

**Published:****(88) Date of publication of the international search report:**

26 February 2015

- *with international search report (Art. 21(3))*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2014/028695

A. CLASSIFICATION OF SUBJECT MATTER
INV. E21B33/06 F16K3/00 E21B29/08
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)
E21B F16K

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)

EP0-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.
A	US 6 454 015 B1 (ARMSTRONG JOHN TAYLOR [GB] ET AL) 24 September 2002 (2002-09-24) column 1, lines 7-10; figure 9 -----	1-24
A	US 2010/319906 A1 (VAN WINKLE DENZAL WAYNE [US]) 23 December 2010 (2010-12-23) figures 2a, 2b -----	1-24
A	US 6 244 336 B1 (KACHICH ALBERT J [US]) 12 June 2001 (2001-06-12) figures 2,6 -----	1-24
A	US 4 997 162 A (BAKER GERALD S [US] ET AL) 5 March 1991 (1991-03-05) figures 10,11 -----	1-24



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

"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

"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)

"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

"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

28 November 2014

Date of mailing of the international search report

18/12/2014

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer

Bellingacci, F

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2014/028695

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
US 6454015	B1	24-09-2002	GB	2352494 A		31-01-2001
			US	6454015 B1		24-09-2002

US 2010319906	A1	23-12-2010	CA	2760383 A1		23-12-2010
			EP	2443313 A2		25-04-2012
			US	2010319906 A1		23-12-2010
			US	2013299172 A1		14-11-2013
			WO	2010146402 A2		23-12-2010

US 6244336	B1	12-06-2001	AU	1828701 A		13-09-2001
			BR	0100918 A		30-10-2001
			CA	2331579 A1		07-09-2001
			EP	1132566 A2		12-09-2001
			NO	20011142 A		10-09-2001
			SG	99337 A1		27-10-2003
			US	6244336 B1		12-06-2001

US 4997162	A	05-03-1991	AT	110437 T		15-09-1994
			AU	630171 B2		22-10-1992
			AU	5210590 A		24-01-1991
			BR	9003502 A		27-08-1991
			CA	2012290 A1		21-01-1991
			DE	69011787 D1		29-09-1994
			DE	69011787 T2		15-12-1994
			EP	0416719 A1		13-03-1991
			NO	901957 A		22-01-1991
			US	4997162 A		05-03-1991
