



- (51) **International Patent Classification:** Not classified
- (21) **International Application Number:**
PCT/US2014/021766
- (22) **International Filing Date:**
7 March 2014 (07.03.2014)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
13/833,144 15 March 2013 (15.03.2013) US
- (71) **Applicant:** ATI PROPERTIES, INC. [US/US]; 1600 N.E. Old Salem Road, Albany, Oregon 97321 (US).
- (72) **Inventors:** FORBES JONES, Robin M.; 11700 Gullane Court, Charlotte, North Carolina 28277 (US). KENNEDY, Richard L.; 206 Macedonia Church Road, Monroe, North Carolina 28112 (US). CAO, Wei-Di; 4004 Wild Nursery Court, Charlotte, North Carolina 28215 (US).
- (74) **Agents:** GROSSELIN, III, John E. et al.; 1000 Six PPG Place, Pittsburgh, Pennsylvania 15222 (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).

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))

Published:

- without international search report and to be republished upon receipt of that report (Rule 48.2(g))

(54) **Title:** METHODS TO IMPROVE HOT WORKABILITY OF METAL ALLOYS

(57) **Abstract:** A method of processing an alloy workpiece to reduce thermal cracking may comprise spraying a metallic coating material onto at least a portion of a surface of the alloy workpiece to form a surface coating metallurgically bonded to the alloy workpiece. The surface coating may be more ductile than the alloy workpiece and reduces heat loss from the alloy workpiece.

