



(51) International Patent Classification:
E21B 10/36 (2006.01)

(21) International Application Number:

PCT/US2010/037330

(22) International Filing Date:

3 June 2010 (03.06.2010)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/184,635	5 June 2009 (05.06.2009)	US
12/793,489	3 June 2010 (03.06.2010)	US

(71) Applicant (for all designated States except US): **VAREL INTERNATIONAL, IND., L.P.** [US/US]; 1625 West Crosby, Suite 124, Carrollton, TX 75006 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **KING, William, W.** [US/US]; 13836 Paradise Valley Drive, Houston, TX 77069 (US). **DREWS, Steven, W.** [US/US]; 18226 Arbormont Drive, Cypress, TX 77429 (US). **REESE,**

Michael, R. [US/US]; 2806 Twin Fountains Drive, Houston, TX 77068 (US). **KIRK, Ian, Alastair** [GB/GB]; 131 North Deeside Road, Milltimber, Aberdeen (GB).

(74) Agents: **SZUWALSKI, Andre M.** et al.; Gardere Wynne Sewell LLP, 1601 Elm Street, Suite 300, Dallas, TX 75201-4761 (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,

[Continued on next page]

(54) Title: CASING BIT AND CASING REAMER DESIGNS

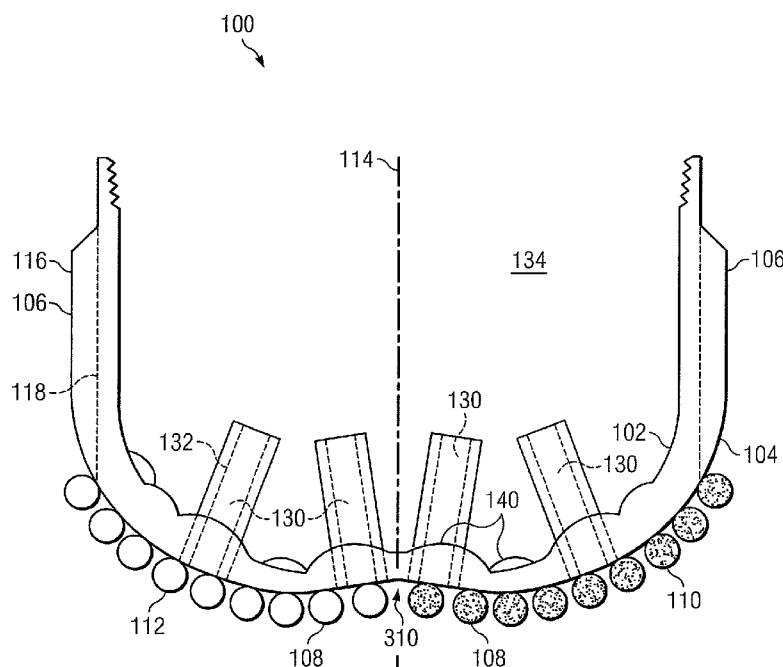


FIG. 1

(57) Abstract: A casing end tool has a bowl-like (or cup-like) body defined by a wall having an outer convex surface and an inner concave surface opposite of the outer convex surface. The bowl-like body has a center axis. The inner concave surface is non-axisymmetric with respect to the center axis, while the outer convex surface is axisymmetric with respect to the center axis. The non-axisymmetric configuration is provided in one implementation through the presence of a set of raised boss or land structures formed on the inner concave surface. In another implementation, the non-axisymmetric configuration is provided by channels formed in the inner concave surface.



EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, **Published:**

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).

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