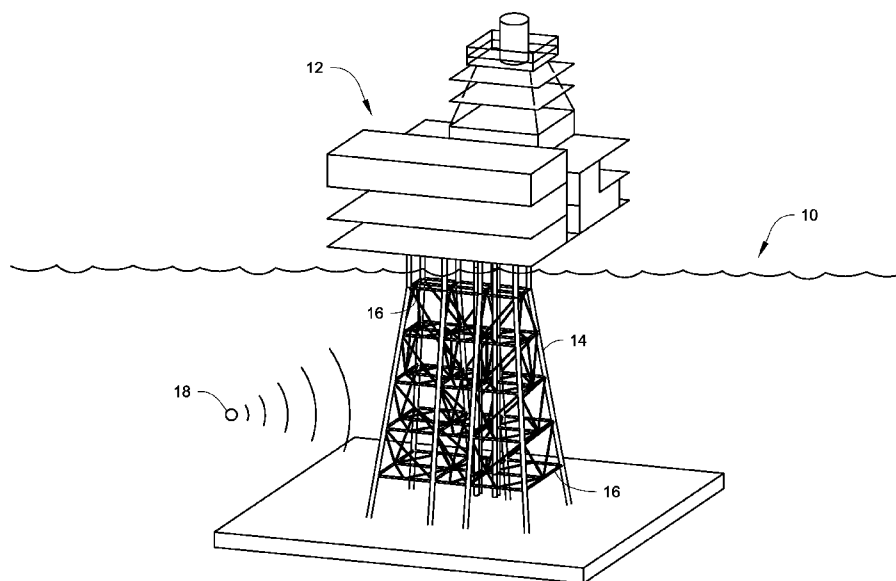




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(54) **Title:** REMOTE FLOODED MEMBER DETECTION



(57) **Abstract:** Utilizing a sonar system to determine if a structural member of an underwater support structure that is supposed to be filled with air is instead flooded with water. The determination that a supposedly air filled structural member is instead flooded with water provides an indication that the structural member is cracked or damaged, making it easier to find damaged members and effect suitable repair. The sonar system is located a distance from the structural member so that it is spaced from the structural member.

**INTERNATIONAL SEARCH REPORT**

International application No.  
PCT/US2011/057496

<p><b>A. CLASSIFICATION OF SUBJECT MATTER</b>                  IPC(8) - G03B 42/06 (2012.01)                  USPC - 367/7                  According to International Patent Classification (IPC) or to both national classification and IPC</p>		
<p><b>B. FIELDS SEARCHED</b>                  Minimum documentation searched (classification system followed by classification symbols)                  IPC(8) - G03B 42/06; G03H 3/00; G01V 1/00, 1/38 (2012.01)                  USPC - 367/7, 9, 14, 15</p>		
<p>Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched</p>		
<p>Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)                  MicroPatent, Google Scholar</p>		
<p><b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b></p>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2004/0174770 A1 (REES) 09 September 2004 (09.09.2004) entire document	1-16
Y	US 4,445,363 A (BENNETT et al) 01 May 1984 (01.05.1984) entire document	1-16
Y	US 2008/0316862 A1 (BERNECKY et al) 25 December 2008 (25.12.2008) entire document	4-7 and 13-16
A	US 5,062,089 A (WILLARD et al) 29 October 1991 (29.10.1991) entire document	1-16
<p><input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/></p>		
<p>* Special categories of cited documents:</p>		
"A"	document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E"	earlier application or patent but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O"	document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P"	document published prior to the international filing date but later than the priority date claimed	
<p>Date of the actual completion of the international search 18 January 2012</p>		<p>Date of mailing of the international search report <b>30 JAN 2012</b></p>
<p>Name and mailing address of the ISA/US                  Mail Stop PCT, Attn: ISA/US, Commissioner for Patents                  P.O. Box 1450, Alexandria, Virginia 22313-1450                  Facsimile No. 571-273-3201</p>		<p>Authorized officer:                  Blaine R. Copenheaver                  PCT Helpdesk: 571-272-4300                  PCT OSP: 571-272-7774</p>