



(51) International Patent Classification:
E21B 43/12 (2006.01)

(21) International Application Number:
PCT/US2011/062190

(22) International Filing Date:
28 November 2011 (28.11.2011)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
12/966,772 13 December 2010 (13.12.2010) US

(71) Applicant (for all designated States except US): **HAL-LIBURTON ENERGY SERVICES, INC.** [US/US];
2601 Beltline Road, Carrollton, TX 75006 (US).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **LOPEZ, Jean-marc** [FR/US]; 7308 Stoddard Ln., Plano, TX 75025 (US).

(74) Agent: **YOUST, Lawrence, R.**; Lawrence Youst Plc, One Waterway Court, Suite 3b, The Woodlands, TX 77380 (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, QA, RO, RS, RU, RW, 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, MD, 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, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

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

Published:

— without international search report and to be republished upon receipt of that report (Rule 48.2(g))

(54) Title: DOWNHOLE FLUID FLOW CONTROL SYSTEM AND METHOD HAVING DIRECTION DEPENDENT FLOW RESISTANCE

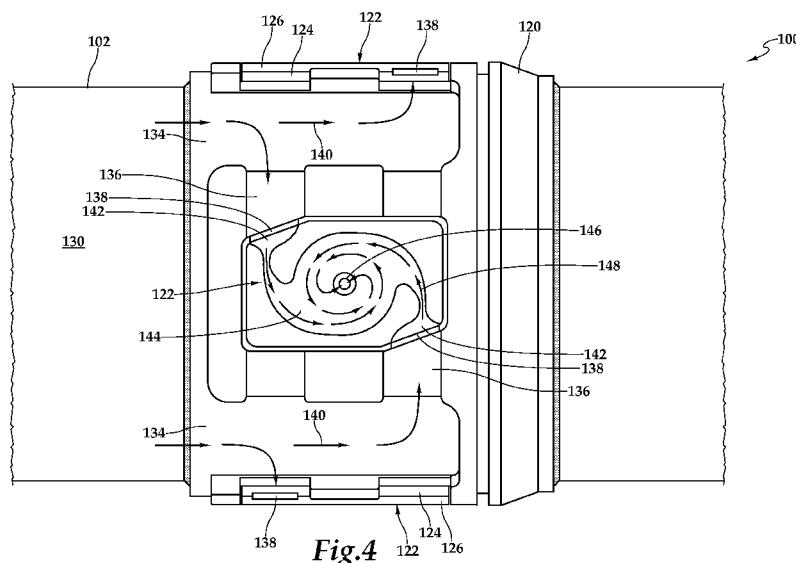


Fig.4

(57) Abstract: A downhole fluid flow control system (100). The flow control system (100) includes a flow control component (122) having direction dependent flow resistance created by a vortex chamber (144). Production fluids (140) that travel through the flow control component (122) in a first direction enter the vortex chamber (144) traveling primarily in a tangential direction (148) to experience a first pressure drop. Injection fluids (150) that travel through the flow control component (122) in a second direction enter the vortex chamber (144) traveling primarily in a radial direction (152) to experience a second pressure drop. The pressure drop created by the tangential flow (148) of the production fluids (140) is greater than the pressure drop created by the radial flow (152) of the injection fluids (150).

