



- (51) **International Patent Classification:**
E21B 33/03 (2006.01)
- (21) **International Application Number:**
PCT/US2014/056599
- (22) **International Filing Date:**
19 September 2014 (19.09.2014)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
61/879,810 19 September 2013 (19.09.2013) US
14/488,819 17 September 2014 (17.09.2014) US
- (71) **Applicant:** VETCO GRAY INC. [US/US]; 4424 West Sam Houston Pkwy North, Suite 100, Houston, TX 77041 (US).
- (72) **Inventors:** GADRE, Aniruddha, D.; 4424 West Sam Houston Parkway North, Suite 100, Houston, TX 77041 (US). FORD, David, Lawrence; 4424 West Sam Houston Parkway North, Suite 100, Houston, TX 77041 (US).
- (74) **Agents:** DOMBROWSKI, Jonna, M. et al.; General Electric Company, Global Patent Operation, 3135 Easton Turnpike, Fairfield, CT 06828 (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, BN, 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, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, 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, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, 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,

[Continued on next page]

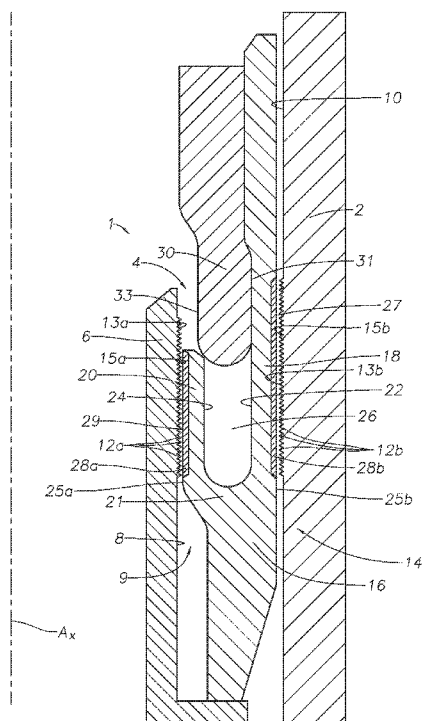
(54) **Title:** SEAL WITH SOFT MATERIAL INLAY

FIG. 1

(57) **Abstract:** A wellhead assembly includes an inner wellhead member with wickers extending outwardly therefrom and an outer wellhead member with wickers extending inwardly therefrom. A seal assembly having an inner leg and an outer leg is inserted between the wellhead members. An energizing ring forces the legs radially apart from each other. An inlay is located along at least one of an inner diameter of the inner leg and an outer diameter of the outer leg, positioned to sealingly engage the wickers. The inlay is located in a single groove configured so that no part of the seal member body contacts an exterior wall of the inner wellhead member or an interior wall of the outer wellhead member. The inlay has a smooth outer surface flush with the diameter and is made of a material softer than the inner wellhead member, the outer wellhead member, and the seal member body.



SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:

— with international search report (Art. 21(3))

Declarations under Rule 4.17:

— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))

— 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))

— as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

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

2 July 2015