mar. 17, 1981.

Abstract—A device for connecting first and second light guides to an external part. Each of the light guides extend into a housing which includes a converging aspheric plano-convex lens. The lenses are mounted so that the focal point of the lens is located at the end surface of the light guide and the aspheric surface of the lens faces the light guide. The planar surface of the lens forms a coupling surface to support immersion fluid for connection to the external part.

13 Claims, 9 Drawing Figures



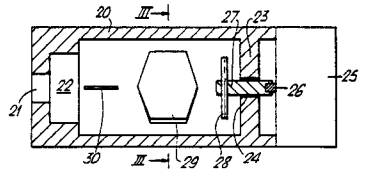
4,420,729 Dec. 13, 1983

Microwave Phase-Shifting Apparatus

Inventor: John V. Ashforth.
Assignee: Ferranti plc.
Filed: Apr. 9, 1981.

Abstract—Microwave phase-shifting apparatus includes a section (20) of waveguide of circular cross-section having a closed end (23) and an open end. A fixed phase-shifting member (20) is located within the section to convert plane-polarized incident energy to circular polarization. A rotatable shaft (27) of dielectric material projects through the end wall of the section along the longitudinal axis, and carries a rotatable element (28). This element is of such a form and in such a position that linearly-polarized microwave energy entering the waveguide section is reflected out of the section with a reflection coefficient having a phase angle component which may be continuously adjusted over a range of 360° by rotation of the shaft, in either direction.

7 Claims, 4 Drawing Figures



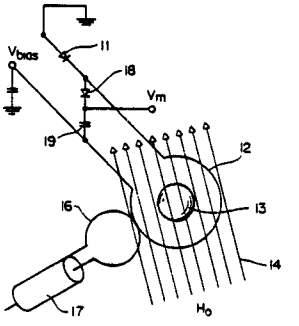
4,420,731 Dec. 13, 1983

Controlled Voltage Yttrium Iron Garnet (YIG) Resonator Apparatus

Inventors: Cristopher F. Schiebold and William R. Green.
Assignee: Watkins-Johnson Company.
Filed: Aug. 10, 1981

Abstract—A controlled voltage yttrium iron garnet (YIG) resonator incorporates a clipping diode in order to maintain a constant output voltage. The clipping diode is connected either across an input or an output loop associated with the resonator. The resonator, as a result of its high Q characteristic, is insensitive to changes in capacitance of the clipping diode.

4 Claims, 7 Drawing Figures



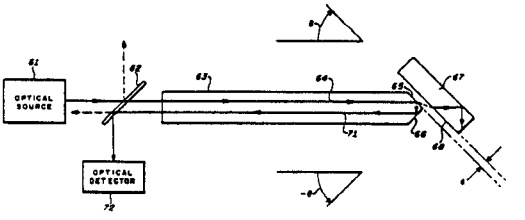
4,421,384 Dec. 20, 1983

Fiber-Optic Transducer

Inventor: Donald H. McMahon.
Assignee: Sperry Corporation.
Filed: July 27, 1981.

Abstract—A fiber optic transducer is provided by cutting and polishing the ends of two optical fibers, having equal indexes of refraction, at angles with respect to their axis such that all light signals propagating within the optical fibers are incident to the end face at angles that are greater than the critical angle defined for an interface between a medium with an index of refraction equal to the index of fraction equal to that of an inverening medium between the two fibers. The two end faces so cut are positioned to be in a parallel relationship, a distance part that is less than the wavelength of the light propagating within the input fibers. Variations of this distance with the pressure changes caused by the acoustic environment produces variations in the optical signal energy coupled from the input optical fiber to the output optical fiber, thus creating an amplitude modulated light beam that propagates in the output optical fiber.

7 Claims, 4 Drawing Figures



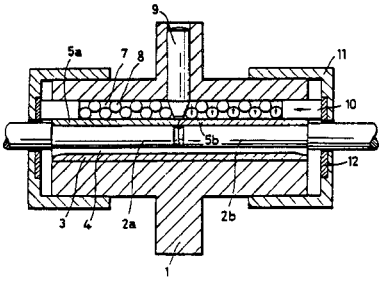
4,422,717 Dec. 27, 1983

Coupling Arrangement for Optical Waveguides

Inventor: Bernhard Schmidt.
Assignee: Felten & Guilleaume Carlswerk Aktiengesellschaft.
Filed: July 6, 1981.

Abstract—An arrangement for coupling optical fiber ends mounted in respective connectors includes an elongated hollow housing, a first clamping member of a prismatic configuration extending over the entire length of the housing and having a longitudinally extending V-shaped groove for partially receiving the connectors, and a pair of second clamping members each overlying one of the connectors in registry with the V-shaped groove of the first clamping member. A plurality of pressing bodies, subdivided by a separating pin in two groups, is received in a longitudinally extending recess of the housing in juxtaposition with the second clamping members. A force exerted by an end cap threadedly mounted at the respective end of the housing is transmitted by the pressing bodies to the respective second clamping members to press the same into clamping engagement with the respective optical fiber connectors received in the V-shaped groove of the first clamping member.

7 Claims, 2 Drawing Figures



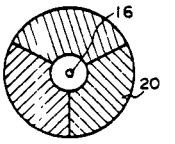
4,422,718 Dec. 27, 1983

Submarine Optical Fiber Cable

Inventors: Yukio Nakagome, Kitsutaro Amano, Taiichiro Nakai, Yasuhiko Niiro, Yoshihiro Ejiri, Hitoshi Yamamoto, and Yoshihiko Yamazaki.
Assignee: Kokusai Denshin Denwa Kabushiki Kaisha.
Filed: Nov. 3, 1981.

Abstract—A submarine optical fiber cable using a low-loss optical fiber as a transmission medium, which is provided with a cylindrical pressure resisting layer composed of an assembly of three equally divided long pressure resisting segments of fan-shaped sections with flat contact planes and having at least one optical fiber in an optical fiber housing space formed in the center of the assembly so as to protect the optical fiber from a high water pressure.

8 Claims, 27 Drawing Figures



4,423,396 Dec. 27, 1983

Bandpass Filter for UHF Band

Inventors: Mitsuo Makimoto and Sadahiko Yamashita.
Assignee: Matsushita Electric IndustrialCompany, Limited.
Filed: Sept. 29, 1981.

Abstract—In a bandpass filter having five or more resonator stages, a sub transmission line is coupled to the main transmission line at the first and four resonators. The first to four resonators provide peak attenuation points at both sides of the center frequency in the attenuation curve, while the remaining resonators following the fourth resonator further sharpen the attenuation characteristics of the bandpass filter. The main and sub transmission lines may be formed by striplines on a printed circuit board, while the sub transmission line can be capacity coupled to the main transmission line. Coupling capacitances are freely set by setting the length of each gap between adjacent striplines to a desired value. Thus, the peak attenuation points can be accurately controlled to provide a bandpass filter having superior characteristics.

9 Claims, 10 Drawing Figures