



IP SERVICES

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(FP/Tapanes)



Title

Pub. Date Int. Class 20.07.2006 G08B 13/186 PCT/AU2005/001899

App. Num

**Applicant** 

**FUTURE FIBRE** TECHNOLOGIES PTY LTD

1. (WO 2006/074502) APPARATUS AND METHOD FOR USING A **COUNTER-PROPAGATING** SIGNAL METHOD FOR LOCATING **EVENTS** 

An apparatus and method for using a counter-propagating signal method for locating events is disclosed. The apparatus and method uses a Mach Zehnder interferometer through which counter-propagating signals can be launched. If the sensing zone of the Mach Zehnder interferometer is disturbed, modified counter-propagating signals are produced and the time difference between receipt of those signals is used to determine the location of the event. Polarisation controllers (43, 44) receive feedback signals so that the polarisation states of the counter-propagating signals can be controlled to match the amplitude and/or phase of the signals. Detectors are provided for detecting the modified signals.

2. (WO 2002/071356) PERIMETER SECURITY SYSTEM AND PERIMETER MONITORING **METHOD** 

12.09.2002 G08B 13/186 PCT/AU2002/000007

**FUTURE FIBRE** TECHNOLOGIES PTY LTD

A perimeter security system is disclosed which includes a first cable (40) and a second cable (60) buried beneath the ground in a zig-zag pattern. The first cable (40) has a first fibre (44) and a further fibre (42). Second cable (60) has a second fibre (62). The first and second fibres (44) and (62) are connected by a coupler (52) at one end so that light can be launched into the first and second fibres (44) and (62) to propagate in one direction. The further fibre (42) is connected to a coupler (70) which also connects to the other end of the first and second fibres (44) and (62) so light can be launched into the fibres from the other end and travel in the opposite direction. Detectors (80) and (82) are provided for detecting an interfere...

3. (WO 2002/067467) OPTIC **COMMUNICATION SYSTEM** 

29.08.2002 H04B 10/17 PCT/AU2001/001575 FUTURE FIBRE

TECHNOLOGIES PTY LTD

A communication device is disclosed which includes a first communication waveguide (10) and a second communication waveguide (40). A transmitter (16) launches signals into the first waveguide (10) and a detector D1 detects signals in the first waveguide (10). A second transmitter (42) launches signals into the waveguide (40) and a second detector D2 detects signals from the waveguide (40). Counter-propagating optical signals are launched into the first and second waveguides by transmitters (12) and (41) so that a first counter-propagating signal travels through the first and second waveguides in a first direction and a second counter-propagating signal travels through the first and second waveguides in a second direction. Amplifier assembli...

(WO 2001/039148) A METHOD OF 31.05.2001 G08B 13/12 PCT/AU2000/001332 FUTURE FIBRE PERIMETER BARRIER **MONITORING AND SYSTEMS** FORMED FOR THAT PURPOSE

TECHNOLOGIES PTY LTD

A perimeter barrier system and method of monitoring a perimeter barrier are disclosed which comprise a perimeter barrier element in the form of a picket (52) or fence panel (50) which is mounted for limited movement by spring loading the barrier element by means of springs (422). An optical fibre (10), (118), is coupled to the barrier elements so that upon an attempt to breach the perimeter barrier system the barrier element is moved to in turn cause movement of the waveguide. A light source (122) and detector (124) is provided for launching light into the fibre (10), (118), and for detecting light which is passed through the fibre so that when the fibre is moved a parameter of the light is changed and that change in parameter is detected b...

## 5. (WO 2001/027569) VEHICLE WEIGH-IN-MOTION METHOD AND **SYSTEM**

19.04.2001 G01G 3/12

PCT/AU2000/001053 FUTURE FIBRE

TECHNOLOGIES PTY LTD

A method and a system of weighing a vehicle in motion which includes a load sensing device (particularly in the forms of an optic fibre cable or strain gauges) located beneath the surface of a roadway and extending across at least one lane and processing means (86) for receiving a signal from the load sensing device and for providing an indication of the vehicle weight. The load sensing device may be located on an extruded substrate member (2) that is located inside a hollow conduit. A plurality of runs of optic fibre may run across a single lane; additionally, an axle detector in the form of a piezoelectric strip or an optic fibre cable may be included in parallel. An optic fibre system may include a light source (60), a sensing fibre (10)...

## 6. (WO 2000/067400) INTRINSIC SECURING OF FIBRE OPTIC **COMMUNICATION LINKS**

09.11.2000 G01M 5/00

PCT/AU2000/000382 FUTURE FIBRE

TECHNOLOGIES PTY. LTD.

An optical waveguide system for securing live fibres against tampering and tapping off of data in optical fibre communication links is disclosed. The communication link includes a waveguide (1000) which extends from one location to another for transmitting a data signal. A data transmitter (20) launches the data signal into the fibre (1000) and a data receiver (22) receives the data signal. A sensing signal transmitter (40) launches a sensing signal into the fibre (1000) and a sensing signal receiver (42) receives the sensing signal for the fibre (1000). The transmitters (20 and 40) are coupled to the fibre (1000) by wavelengths multiplexing/demultiplexing coupler (30) via input arms (76 and 66) of the coupler (30). The signals are transfer...

7. (WO 2000/037925) APPARATUS AND METHOD FOR MONITORING A STRUCTURE USING A COUNTER-PROPAGATING SIGNAL METHOD FOR LOCATING **EVENTS** 

29.06.2000 G01M 5/00 PCT/AU1999/001028 FUTURE FIBRE

**TECHNOLOGIES PTY LTD** 

An apparatus and method for monitoring a structure such as machines, buildings, fibre optic communication links and infra-structure is disclosed which includes a waveguide (10) and a light source (20) for launching light into both ends of the waveguide (10) so that counter-propagating light signals are produced in the waveguide (10). The waveguide (10) is in the form of an optical fibre or fibre bundle formed from silica and in which the characteristic of the light is modified or effected by an external parameter caused by an event. A detector (30) is provided for detecting light form both ends of the waveguide (10) and for determining the time delay or difference between the modified signals which have been effected by the parameter in ord...

8. (WO 1998/037442) A METHOD OF 27.08.1998 G02B 6/34 PROVIDING IN-SITU CHIRPED **GRATINGS IN WAVEGUIDES AND WAVEGUIDES MADE BY THAT METHOD** 

PCT/AU1998/000081 VICTORIA UNIVERSITY OF **TECHNOLOGY** 

A new method for the production of chirped gratings in a photosensitive optical waveguiding medium (11) is described which utilises a bulk optic prism (20) and superimposed divergent or convergent actinic radiation beams (12, 13). A chirped interference pattern is generated on or in the vicinity of one face (23) of a prism (11) by impinging a single or plurality of divergent or convergent actinic radiation beam(s) to a second face (22) of the prism. The chirped grating is formed in the photosensitive optical waveguide to be processed by exposure to the interference pattern, thus forming a chirped grating in the waveguide. In one preferred embodiment, the waveguide is a photosensitive optical fibre (11), having formed in said waveguide an in...

9. (WO 1996/008695) OPTICAL SENSORS AND METHOD FOR PRODUCING FIBRE OPTIC

21.03.1996 G01D 5/353 PCT/AU1995/000568 FUTURE FIBRE

TECHNOLOGIES PTY. LTD. **TAPANES**, Edward

## MODALMETRIC SENSORS

An optical sensor and a method of producing the optical sensor is disclosed in which a singlemode fibre (14) is fusion spliced to a multimode fibre (18). The multimode fibre is cleaved or polished at a desired location from the splice (17) to localise the sensor, the end (15) of the multimode fibre can be mirrored to reflect radiation back through the multimode fibre so that the radiation re-enters the singlemode fibre for detection by a detector (24). Alternatively, a light source (22) can be coupled to the singlemode fibre and a further singlemode fibre connected to the multimode fibre at the desired location by fusion splicing so that a detector (24) can be connected to the further singlemode fibre for detecting radiation which is passed...

10. (WO 1996/007150) A METHOD **AND APPARATUS FOR VERIFYING A TRANSACTION** 

07.03.1996 G07C 9/00

PCT/AU1995/000344

SECURECARD TECHNOLOGY LTD. **TAPANES**, Edward

A method and apparatus for verifying a transaction are disclosed in which a credit card is processed by a processor (20) and information relating to the transaction is keyed into a key pad (26). The information on the card and transaction is fed by a link (40) to a central computer (10) where data relating to the person owning the card is stored. That data such as photographic data, signature data or the like is transmitted from the computer (10) over the communication link (40) to the processor (20) where the information is displayed on a screen (24) so that a visual record of the person making the transaction or the person's signature is displayed for a vendor. The vendor then makes a comparison between the picture displayed on the screen...

11. (WO 1995/026519) A METHOD OF 05.10.1995 C03C 23/00 PCT/AU1995/000177 MONASH UNIVERSITY PRODUCING A PHOTOREFRACTIVE EFFECT IN **OPTICAL DEVICES AND OPTICAL DEVICES FORMED BY THAT METHOD** 

ROSSITER, Paul, Lawrence MACFARLANE, Douglas NEWMAN, Peter JAVORNICZKY, John TAPANES, Edward, Eduardovich

A method for producing a refractive effect in an optical device and an optical device formed by the method are disclosed in which a material from which the device is to be formed is illuminated to induce solarisation involving a photoinitiated REDOX reaction in the material so that the material exhibits a permanent or quasi-permanent photorefractive effect. The mechanism of forming the photorefractive effect in the material relates to the photon induced oxidation of a species present in the material, either as a dopant, co-dopant or as a main component. The photo-oxidation of the species liberates an electron which, after a brief lifetime, usually finds a suitable repository by combining with some reducible species in the material. The meth...

12. (WO 1995/003563) ACOUSTO-**OPTICAL DEVICES FOR** PRODUCING TUNEABLE **DIFFRACTION GRATINGS** 

02.02.1995 G02F 1/125 PCT/AU1994/000417 MONASH UNIVERSITY

ROSSITER, Paul, Lawrence BINH, Le Nguyen TAPANES, Eduardo, Eduardovich

An acousto-optical device comprising: an optical fibre (10) formed from a waveguiding material and having a core (12) and a cladding (14); and an acoustic-wave device (16) on or in the fibre for inducing an acousto-optical stress wave in the form of a diffraction grating in the fibre with the acoustic-wave device being controlled to produce a diffraction grating in the fibre to alter electromagnetic radiation propagating in the fibre.

13. (WO 1993/025866) SENSING **PATCHES UTILISING INCORPORATED WAVEGUIDE SENSOR** 

23.12.1993 G01D 5/26

PCT/AU1993/000259 MONASH UNIVERSITY

A sensing patch is disclosed which has a body (12) formed from a suitable host material and which is shaped to form a patch which can be adhered or otherwise attached to a structure. A waveguide which may be in the form of an optical fibre (14) or an optical fibre in combination with a sensor element (17) is embedded in the host material forming the body (12). When a change in a parameter of the structure takes place a property or characteristic of electromagnetic radiation propagating in the waveguide sensor is altered by the change in that parameter to thereby provide an indication of the

change in the parameter. Thus, the sensing patch monitors the change in parameter in a manner which does not destroy the patch.

## **Search Summary**



FP/Tapanes: 17 occurrences in 13 records.

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