

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
10 June 2021 (10.06.2021)



(10) International Publication Number
WO 2021/111153 A1

(51) International Patent Classification:
C02F 1/32 (2006.01)

(21) International Application Number:
PCT/GB2020/053137

(22) International Filing Date:
07 December 2020 (07.12.2020)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
62/944,665 06 December 2019 (06.12.2019) US

(71) Applicant: **ATG R&D LIMITED** [GB/GB]; Genesis House, Pemberton Busienss Centre, Richmond Hill, Pemberton, Wigan WN5 8AA (GB).

(72) Inventors: **JOSHI, Richard**; 9 Burnsall Avenue, Lowton, Warrington WA3 2LT (GB). **FOSTER, George**; 29 Oak Lane, Whitefield, Manchester M45 8FT (GB). **CROXSON, Thomas**; Genesis House, Pemberton, Wigan WN5 8AA (GB).

(74) Agent: **MURGITROYD**; Murgitroyd House, 165-169 Scotland Street, Glasgow Strathclyde G5 8PL (GB).

(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, IT, 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: CLEANING MECHANISM FOR OPTICAL TUBULAR SLEEVES

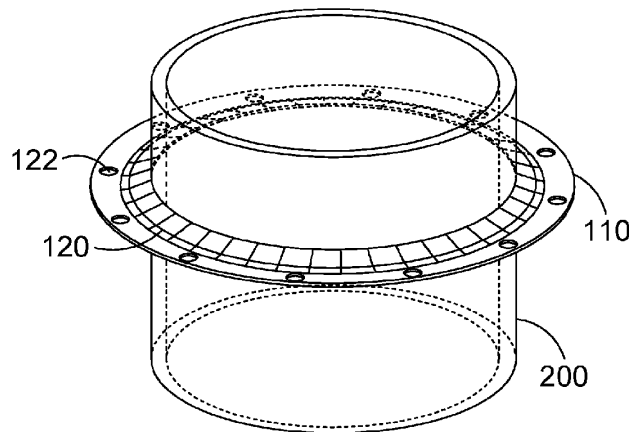


FIG. 1

(57) Abstract: A scraper assembly configured to traverse an exterior surface of a tubular member is disclosed. The scraper assembly includes a casing constructed and arranged to drive the scraper assembly to traverse the exterior surface of the tubular member and a primary ring fixed to the casing, having a plurality of projections formed of a semi-rigid material extending inward toward the exterior surface of the tubular member. A water treatment system including the scraper assembly is also disclosed. A method of retrofitting a water treatment system including providing the scraper assembly is also disclosed. A method of removing organic material fouling from an exterior surface of a quartz sleeve is also disclosed. The method includes directing the scraper assembly to traverse the exterior surface of the quartz sleeve.

[Continued on next page]

WO 2021/111153 A1

Published:

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