



(43) International Publication Date
13 December 2012 (13.12.2012)

- (51) **International Patent Classification:**
E21B 43/12 (2006.01)
- (21) **International Application Number:**
PCT/US2012/032208
- (22) **International Filing Date:**
4 April 2012 (04.04.2012)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
61/494,557 8 June 2011 (08.06.2011) US
- (71) **Applicant** (*for all designated States except US*): **HANSEN ENERGY SOLUTIONS LLC** [US/US]; 7 Gingerwilde Place, The Woodlands, TX 77381 (US).
- (72) **Inventor; and**
- (75) **Inventor/Applicant** (*for US only*): **HANSEN, Henning** [NO/ES]; Vereda del Rincon 13, E-01350 Alicante (ES).
- (74) **Agent:** **FAGIN, Richard, A.**; P.O. Box 1247, Richmond, TX 77406-1247 (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,
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).

Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

[Continued on next page]

- (54) Title:** SINGLE AND MULTI-CHAMBER WELLBORE PUMPS FOR FLUID LIFTING

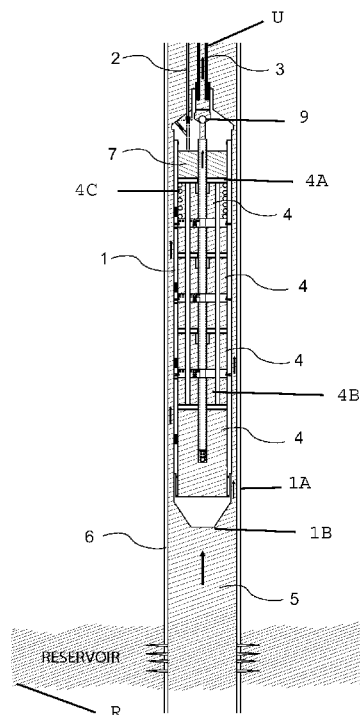


FIG. 1

- (57) Abstract:** A wellbore pump includes a pump housing suspendible in a wellbore at ends of at least one of a power fluid line and a fluid discharge line. The pump housing includes a fluid inlet proximate a bottom end thereof and wherein the fluid discharge line is coupled proximate a top end thereof. The pump include valves for directing flow of wellbore fluid out of the housing when power fluid displaces fluid in the housing, the valves for directing flow of wellbore fluid into the housing when power fluid pressure is relieved.

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

5 December 2013

- *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/US2012/032208

A. CLASSIFICATION OF SUBJECT MATTER
INV. E21B43/12
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)

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.
X	US 2005/150224 A1 (HOFFARTH CLAYTON [CA]) 14 July 2005 (2005-07-14) figure 2	1,4,10, 12
X	----- US 2004/216886 A1 (ROGERS JACK R [US] ROGERS JR JACK R [US]) 4 November 2004 (2004-11-04) paragraph [0200] - paragraph [0202] figure 19	25
A	----- US 2009/321084 A1 (SIMMONS EUGENE DARRELL [US]) 31 December 2009 (2009-12-31) paragraphs [0050], [0054] figure 2	1-25
A	----- WO 86/02412 A1 (ENERSAVE PUMPS INC [US]) 24 April 1986 (1986-04-24) abstract	1-25



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

9 October 2013

Date of mailing of the international search report

18/10/2013

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

Schouten, Adri

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2012/032208

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2005150224 A1	14-07-2005	CA 2453072 A1	10-05-2004
		US 2005150224 A1	14-07-2005

US 2004216886 A1	04-11-2004	AR 044148 A1	24-08-2005
		AU 2003284182 A1	26-11-2004
		PE 02672005 A1	13-04-2005
		US 2004216886 A1	04-11-2004
		US 2005022998 A1	03-02-2005
		WO 2004099563 A1	18-11-2004

US 2009321084 A1	31-12-2009	US 2009321084 A1	31-12-2009
		WO 2010002841 A2	07-01-2010

WO 8602412 A1	24-04-1986	AU 5019985 A	02-05-1986
		EP 0198074 A1	22-10-1986
		US 4616981 A	14-10-1986
		WO 8602412 A1	24-04-1986
