

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
20 March 2008 (20.03.2008)

PCT

(10) International Publication Number
WO 2008/031229 A1

(51) International Patent Classification:

C01B 33/037 (2006.01) **C30B 29/06** (2006.01)
C01B 33/02 (2006.01) **F27B 7/06** (2006.01)
C01B 33/12 (2006.01)

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(21) International Application Number:

PCT/CA2007/001646

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, 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, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(22) International Filing Date:

13 September 2007 (13.09.2007)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

60/844,372 14 September 2006 (14.09.2006) US

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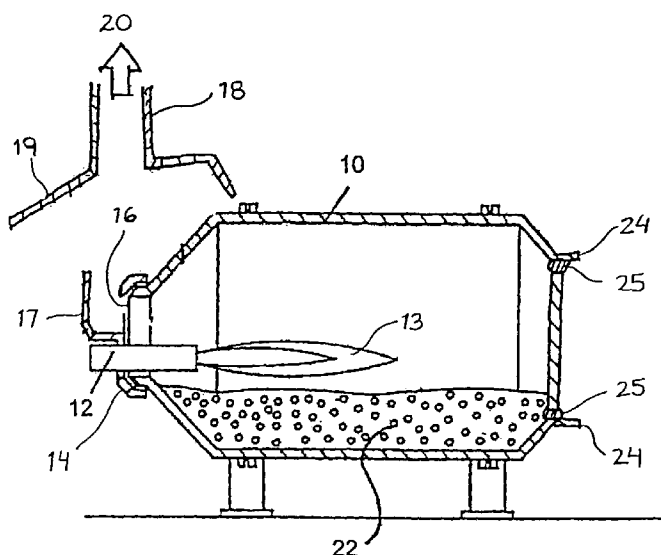
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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[Continued on next page]

(54) Title: PROCESS AND APPARATUS FOR PURIFYING LOW-GRADE SILICON MATERIAL



(57) Abstract: A process and apparatus for purifying low-purity silicon material and obtaining a higher-purity silicon material is provided. The process includes providing a melting apparatus equipped with an oxy-fuel burner, and melting the low-purity silicon material in the melting apparatus to obtain a melt of higher-purity silicon material. The melting apparatus may include a rotary drum furnace and the melting of the low-purity silicon material may be carried out at a temperature in the range from 1410°C to 1700°C under an oxidizing or reducing atmosphere. A synthetic slag may be added to the molten material during melting. The melt of higher-purity silicon material may be separated from a slag by outpouring into a mould having an open top and insulated bottom and side walls. Once in the mould, the melt of higher-purity silicon material can undergo controlled unidirectional solidification to obtain a solid polycrystalline silicon of an even higher purity.

WO 2008/031229 A1



Declaration under Rule 4.17:

— *of inventorship (Rule 4.17(iv))*

Published:

— *with international search report*

— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*