

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
04 May 2023 (04.05.2023)



(10) International Publication Number
WO 2023/076752 A1

(51) International Patent Classification:
E21B 17/02 (2006.01) *E21B 23/00* (2006.01)
E21B 17/00 (2006.01)

(21) International Application Number:
PCT/US2022/073749

(22) International Filing Date:
14 July 2022 (14.07.2022)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
63/272,013 26 October 2021 (26.10.2021) US
17/812,708 14 July 2022 (14.07.2022) US

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

(72) Inventors: **MINASSA, Lorenzo**; 3000 N. Sam Houston Parkway E., Houston, Texas 77032 (US). **FERNANDES, Marco Antonio dos Santos**; 3000 N. Sam Houston Parkway E., Houston, Texas 77032 (US).

(74) Agent: **GARDNER, Jason D.**; Kilpatrick Townsend & Stockton LLP, IP Docketing - 22nd Floor, 1100 Peachtree Street NE, Suite 2800, Atlanta, Georgia 30309 (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, CV, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, 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, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, 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).

(54) Title: AUTO-INSULATING CONCENTRIC WET-MATE ELECTRICAL CONNECTOR FOR DOWNHOLE APPLICATIONS

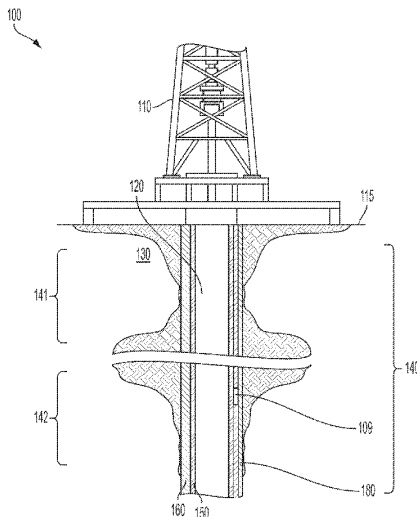


FIG. 1

(57) Abstract: A wet-mate connector assembly can include a male portion having a male electrical contact with a valve metal alloy thereon. The wet-mate connector assembly can also include a female portion having a female electrical contact with the valve metal alloy thereon. The female portion can receive the male portion for defining a fluid flow path therein and can form an electrical connection with the male portion. The valve metal alloy can respond to an electrical charge and a downhole fluid by forming an insulation layer on at least one of the male electrical contact or the female electrical contact in a downhole of a well.

WO 2023/076752 A1

[Continued on next page]

Published:

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