



- (51) International Patent Classification:
E21B 33/03 (2006.01)
- (21) International Application Number:
PCT/US2014/035939
- (22) International Filing Date:
29 April 2014 (29.04.2014)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
13/913,238 7 June 2013 (07.06.2013) US
- (71) Applicant: CAMERON INTERNATIONAL CORPORATION [US/US]; 1333 West Loop South, Suite 1700, Houston, Texas 77027 (US).
- (72) Inventors: LEE, Jeffrey Michael; 4646 West Sam Houston Parkway North, Houston, Texas 77041 (US). ROBINSON, Stuart; 4646 West Sam Houston Parkway North, Houston, Texas 77041 (US).

(74) Agents: SWANSON, Tait R. et al.; P.O. Box 692289, Houston, Texas 77269 (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,

[Continued on next page]

(54) Title: GEOTHERMAL INTEGRATED EXPANSION SPOOL ASSEMBLY

(57) Abstract: Embodiments of the present disclosure are directed towards a geothermal expansion spool assembly having an integrated or single piece configuration. The geothermal expansion spool assembly comprises an upper portion adapted to directly couple to a production valve and a lower portion adapted to surround and engage with a surface casing of a geothermal well, wherein the upper and lower portion are permanently fixed to one another.

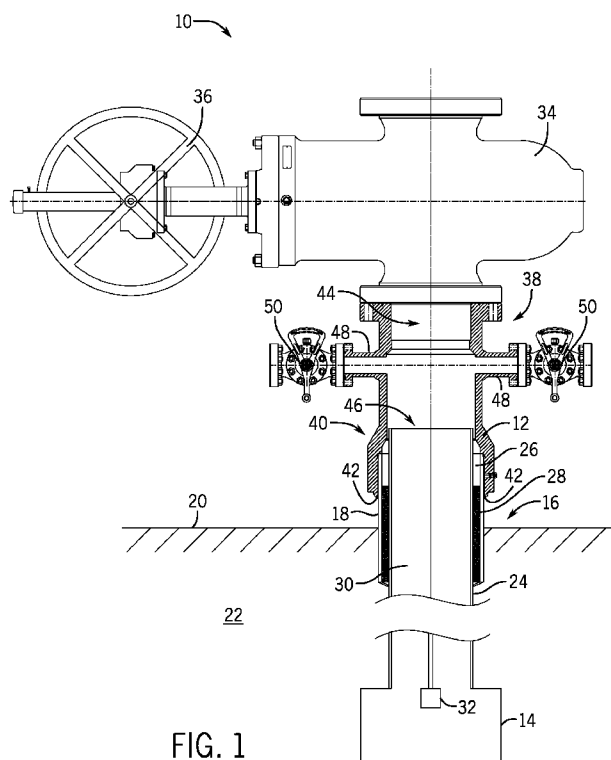


FIG. 1



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:**Declarations under Rule 4.17:**

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

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

— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

(88) Date of publication of the international search report:

16 April 2015