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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2014/030682

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - E21 B 47/1 2 (2014.01)

USPC - 340/855.3

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) - E21 B 47/12, 47/13, 47/14, 47/16, 47/18 (2014.01)

USPC - 340/853.7, 854.3, 854.5, 854.6, 855.3, 855.7

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

CPC - E21 B 47/12, 47/122, 47/14, 47/16, 47/18 (2014.02)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

PatBase, Orbit, 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.
X		1-3, 14
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Y	US 2006/01 14746 A1 (GARDNER et al.) 01 June 2006 (01.06.2006) entire document	4-13, 15-20
Y	US 5,838,727 A (LYON et al.) 17 November 1998 (17.11.1998) entire document	4-5, 18-20
Y	US 6,144,316 A (SKINNER) 07 November 2000 (07.11.2000) entire document	6-12, 18-20
Y	US 2012/0126992 A1 (RODNEY et al.) 24 May 2012 (24.05.2012) entire document	10, 13, 19
Y	US 2012/0037423 A1 (GEERITS et al.) 16 February 2012 (16.02.2012) entire document	15-17

Further documents are listed in the continuation of Box C.

* Special categories of cited documents:	"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
"A" document defining the general state of the art which is not considered to be of particular relevance	"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
"E" earlier application of patent but published on or after the international filing date	"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
"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)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 01 August 2014	Date of mailing of the international search report 22 AUG 2014
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