



- (51) **International Patent Classification:**
G21H 1/12 (2006.01) *H05H 1/48* (2006.01)
- (21) **International Application Number:**
PCT/US2014/032584
- (22) **International Filing Date:**
1 April 2014 (01.04.2014)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
- | | | |
|------------|----------------------------|----|
| 61/947,019 | 3 March 2014 (03.03.2014) | US |
| 61/949,271 | 7 March 2014 (07.03.2014) | US |
| 61/968,839 | 21 March 2014 (21.03.2014) | US |
| 61/972,807 | 31 March 2014 (31.03.2014) | US |
- (71) **Applicant:** **BLACKLIGHT POWER, INC.** [US/US];
493 Old Trenton Road, Cranbury, NJ 08512 (US).
- (72) **Inventor:** **MILLS, Randell**; c/o Blacklight Power, Inc.,
493 Old Trenton Road, Cranbury, NJ 08512 (US).
- (74) **Agents:** **SWEET, Mark, D.** et al.; FINNEGAN, HENDE-
RSON, FARABOW, GARRETT & DUNNER LLP, 901
New York Avenue, NW, Washington, DC 20001-4413
(US).

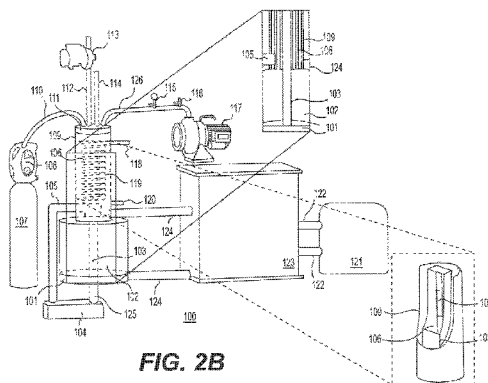
(81) **Designated States** (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, 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, 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:

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

(54) **Title:** PHOTOVOLTAIC POWER GENERATION SYSTEMS AND METHODS REGARDING SAME

**FIG. 2B**

(57) **Abstract:** A solid fuel power source that provides at least one of electrical and thermal power comprising (i) at least one reaction cell for the catalysis of atomic hydrogen to form hydrinos, (ii) a chemical fuel mixture comprising at least two components chosen from: a source of H₂O catalyst or H₂O catalyst; a source of atomic hydrogen or atomic hydrogen; reactants to form the source of H₂O catalyst or H₂O catalyst and a source of atomic hydrogen or atomic hydrogen; one or more reactants to initiate the catalysis of atomic hydrogen; and a material to cause the fuel to be highly conductive, (iii) at least one set of electrodes that confine the fuel and an electrical power source that provides a short burst of low-voltage, high-current electrical energy to initiate rapid kinetics of the hydrino reaction and an energy gain due to forming hydrinos, (iv) a product recovery systems such as a vapor condenser, (v) a re-loading system, (vi) at least one of hydration, thermal, chemical, and electrochemical systems to regenerate the fuel from the reaction products, (vii) a heat sink that accepts the heat from the power-producing reactions, (viii) a photovoltaic power converter comprising at least one of a concentrated solar power device, and at least one triple-junction photovoltaic cell, monocrystalline cell, polycrystalline cell, amorphous cell, string/ribbon silicon cell, multi-junction cell, homojunction cell, heterojunction cell, p-i-n device, thin-film cells, dye-sensitized cell, and an organic photovoltaic cell, and an antireflection coating, an optical impedance matching coating, and a protective coating.