

INDEPENDENT CLAIM CORRELATION TABLE

Claim 1 Elements	Claim 8 Elements	Claim 9 Elements	Claim 12 Elements	Claim 13 Elements
[1.0] A method for detecting movement of optical fibers of an optical fiber cable comprising:	[8.0] A method for detecting movement of optical fibers comprising:	[9.0] A method for detecting movement of optical fibers comprising:	[12.0] A method for detecting movement of optical fibers of an optical fiber cable comprising:	[13.0] A method for detecting movement of optical fibers comprising:
			[12.1] providing a plurality of optical fiber cables arranged in a hub-and-spoke arrangement where each optical fiber cable extends from a main unit at a central location to one of a plurality of remote units;	
[1.1] providing a optical fiber cable having a first end and a second end, the cable having a plurality of fibers each of which extends from the first end to the second end;			[12.2] each optical fiber cable having a first end and a second end, the cable having a plurality of fibers;	
[1.2] monitoring a plurality of fibers of the cable by detecting movement of the fiber at locations along the length of the fiber by:			[12.3] monitoring a plurality of fibers of the optical fiber cables by detecting movement of the fibers at locations along the length of the fibers by:	
[1.3] providing at least one source of light for injection onto the fibers;	[8.1] providing at least one source of light for injection onto the fibers;	[9.1] providing at least one source of light for injection onto the fibers;	[12.4] providing at least one source of light at the main unit for injection onto the fibers;	[13.1] providing at least one source of light for injection onto the fibers;

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[1.4] providing at least one sensor arrangement for receiving light transmitted through the fibers;	[8.2] providing at least one sensor arrangement for receiving light transmitted through the fibers;	[9.2] providing at least one sensor arrangement for receiving light transmitted through the fibers;	[12.5] providing at least one sensor arrangement for receiving light transmitted through the fibers;	[13.2] providing at least one sensor arrangement for receiving light transmitted through the fibers;
[1.5] injecting light from the at least one source into one end of each of the fibers to be monitored;	[8.3] injecting light from the at least one source into one end of each of the fibers to be monitored;	[9.3] injecting light from the at least one source into one end of each of the fibers to be monitored;	[12.6] injecting light from the at least one source at the main unit into one end of the each of the fibers to be monitored;	[13.3] injecting light from the at least one source into one end of each of the fibers to be monitored;
[1.6] in the at least one sensor arrangement, detecting a series of received light signals which have been transmitted along the fibers to be monitored;	[8.4] in the at least one sensor arrangement, detecting a series of received light signals which have been transmitted along the fibers;	[9.4] in the at least one sensor arrangement, detecting a series of received light signals which have been transmitted along the fibers;	[12.7] in the at least one sensor arrangement, detecting a series of received light signals which have been transmitted along the fibers to be monitored;	[13.4] in the at least one sensor arrangement, detecting a series of received light signals which have been transmitted along the fibers;
[1.7] in the at least one sensor arrangement, comparing at least some of the received light signals relative to data obtained from previously received ones of the received light signals to detect changes in the received light signals relative to the previously received light signals;	[8.5] in the at least one sensor arrangement, comparing at least some of the received light signals relative to data obtained from previously received ones of the received light signals to detect changes in the received light signals relative to the previously received light signals;	[9.5] in the at least one sensor arrangement comparing at least some of the received light signals relative to data obtained from previously received ones of the received light signals to detect changes in the received light signals relative to the previously received light signals;	[12.8] in the at least one sensor arrangement, comparing at least some of the received light signals relative to data obtained from previously received ones of the received light signals to detect changes in the received light signals relative to the previously received light signals;	[13.5] in the at least one sensor arrangement, comparing at least some of the received light signals relative to data obtained from previously received ones of the received light signals to detect changes in the received light signals relative to the previously received light signals;

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[1.8] in the at least one sensor arrangement, analyzing the changes to determine any changes which are indicative of manipulation of the optical fiber causing movement of a portion thereof along the length thereof;	[8.6] in the at least one sensor arrangement, analyzing the changes to determine any changes which are indicative of manipulation of the optical fiber causing movement of a portion thereof along the length thereof;	[9.6] in the at least one sensor arrangement, analyzing the changes to determine any changes which are indicative of manipulation of the optical fiber causing movement of a portion thereof along the length thereof;	[12.9] in the at least one sensor arrangement, analyzing the changes to determine any changes which are indicative of manipulation of the optical fiber causing movement of a portion thereof along the length thereof;	[13.6] in the at least one sensor arrangement, analyzing the changes to determine any changes which are indicative of manipulation of the optical fiber causing movement of a portion thereof along the length thereof;
[1.9] generating an alarm in response to the detection of any such changes which are indicative of manipulation of the optical fiber causing movement of a portion thereof along the length thereof;	[8.7] generating an alarm in response to the detection of any such changes which are indicative of manipulation of the optical fiber causing movement of a portion thereof along the length thereof;	[9.7] generating an alarm in response to the detection of any such changes which are indicative of manipulation of the optical fiber causing movement of a portion thereof along the length thereof;	[12.10] generating an alarm in response to the detection of any such changes which are indicative of manipulation of the optical fiber causing movement of a portion thereof along the length thereof;	[13.7] generating an alarm in response to the detection of any such changes which are indicative of manipulation of the optical fiber causing movement of a portion thereof along the length thereof;

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[1.10] and using optical communication components to communicate light from the at least one source to more than one of the fibers of the optical fiber cable and to communicate light from more than one of the fibers of the optical fiber cable to the at least one sensor arrangement such that the number of fibers of the optical fiber cable monitored is greater than the number of sources and greater than the number of sensor arrangements.	[8.8] and using optical communication components to communicate light from the at least one source to more than one of the fibers and to communicate light from more than one of the fibers to the at least one sensor arrangement such that the number of fibers monitored is greater than the number of sources and greater than the number of sensor arrangements;	[9.8] and using optical communication components to communicate light from the at least one source to more than one of the fibers and to communicate light from more than one of the fibers to the at least one sensor arrangement such that the number of fibers monitored is greater than the number of sources and greater than the number of sensor arrangements;	[12.11] and using optical communication components to communicate light from the at least one source at the main unit to more than one of the fibers and to communicate light from more than one of the fibers to the at least one sensor arrangement such that the number of fibers monitored is greater than the number of sources and greater than the number of sensor arrangements	[13.8] and using optical communication components to communicate light from the at least one source to more than one of the fibers and to communicate light from more than one of the fibers to the at least one sensor arrangement such that the number of fibers monitored is greater than the number of sources and greater than the number of sensor arrangements;
	[8.9] wherein the at least one sensing arrangement includes a locating arrangement for detecting the location of a detected movement and wherein there is provided a stored table of fiber lengths of the plurality of fibers which allows the at least one sensing arrangement to determine which fiber of the plurality of fibers has moved.			

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		[9.9] wherein there is provided a plurality of wavelength division multiplexers (WDMs) such that each monitored fiber has connected thereto at an entry end and an exit end a respective pair of the WDMs for separating the light from the source from a data signal transmitted simultaneously with the monitoring light through the fiber.		
			[12.12] wherein at least one of the fibers of more than one of the cables is monitored by the light injected into the fibers from said at least one source of light at the main unit.	
				[13.9] wherein there is provided a plurality of optical switches each arranged at a respective end of a respective fiber to be monitored.