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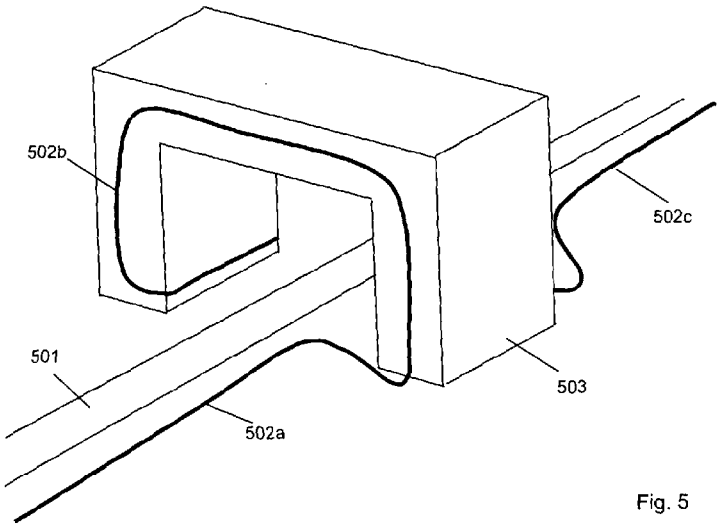


Fig. 5

(57) Abstract: This application relates to conditions monitoring of structures forming part of a transport network, e.g. structural health monitoring of structures, especially tunnels. The method involves performing distributed acoustic sensing (DAS) on at least one optical fibre (104) deployed so as to monitor the structure (206). The acoustic response to movement of traffic (205) on the network in the vicinity of the structure is detected and analysed to detect the acoustic response (303, 304) of the structure. The acoustic response of the structure is then analysed to detect any change in condition. The method thus uses the normal movement of traffic on the network, e.g. trains on a rail network, to acoustic excite the structure and detects the resultant response. The method is particularly useful for condition monitoring of tunnels on a rail network.

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A. CLASSIFICATION OF SUBJECT MATTER
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ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 487 914 B1 (HODGE MALCOLM H [US]) 3 December 2002 (2002-12-03) abstract figures 1, 26, 27, 27A, 27B column 4, lines 13-64 column 8, line 42 - column 10, line 3 column 13, line 60 - column 14, line 57 ----- -/--	1-24

[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	Yutaka Kawano ET AL: "Health Monitoring of a Railway Bridge by Fiber Optic Sensor (SOFO)", , 4 July 2010 (2010-07-04), XP055102449, Sorrento, Italy Retrieved from the Internet: URL:http://www.roctest-group.com/sites/default/files/bibliography/pdf/C213.pdf [retrieved on 2014-02-17] the whole document	1-3,7,8, 13-24
Y	US 2010/242609 A1 (LEE WEI-FENG [TW] ET AL) 30 September 2010 (2010-09-30) abstract figures 1, 5, 7 paragraphs [0002], [0010] - [0017], [0054] - [0056], [0068] - [0079]	1-24
Y	DAVID KROHN ET AL: "Fiber optic sensor applications in transportation infrastructure protection", PROCEEDINGS OF SPIE, vol. 7314, 29 April 2009 (2009-04-29), pages 731407-731407-9, XP055100357, ISSN: 0277-786X, DOI: 10.1117/12.820797 the whole document	1-24

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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