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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
9 April 2009 (09.04.2009)

PCT

(10) International Publication Number
WO 2009/044195 A1

(51) International Patent Classification:
*E02B 17/08* (2006.01)

(21) International Application Number:
PCT/GB2008/050884

(22) International Filing Date:
30 September 2008 (30.09.2008)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/997,784 5 October 2007 (05.10.2007) US
12/284,886 25 September 2008 (25.09.2008) US

(71) Applicants *(for all designated States except US)*: **NATIONAL OILWELL VARCO, L.P.** [US/US]; 7909 Parkwood Circle Drive, Houston, Texas 77036 (US). **LUCAS, Brian Ronald** [GB/GB]; Lucas & Co., 135 Westhall Road, Warlingham Surrey CR6 9HJ (GB).

(72) Inventors; and
(75) Inventors/Applicants *(for US only)*: **GRANT, James Simpson** [GB/US]; 13015 Skyview Drive, Houston, TX 77082 (US). **LENDERS, Bernardino** [US/US]; 5515 Davis Lane Unit 94, Austin, TX 78749-3689 (US).

(74) Agent: **LUCAS, Phillip, Brian**; Lucas & Co., 135 Westhall Road, Warlingham, Surrey CR6 9HJ (GB).

(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, 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, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, 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, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Declaration under Rule 4.17:**
— *of inventorship (Rule 4.17(iv))*

**Published:**
— *with international search report*

(54) Title: A METHOD AND APPARATUS FOR MONITORING A JACK-UP RIG

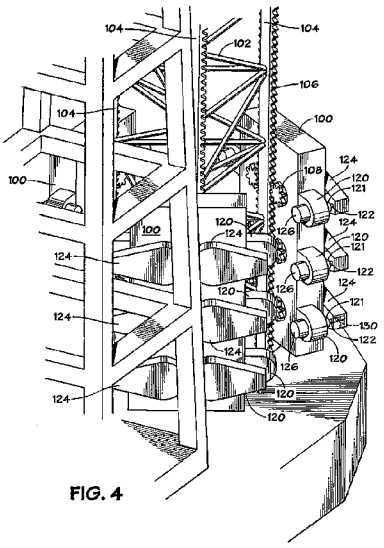


FIG. 4

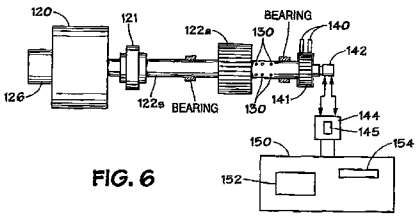


FIG. 6

(57) Abstract: A method and apparatus for monitoring a jack - up rig comprising a platform (12), at least one leg (14), at least one chord (104) having a toot hed rack (106) and a jacking apparatus (100) comprising a climb pinion apparatus (108,121,122s,122a,161) driven by a motor (120) for jacking the platform (12) on the at least one leg (14), the climb pinion apparatus (108,121,122s,122a,161) comprising a gea r (108) for meshing with the toothed track (106) and a shaft (122), characterised in that at least one strain sensing apparatus (130) is provided on said climb pinion apparatus (108,121,122s,122a,161) the method comprising the steps of obtaining a signal i ndicative of strain with said strain sensing apparatus (130) and sending said signal to a control system and processing said signal to pro duce a value of a load on said chord (104).

WO 2009/044195 A1