

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
06 February 2020 (06.02.2020)



(10) International Publication Number
WO 2020/027782 A1

(51) International Patent Classification:

E21B 34/06 (2006.01) **E21B 34/00** (2006.01)
F16K 1/20 (2006.01)

(21) International Application Number:

PCT/US2018/044414

(22) International Filing Date:

30 July 2018 (30.07.2018)

(25) Filing Language:

English

(26) Publication Language:

English

(71) Applicant: **HALLIBURTON ENERGY SERVICES, INC.** [US/US]; 3000 N. Sam Houston Parkway E., Houston, Texas 77032-3219 (US).

(72) Inventors: **VICK, JR., James Dan**; 13545 Purple Sage Rd., Dallas, Texas 75240 (US). **KELBIE, Andrew James**; 1416 Red Drive, Little Elm, Texas 75068 (US).

(74) Agent: **TUMEY, Corey, S.**; C. Tumey Law Group PLLC, P.O. Box 890226, Houston, Texas 77062-9998 (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, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP,

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

Declarations under Rule 4.17:

— of inventorship (Rule 4.17(iv))

Published:

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

(54) Title: SAFETY VALVE WITH A SLEEVED PISTON RECEPTACLE

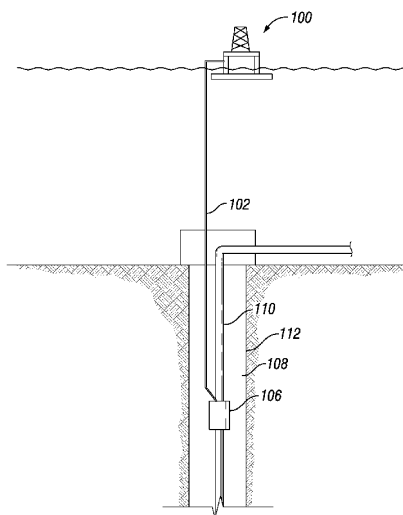


FIG. 1

(57) Abstract: Provided are systems and methods incorporating design features that may be beneficial over current available well safety valves, such as a sleeved receptacle for a piston, a constrained piston rod, and a trapped flapper valve. A safety valve may comprise: an outer housing having a central bore extending axially through the outer housing, wherein the outer housing comprises an outer wall having a receptacle formed in the outer wall; a sleeve disposed in the receptacle; a piston disposed in the sleeve, wherein the piston is actuated to travel in the sleeve; a spring positioned to apply a biasing force to the piston; and a valve member disposed in the outer housing, wherein the valve member is operable to selectively restrict flow through the safety valve in response to movement of the piston.

WO 2020/027782 A1