



(51) International Patent Classification:
F23D 3/40 (2006.01)

(21) International Application Number:
PCT/US2009/006722

(22) International Filing Date:
28 December 2009 (28.12.2009)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/140,902 26 December 2008 (26.12.2008) US
12/647,834 28 December 2009 (28.12.2009) US

(71) Applicant (for all designated States except US): **VACCA, INC.** [US/US]; 3476 Irwin Simpson Road, Suite 105, Mason, OH 45040 (US).

(72) Inventors: **VACCA, Giampaolo**; 3476 Irwin Simpson Road, Suite 105, Mason, Ohio 45040 (US). **POSTON, Jeffrey**; 3476 Irwin Simpson Road, Suite 105, Mason,

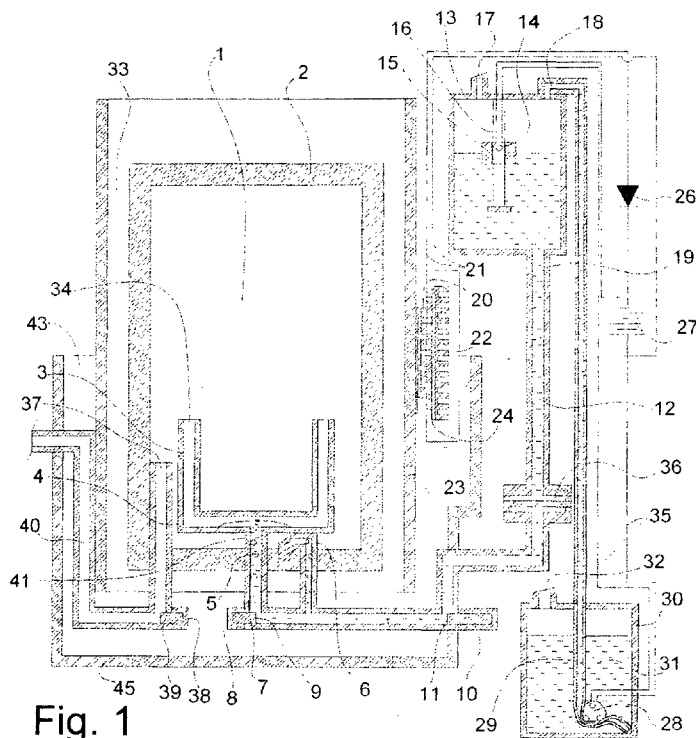
Ohio 45040 (US). **SWANK, Michael, A.**; 3476 Irwin Simpson Road, Suite 105, Mason, Ohio 45040 (US). **HOCKADAY, Robert, G.**; 3476 Irwin Simpson Road, Suite 105, Mason, Ohio 45040 (US). **WEBER, Lawrence**; 52 Fourth Street, Holbrook, New York 11741 (US). **BAGRIY, Pavlo**; 3476 Irwin Simpson Road, Suite 105, Mason, OH 45040 (US).

(74) Agent: **LAFKAS, David, M.**; Lafkas Patent LLC, PO Box 43289, Cincinnati, OH 45243-0289 (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, 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, PE, PG, PH, PL, PT, RO, RS, RU, 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.

[Continued on next page]

(54) Title: JET CAVITY CATALYTIC HEATER



(57) Abstract: The present invention is a method of delivering vaporized alcohol fuel through a thermally conductive porous nozzle to a catalytic burner with a plasma cavity and a surrounding porous catalytic cavity with fuel vapor and air supplied separately and inter diffusing into each other from different routes to the catalyst to achieve an efficient, steady, and complete combustion of the hydrogen bearing fuels. This heating system with passive auto thermostatic behavior, coupled to thermopiles, heat pipes and fluid heating systems may provide useful heat and electricity to applications of floors, roadways, runways, electronics, refrigerators, machinery, automobiles, structures, and fuel cells.



(84) **Designated States** (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (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, SE, SI, SK, SM,

TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

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