

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 063718.5423	FOR FURTHER ACTION	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. PCT/US2016/020105	International filing date (<i>day/month/year</i>) 29 February 2016 (29.02.2016)	(Earliest) Priority Date (<i>day/month/year</i>)
Applicant HALLIBURTON ENERGY SERVICES, INC.		

This International search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 3 sheets.

It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

a. With regard to the **language**, the international search was carried out on the basis of:

the international application in the language in which it was filed

a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))

b. This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6bis(a)).

c. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. **Certain claims were found unsearchable** (See Box No. II)

3. **Unity of invention is lacking** (See Box No. III)

4. With regard to the **title**,

the text is approved as submitted by the applicant.

the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

the text is approved as submitted by the applicant.

the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the drawings,

a. the figure of the **drawings** to be published with the abstract is Figure No. 2B

as suggested by the applicant.

as selected by this Authority, because the applicant failed to suggest a figure.

as selected by this Authority, because this figure better characterizes the invention.

b. none of the figures is to be published with the abstract.

A. CLASSIFICATION OF SUBJECT MATTER**E21B 23/00(2006.01)i, E21B 23/02(2006.01)i, E21B 17/00(2006.01)i**

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 23/00; E21B 33/10; B23B 31/20; E21B 7/06; E21B 23/12; E21B 17/02; E21B 19/14; E21B 17/00; E21B 23/02

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

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) & Keywords: actuation, indicator, wellbore, tubular, collet, protrusion, spring, high-load, low-load and angle

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2013-0161027 A1 (HALLIBURTON ENERGY SERVICES, INC.) 27 June 2013 See paragraph [0051]; claims 1, 10, 19; and figures 1-3, 7.	1-20
A	US 2014-0209323 A1 (SCHLUMBERGER TECHNOLOGY CORPORATION) 31 July 2014 See paragraphs [0005]-[0006] and claim 1.	1-20
A	US 2015-0041218 A1 (TOLER, JR., JIMMY EDWARD) 12 February 2015 See paragraphs [0012]-[0029] and claim 1.	1-20
A	US 2011-0232898 A1 (PENDLETON et al.) 29 September 2011 See paragraphs [0015]-[0016] and figure 1A.	1-20
A	US 2011-0232897 A1 (ZWEIFEL, THOMAS J.) 29 September 2011 See claims 1, 16 and figure 1A.	1-20



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

18 November 2016 (18.11.2016)

Date of mailing of the international search report

22 November 2016 (22.11.2016)

Name and mailing address of the ISA/KR

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2016/020105

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2013-0161027 A1	27/06/2013	AU 2011-384179 A1 CA 2856614 A1 EP 2795042 A1 MX 2014007563 A US 9109407 B2 WO 2013-093389 A1 WO 2013-093389 A8	07/08/2014 27/06/2013 29/10/2014 27/08/2014 18/08/2015 27/06/2013 12/09/2013
US 2014-0209323 A1	31/07/2014	WO 2014-120781 A1	07/08/2014
US 2015-0041218 A1	12/02/2015	AU 2014-304805 A1 WO 2015-020693 A1	28/01/2016 12/02/2015
US 2011-0232898 A1	29/09/2011	CA 2724969 A1 CA 2724969 C US 8408291 B2	23/09/2011 19/11/2013 02/04/2013
US 2011-0232897 A1	29/09/2011	CA 2724796 A1 CA 2724796 C US 8210254 B2	23/09/2011 16/07/2013 03/07/2012