



(51) International Patent Classification:

C02F 1/467 (2006.01) H01M 8/08 (2016.01)
C02F 1/461 (2006.01) H01M 8/16 (2006.01)
C02F 1/46 (2006.01)

(21) International Application Number:

PCT/US2019/039899

(22) International Filing Date:

28 June 2019 (28.06.2019)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

62/691,426 28 June 2018 (28.06.2018) US
62/745,896 15 October 2018 (15.10.2018) US

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(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,

(54) Title: SCALABLE CONTINUOUS FLOW MICROBIAL FUEL CELLS

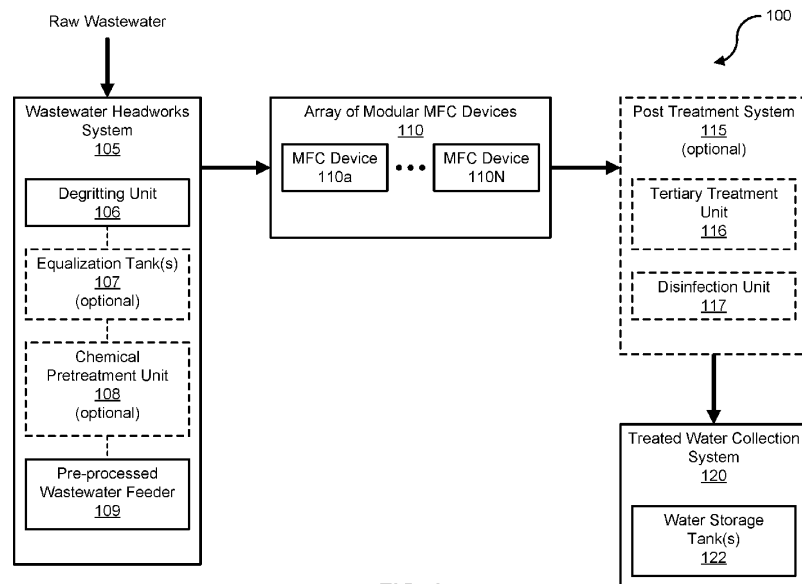


FIG. 1

(57) **Abstract:** Disclosed are modular microbial fuel cell (MFC) devices, systems and methods for treating wastewater and generating electrical energy through a bioelectrochemical waste-to-energy conversion process. In some aspects, a modular MFC system includes a wastewater pretreatment system to receive and pre-treat raw wastewater for feeding pre-treated wastewater for bioelectrochemical processing; one or more modular MFC devices to bioelectrochemically process the pre-treated wastewater by concurrently generating electrical energy and digesting organic contaminants and particulates in the wastewater to yield treated, cleaner water; and a water collection module to receive the treated water from the one or more modular MFC devices and store the treated water and/or route the treated water from the system.

[Continued on next page]

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:

— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

Published:

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