



SUPPLEMENTARY EUROPEAN SEARCH REPORT

Application number:
EP 16 78 07 63

Classification of the application (IPC):
E21B 43/117, E21B 43/1185, F42D 1/04

Technical fields searched (IPC):
E21B, F42D, F42B

DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim
X,P	WO 2015179698 A2 (HUNTING TITAN INC [US]; COLLINS WILLIAM R [US]; MCDONALD DEBRA C [US]); 26 November 2015 (2015-11-26) * page 11, line 6 - page 14, line 8 * * page 9, line 8 - page 10, line 6 * * figures 1, 2, 4-6 *	1-18
X	US 2005247447 A1 (SPRING ROGER L [US] ET AL) 10 November 2005 (2005-11-10) * figures 8-16 *	1-4, 7-11, 18
X	US 5007486 A (RICLES THOMAS D [US]) 16 April 1991 (1991-04-16) * figures 1, 2, 3, 14, 15, 16 *	1-4, 7-11
X	US 2013019770 A1 (WALKER JERRY L [US]) 24 January 2013 (2013-01-24) * paragraph [0031] - paragraph [0044]; figures 1-12 *	1-4, 7, 8
X	US 2015096434 A1 (WHITE RYAN S [US] ET AL) 09 April 2015 (2015-04-09) * figures 1, 2 *	1-3
X	US 2010243323 A1 (MCCANN JASON W [US] ET AL) 30 September 2010 (2010-09-30) * figures 3, 6 *	1-3

The supplementary search report has been based on the last set of claims valid and available at the start of the search.

Place of search The Hague	Date of completion of the search 15 November 2018	Examiner Hennion, Dmitri
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CATEGORY OF CITED DOCUMENTS

X: particularly relevant if taken alone	P: intermediate document
Y: particularly relevant if combined with another document of the same category	T: theory or principle underlying the invention
A: technological background	E: earlier patent document, but published on, or after the filing date
O: non-written disclosure	D: document cited in the application
&: member of the same patent family, corresponding document	L: document cited for other reasons

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ANNEX TO SUPPLEMENTARY EUROPEAN SEARCH REPORT

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on 15-11-2018
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO2015179698 A2	26-11-2015	CA 2933570 A1	26-11-2015
		EP 3108093 A2	28-12-2016
		US 2017199015 A1	13-07-2017
		WO 2015179698 A2	26-11-2015
US 2005247447 A1	10-11-2005	US 2005247447 A1	10-11-2005
		WO 2006041536 A2	20-04-2006
US 5007486 A	16-04-1991	CA 2033932 A1	03-08-1991
		GB 2240837 A	14-08-1991
		NO 910188 A	05-08-1991
		US 5007486 A	16-04-1991
US 2013019770 A1	24-01-2013	US 2013019770 A1	24-01-2013
		WO 2013016117 A2	31-01-2013
US 2015096434 A1	09-04-2015	US 2015096434 A1	09-04-2015
		WO 2015050765 A1	09-04-2015
US 2010243323 A1	30-09-2010	BR PI1012328 A2	29-03-2016
		GB 2481741 A	04-01-2012
		US 2010243323 A1	30-09-2010
		WO 2010111638 A2	30-09-2010