



- (51) **International Patent Classification:**
H05B 1/02 (2006.01)
- (21) **International Application Number:**
PCT/US2021/045735
- (22) **International Filing Date:**
12 August 2021 (12.08.2021)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
63/064,523 12 August 2020 (12.08.2020) US
- (71) **Applicant:** **WATLOW ELECTRIC MANUFACTURING COMPANY** [US/US]; 12001 Lackland Road, St. Louis, MO 63146 (US).
- (72) **Inventors:** **PHILLIPS, Brittany**; 9741 Sappington Road, St. Louis, MO 63128 (US). **BREITLOW, Stanton, H.**; 1241 Bundy Blvd., Winona, MN 55987 (US). **PTASIENSKI, Kevin**; 220 Irish Hound Dr., O'Fallon, MO 63368 (US).
- (74) **Agent:** **FADIPE, Abha, T.**; Burris Law, PLLC, 300 River Place Drive, Suite 1775, Detroit, MI 48207 (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, 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,

(54) **Title:** METHOD AND SYSTEM FOR PROVIDING VARIABLE RAMP-DOWN CONTROL FOR AN ELECTRIC HEATER

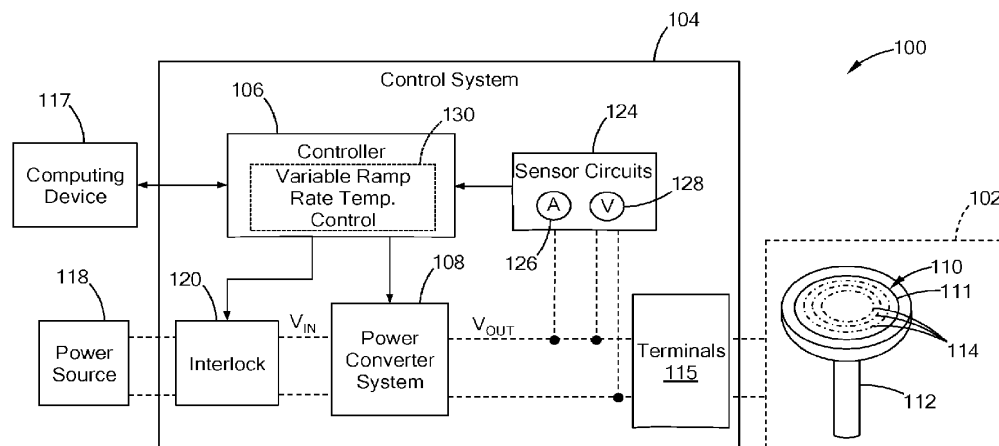


FIG. 1

(57) **Abstract:** In one form, the present disclosure is directed toward a method of controlling temperature of a heater including a resistive heating element. The method includes applying power to the resistive heating element at a variable ramp rate to decrease temperature of the heater to a desired temperature setpoint, where the variable ramp rate is set to a desired ramp rate. The method further includes monitoring the temperature of the heater to detect a runaway condition and adjusting the variable ramp rate from the desired ramp rate to a permitted ramp rate in response to the runaway condition being detected.

[Continued on next page]

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))*