

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
1 April 2004 (01.04.2004)

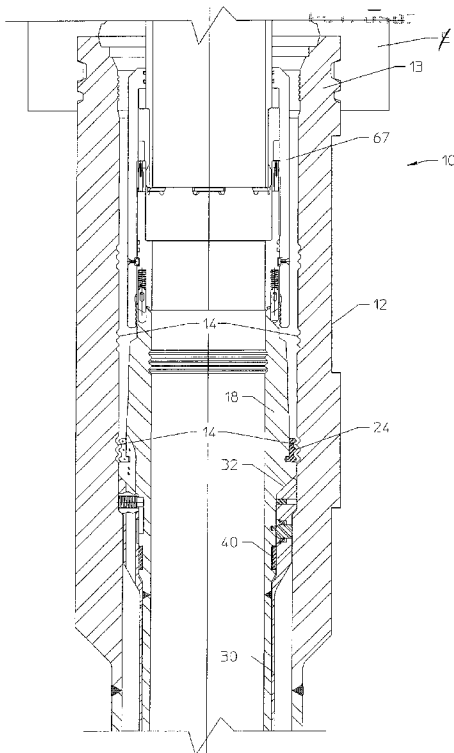
PCT

(10) International Publication Number
WO 2004/027202 A3

- (51) International Patent Classification⁷: **E21B 29/12, 33/035**
- (21) International Application Number: PCT/US2003/029650
- (22) International Filing Date: 17 September 2003 (17.09.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: 60/411,176 17 September 2002 (17.09.2002) US
- (71) Applicant (for all designated States except US): **DRIL-QUIP, INC.** [US/US]; 13550 Hempstead Highway, Houston, TX 77040 (US).
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): **REIMERT, Larry, E.** [US/US]; 6 Winners Circle, Houston, TX 77024 (US).
- (74) Agent: **HELMREICH, Loren, G.**; Browning Bushman, P.C., 5718 Westheimer, Suite 1800, Houston, TX 77057 (US).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,

[Continued on next page]

(54) Title: INNER RISER ADJUSTABLE HANGER AND SEAL ASSEMBLY



(57) Abstract: An inner riser adjustable hanger and seal assembly (10) are provided for applying tension to a casing string (20) secured at a lower end within a well and supported at an upper end by a wellhead housing (12). The wellhead housing has a locking member (14) on an inner surface thereof. A tensioning mechanism (60) tensions the casing string and secures the upper end to the wellhead housing (12). A seal body locking member (24) is radially moveable into engagement with the housing locking member (66) to fix the axial position of the seal body (18) and the wellhead housing, and a lower assembly seals (46) between the seal body and the casing string. The casing string is tensioned without appreciable rotation of the hanger body or the upper and lower seal assemblies.



ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,
SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM,
GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(88) Date of publication of the international search report:
2 September 2004

Date of publication of the amended claims: 16 December 2004

Published:

- with international search report
- with amended claims

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.