



- (51) International Patent Classification: *E21B 33/122* (2006.01) *E21B 33/124* (2006.01)
- (21) International Application Number: PCT/US2011/061032
- (22) International Filing Date: 16 November 2011 (16.11.2011)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: 61/416,200 22 November 2010 (22.11.2010) US  
13/232,876 14 September 2011 (14.09.2011) US
- (71) Applicant (for all designated States except US): **BOISE STATE UNIVERSITY** [US/US]; 1910 University Drive, Business Building, Room 319, Boise, ID 83725 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **BARRASH, Warren** [US/US]; 11805 Musker Drive, Boise, ID 83713 (US).  
**CARDIFF, Michael** [US/US]; 1421 S. Denver Avenue, Boise, ID 83706 (US).
- (74) Agents: **MIDGLEY, Peter, M.** et al.; Parsons Behle & Latimer, 960 Broadway, Suite 250, Boise, ID 83706 (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, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO,

[Continued on next page]

(54) Title: MODULAR HYDRAULIC PACKER-AND-PORT SYSTEM

(57) Abstract: Modular hydraulic packer-and-port system (100) and corresponding methods of operation. The system may be installed for temporary, semi-permanent, or permanent deployments. The system and method may provide for hydraulic isolation of target zones in a well while allowing pass-through tubes (225) to the target zones for taking samples, inserting monitoring sensors, and the like.

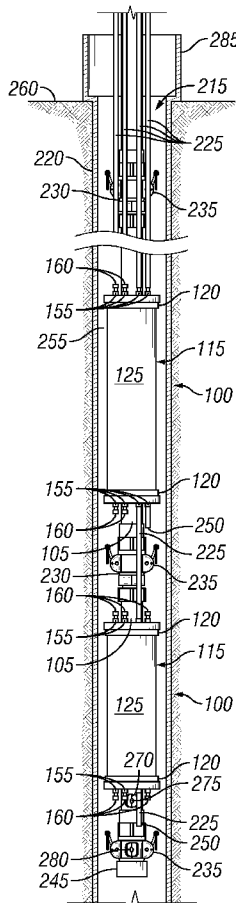


FIG. 1





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, 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, MD, 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, 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).

**Published:**

- 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))

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

16 May 2013

INTERNATIONAL SEARCH REPORT

International application No  
PCT/US2011/061032

A. CLASSIFICATION OF SUBJECT MATTER  
INV. E21B33/122 E21B33/124  
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, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 353 249 A (LAGUS PETER L ET AL) 12 October 1982 (1982-10-12)	12-15
Y	column 8, line 1 - column 10, line 4; figure 3	1-11
Y	----- US 5 226 485 A (DOBSCHA FRANCIS X [US] ET AL) 13 July 1993 (1993-07-13) column 5, line 26 - column 7, line 52	1-11
Y	----- WO 2010/079237 A1 (WELLTEC AS [DK]; HALLUNDBAEK JOERGEN [DK]; HAZEL PAUL [GB]) 15 July 2010 (2010-07-15) figure 4	1-11
A	----- US 3 035 440 A (REED EDWIN E) 22 May 1962 (1962-05-22) the whole document	1-15
	----- -/--	

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  27 March 2013	Date of mailing of the international search report  05/04/2013
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  Ott, Stéphane

# INTERNATIONAL SEARCH REPORT

International application No  
PCT/US2011/061032

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4 467 865 A (HARDYMON MARK [US]) 28 August 1984 (1984-08-28) the whole document -----	1-15

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/US2011/061032
---

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4353249	A	12-10-1982	NONE
-----			
US 5226485	A	13-07-1993	NONE
-----			
WO 2010079237	A1	15-07-2010	AU 2010204282 A1 23-06-2011
			CA 2746015 A1 15-07-2010
			CN 102272413 A 07-12-2011
			EP 2206879 A1 14-07-2010
			EP 2391796 A1 07-12-2011
			US 2011266004 A1 03-11-2011
			WO 2010079237 A1 15-07-2010
-----			
US 3035440	A	22-05-1962	NONE
-----			
US 4467865	A	28-08-1984	NONE
-----			