

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
24 March 2011 (24.03.2011)

PCT

(10) International Publication Number
WO 2011/034694 A2

(51) International Patent Classification:

E21B 43/04 (2006.01) *E21B 34/12* (2006.01)
E21B 43/08 (2006.01) *E21B 34/14* (2006.01)
E21B 34/10 (2006.01) *E21B 21/10* (2006.01)

(21) International Application Number:

PCT/US2010/046583

(22) International Filing Date:

25 August 2010 (25.08.2010)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

12/562,872 18 September 2009 (18.09.2009) US

(71) Applicant (for all designated States except US): **BAKER HUGHES INCORPORATED** [US/US]; P.O. Box 4740, Houston, TX 77210-4740 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **CLEM, Nicholas, J.** [US/US]; 5302 Lamonte Lane, Houston, TX 77092 (US). **CORONADO, Martin, P.** [US/US]; 19826 Red Cedar Canyon Lane, Cypress, TX 77433 (US). **KITZMAN, Jeffery, D.** [US/US]; 15000 Mansions View Drive, Apt. 2403, Conroe, TX 77384 (US). **EDWARDS, Jeffry, S.** [US/US]; 18014 Willow Cliff Lane, Cypress, TX 77433 (US).

(74) Agent: **DUPHORNE, Darin, H.**; BAKER HUGHES INCORPORATED, P.O. Box 4740, Houston, TX 77210-4740 (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, RO, RS, RU, 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, 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, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— without international search report and to be republished upon receipt of that report (Rule 48.2(g))

(54) Title: FRACTURING AND GRAVEL PACKING TOOL WITH SHIFTING ABILITY BETWEEN SQUEEZE AND CIRCULATE WHILE SUPPORTING AN INNER STRING ASSEMBLY IN A SINGLE POSITION

(57) Abstract: A fracturing and gravel packing tool has features that prevent well swabbing when the tool is picked up with respect to a set isolation packer. An upper or jet valve allows switching between the squeeze and circulation positions without risk of closing the wash pipe valve. The wash pipe valve can only be closed with multiple movements in opposed direction that occur after a predetermined force is held for a finite time to allow movement that arms the wash pipe valve. The jet valve can prevent fluid loss to the formation when being set down whether the crossover tool is supported on the packer or on the smart collet.



WO 2011/034694 A2