



(51) International Patent Classification:

B03D 1/02 (2006.01) **B01F 5/16** (2006.01)
B03D 1/14 (2006.01) **B01F 3/04** (2006.01)
B03D 1/24 (2006.01) **F04D 7/04** (2006.01)
C02F 1/24 (2006.01) **F04D 31/00** (2006.01)

(21) International Application Number:

PCT/US2013/040830

(22) International Filing Date:

14 May 2013 (14.05.2013)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/646,958 15 May 2012 (15.05.2012) US
 13/892,746 13 May 2013 (13.05.2013) US

(71) Applicant: **FLUID EQUIPMENT DEVELOPMENT COMPANY, LLC** [US/US]; 800 Ternes Drive, Monroe, Michigan 48162 (US).

(72) Inventor: **OKLEJAS, Eli, Jr.**; 4750 Burke Road, Newport, Michigan 48166 (US).

(74) Agents: **MIERZWA, Kevin** et al.; Harness, Dickey & Pierce, P.L.C., P.O. Box 828, Bloomfield Hills, Michigan 48303 (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, IS, JP, KE, KG, KM, 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, 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.

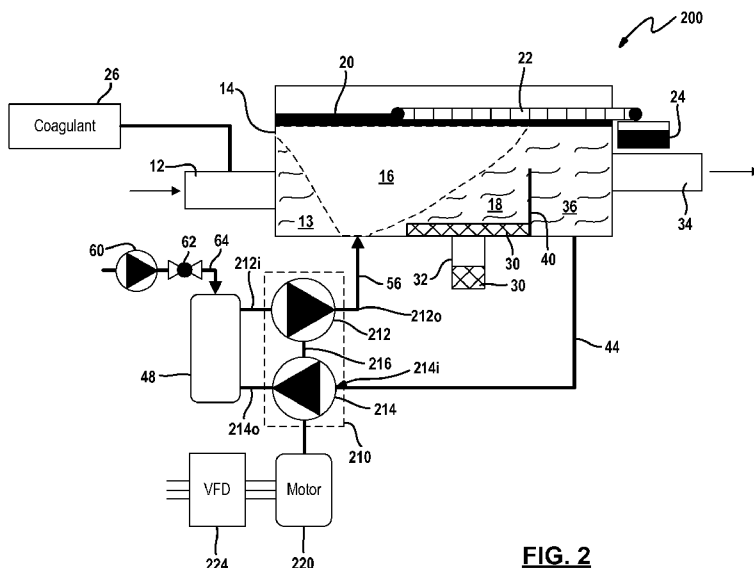
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, 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, ML, MR, NE, SN, TD, TG).

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))

[Continued on next page]

(54) Title: DISSOLVED AIR FLOTATIONS SYSTEM WITH ENERGY RECOVERY DEVICES

**FIG. 2**

(57) Abstract: A system and method of operating the same includes an absorption tank having a compressor communicating gas thereto, a suspended solid filtration tank having a primary inlet, a secondary inlet, a primary outlet and a secondary outlet and a pump comprising a pump inlet coupled to the secondary outlet and a pump outlet communicating fluid to the absorption tank. The absorption tank forms a solution from the fluid and gas. A turbine mechanically couples the pump with a common shaft extending to the pump. The turbine has a turbine inlet coupled to the absorption tank and a turbine outlet coupled to the secondary inlet. The turbine depressurizes the solution. The system may also use a centrifugal pump in place of a turbine and absorption tank.



Published:

- *with international search report (Art. 21(3))*
- *with amended claims and statement (Art. 19(1))*

(88) Date of publication of the international search report:
20 March 2014

Date of publication of the amended claims and statement: 8
May 2014