



- (51) **International Patent Classification:**
E21B 17/02 (2006.01) *E21B 17/046* (2006.01)
- (21) **International Application Number:**
PCT/US2013/072483
- (22) **International Filing Date:**
29 November 2013 (29.11.2013)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (71) **Applicant:** HALLIBURTON ENERGY SERVICES, INC. [US/US]; 10200 Bellaire Boulevard, Houston, TX 77072 (US).
- (72) **Inventors:** ELDHO, Shanu, Thottungal; Blk 707 Hougang Ave 2 #04-91, Singapore 530707 (SG). EZELL, Michael, Dale; 1203 Rooney Lane, Carrollton, TX 75007 (US).
- (74) **Agents:** HILTON, Robert, C. et al.; Patton Boggs LLP, 2550 M Street, Nw, Washington, DC 20037 (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, LT, 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, 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, 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))

- (54) **Title:** EXTERNAL SLIP HAVING EXPANDABLE SLOTS AND A RETAINER

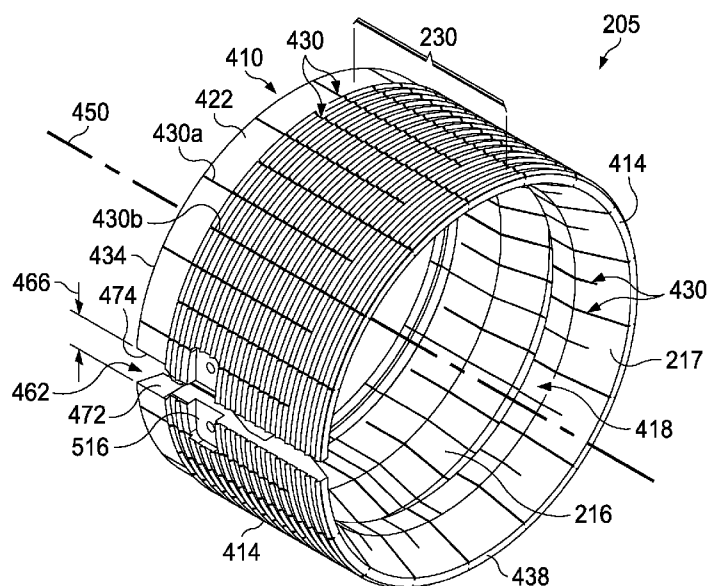


FIG. 4A

(57) **Abstract:** An external slip includes a slip body comprising a wall having internal and external surfaces. The internal surface includes a ramp portion, and a plurality of teeth is disposed on the external surface of the wall of the slip body. A plurality of expansion slots extends through a thickness of the wall, at least one extending from a first end of the wall toward a second end of the wall but not reaching the second end. At least another of the plurality of expansion slots extends from the second end toward the first end of the wall but does not reach the first end. An installation slot extends through a thickness of the wall along a length of the wall, and a retainer is coupled to first and second gap ends of the wall across a gap created by the installation slot.