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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2012/024076

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - E02D 13/06 (2012.01)

USPC - 702/188

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)

IPC(8) - E02D 13/00, E02D 13/06, G01D 21/00 (2012.01)

USPC - 340/853.8, 702/188, 73/11.03

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)

PatBase, Google Patents, Google Scholar

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6,301,551 B1 (PISCALCO et al) 09 October 2001 (09.10.2001) entire document	1-35
Y	US 2009/0120987 A1 (CALAYO et al) 14 May 2009 (14.05.2009) entire document	1-35
Y	US 5,978,749 A (LIKINS JR et al) 02 November 1999 (02.11.1999) entire document	3-5, 9, 20-22
Y	US 6,533,502 B2 (MCVAY et al) 18 March 2003 (18.03.2003) entire document	4, 6, 32, 33
Y	US 6,962,277 B2 (QUINTANA et al) 08 November 2005 (08.11.2005) entire document	13, 14
Y	US 5,610,818 A (ACKROYD et al) 11 March 1997 (11.03.1997) entire document	16, 18
Y	US 6,484,079 B2 (BUCKELEW et al) 19 November 2002 (19.11.2002) entire document	35

☐ Further documents are listed in the continuation of Box C.



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"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

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"P" document published prior to the international filing date but later than the priority date claimed

"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

"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

"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

"&" document member of the same patent family

Date of the actual completion of the international search

29 May 2012

Date of mailing of the international search report

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