



- (51) International Patent Classification: E21B 33/02 (2006.01)
- (21) International Application Number: PCT/US2012/072156
- (22) International Filing Date: 28 December 2012 (28.12.2012)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: 61/581,427 29 December 2011 (29.12.2011) US
- (71) Applicant: WEATHERFORD/LAMB, INC. [US/US]; 2000 Saint James Place, Houston, TX 77056 (US).
- (72) Inventors: HANNEGAN, Don, M.; 8220 Hwy 271 S., Fort Smith, AR 72908 (US). CHAMBERS, James; 8220 Hwy 271 S., Fort Smith, AR 72908 (US). JACOBS, Melvin; 8220 Hwy 271 S., Fort Smith, AR 72908 (US).
- (74) Agent: OATHOUT, Mark, A.; 3701 Kirby Drive, Suite 960, Houston, TX 77098 (US).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV,

[Continued on next page]

(54) Title: ANNULAR SEALING IN A ROTATING CONTROL DEVICE

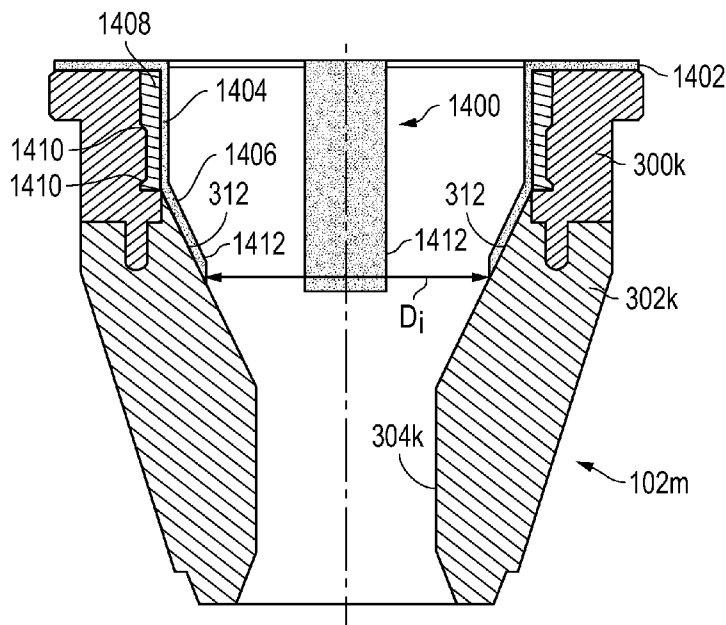


FIG. 14A

(57) Abstract: An annular seal having a sealing member (302k) and method for use is provided for sealing an item of oilfield equipment. The annular seal has an inner diameter for receiving the item of oilfield equipment and a frame (300k). The seal member (302k) is contiguous with the frame (300k). The annular seal is configured for durability, in that it resists wear, inversion, increases lubricity, enables tightness, and/or otherwise generally increases endurance, toughness, and/or permanence.





MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK,
SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,
GW, ML, MR, NE, SN, TD, TG).

— *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))*

Published:

— *with international search report (Art. 21(3))*

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

20 March 2014

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2012/072156

A. CLASSIFICATION OF SUBJECT MATTER
INV. E21B33/08
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

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)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CA 2 575 477 A1 (FILLIOL LYLE E [CA]; TRAVIS KENNETH A [CA] TRAVIS KENNETH A [CA]; FILL) 12 July 2008 (2008-07-12) page 2, lines 20-25 page 3, lines 22-28; figures 1-8 -----	1-80
X	US 2005/183856 A1 (WILLIAMS JOHN R [US]) 25 August 2005 (2005-08-25) paragraphs [0036] - [0052]; figures 1-6 -----	1,20-22, 24
X	WO 2009/029146 A1 (WILLIAMS JOHN R [US]) 5 March 2009 (2009-03-05) page 6, lines 18-30 page 17, lines 11-16 page 18, line 28 - page 19, line 11; figures 1-18 ----- -/--	1,13-19, 51-55, 59-61, 65,66,69

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 15 January 2014	Date of mailing of the international search report 22/01/2014
--	--

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 Manolache, Iustin
--	---

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2012/072156

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2 362 668 A (VETCO GRAY INC ABB [US]) 28 November 2001 (2001-11-28) paragraph [0007]; figures 1-3 -----	1,35, 37-39
X	US 5 647 444 A (WILLIAMS JOHN R [US]) 15 July 1997 (1997-07-15) column 4, line 10 - column 7, line 39; figures 1-2C -----	1-80

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/US2012/072156

Patent document cited in search report	Publication date	Patent family member(s)	Publication date	
CA 2575477	A1	12-07-2008	CA 2575477 A1 US 2008169617 A1	12-07-2008 17-07-2008
US 2005183856	A1	25-08-2005	US 2005183856 A1 US 2007240874 A1 WO 2005113932 A1	25-08-2005 18-10-2007 01-12-2005
WO 2009029146	A1	05-03-2009	AU 2008101297 A4 AU 2008294052 A1 CA 2697476 A1 EP 2181246 A1 RU 2010105970 A US 2009057022 A1 US 2010187015 A1 WO 2009029146 A1	23-08-2012 05-03-2009 05-03-2009 05-05-2010 10-10-2011 05-03-2009 29-07-2010 05-03-2009
GB 2362668	A	28-11-2001	BR 0103566 A CA 2347320 A1 GB 2362668 A US 2001047885 A1	12-03-2002 10-11-2001 28-11-2001 06-12-2001
US 5647444	A	15-07-1997	NONE	