(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
28 February 2008 (28.02.2008)

PCT

(10) International Publication Number
WO 2008/024264 A3

(51) International Patent Classification:
F16K 51/00 (2006.01) *E21B 33/06* (2006.01)

(21) International Application Number:
PCT/US2007/018159

(22) International Filing Date: 15 August 2007 (15.08.2007)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
11/466,161 22 August 2006 (22.08.2006) US

(71) Applicant *(for all designated States except US)*: **CAMERON INTERNATIONAL CORPORATION** [US/US]; 1333 West Loop South, Suite 1700, Houston, TX 77027 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **WHITBY, Melvyn, F.** [GB/US]; 15723 Stoney Fork Drive, Houston, TX 77084 (US). **MANGAN, John, T.** [GB/US]; 8411 Terrace Brook Drive, Houston, TX 77040 (US). **MCWHORTER, David, J.** [US/US]; 27102 Creek Drive, Magnolia, TX 77354 (US).

(74) Agent: **VYAS, Manish**; CAMERON INTERNATIONAL CORPORATION, P.O. Box 1212, Houston, TX 77251-1212 (US).

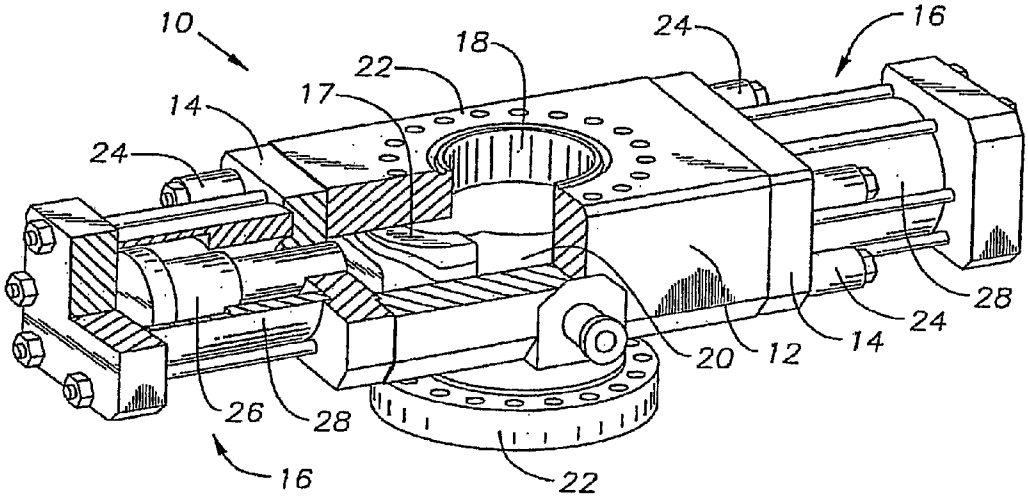
(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, 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, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, 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, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report*

(88) Date of publication of the international search report:
22 May 2008

(54) Title: FLUID SAVING BLOWOUT PREVENTER OPERATOR SYSTEM



(57) Abstract: A hydraulic blowout preventer operator comprises a piston rod having one end coupled to a closure member. The operator further comprises an operator housing having one end coupled to a bonnet and a second end coupled to a head. The piston rod extends through the bonnet into the operator housing where it is coupled to a piston that is disposed within the operator housing. The piston comprises a body and a flange. A flange seal is disposed on the flange and is sealingly engaged with the operator housing. A body seal is disposed on the body and is sealingly engaged with the operator housing. The flange seal has a sealing diameter greater than a sealing diameter of the body seal.

WO 2008/024264 A3