

(51) International Patent Classification:
C21B 13/00 (2006.01)

(21) International Application Number:

PCT/KR2008/007490

(22) International Filing Date:

17 December 2008 (17.12.2008)

(25) Filing Language:

Korean

(26) Publication Language:

English

(30) Priority Data:

10-2007-0137303

26 December 2007 (26.12.2007)

KR

(71) Applicant (for all designated States except US): POSCO
[KR/KR]; 1, Goedong-dong, Nam-ku, Pohang-shi,
Kyungsangbuk-do 790-300 (KR).

(72) Inventors; and

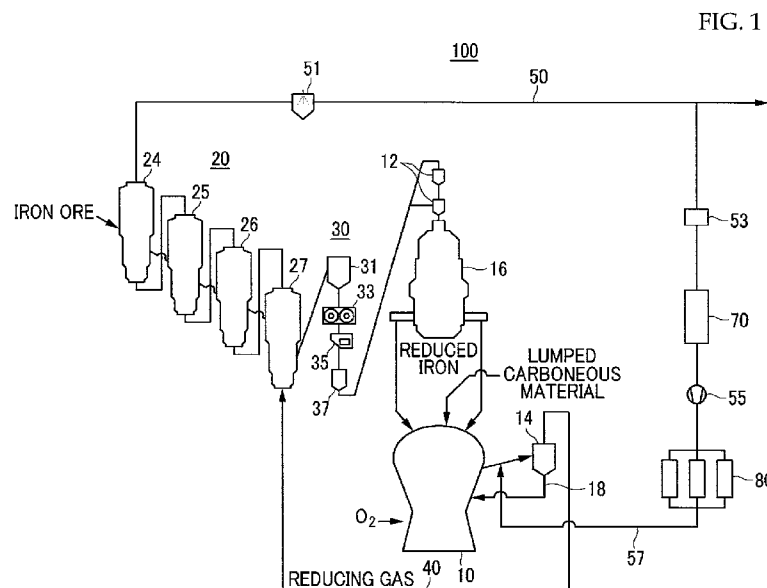
(75) Inventors/Applicants (for US only): KIM, Ki-Hyun
[KR/KR]; c/o POSCO, Dongchon-dong 5, Nam-ku, Po-
hang-shi, Kyungsangbuk-do 790-360 (KR). LEE, Si-
Hyung [KR/KR]; c/o POSCO, Dongchon-dong 5, Nam-
ku, Pohang-shi, Kyungsangbuk-do 790-360 (KR). KIM,
Sung-Man [KR/KR]; c/o POSCO, Dongchon-dong 5,
Nam-ku, Pohang-shi, Kyungsangbuk-do 790-360 (KR).
LEE, Hoo-Geun [KR/KR]; c/o POSCO, Dongchon-dong
5, Nam-ku, Pohang-shi, Kyungsangbuk-do 790-360 (KR).(74) Agent: YOU ME PATENT AND LAW FIRM; Seolim
Bldg., 649-10, Yoksam-dong, Kangnam-ku, Seoul,
135-080 (KR).(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, 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, 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, ST, SV, SY, 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, 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, MT, NL, NO, PL, PT, RO, SE, SI, SK, 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))

[Continued on next page]

(54) Title: APPARATUS FOR MANUFACTURING MOLTEN IRON AND METHOD FOR MANUFACTURING THE SAME



(57) Abstract: The present invention relates to an apparatus for manufacturing molten iron and a method of manufacturing the molten iron. The apparatus for manufacturing molten iron includes at least one reduction reactor, a melter-gasifier, an offgas supply line, and at least one reformer. The at least one reduction reactor reduces iron ore to form reduced iron. The melter-gasifier is connected to the reduction reactor. The reduced iron, a lumped carbonaceous material, and oxygen are provided to the melter-gasifier to form molten iron. The offgas supply line circulates an offgas discharged from the reduction reactor to the reduction reactor. The at least one reformer is installed at the offgas supply line to raise the amount of hydrogen included in the offgas.



— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

(88) **Date of publication of the international search report:**
17 September 2009

A. CLASSIFICATION OF SUBJECT MATTER*C21B 13/00(2006.01)i*

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC8 C21B 13/00, C21B 13/02.

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean Utility models and applications for Utility models since 1975.

Japanese Utility models and applications for Utility models since 1975.

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & keywords: "molten iron, reduction reactor, a melter-gasifier, an offgas supply line, reformer"

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	KR 10-2005-0054849 A (POSCO) 10 June 2005 See the abstract, and claims 1-42 and figures 1-8	1 - 27
A	KR 10-2001-0041141 A (VILLARREAL-TREVINO) 15 May 2001 See the abstract, and claims 1-26 and figures 1-4	1 - 27
A	KR 10-2003-0013057 A (POSCO) 14 February 2003 See the abstract, and claims 1-4 and figures 1-2	1 - 27
A	KR 10-2005-0089836 A (POSCO) 08 September 2005 See the abstract, and claims 1-16 and figures 1-5	1 - 27
A	JP 11-140529 A (NKK CORP.) 25 May 1999 See the abstract, and claim 1 and figures 1-3	1 - 27



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

31 JULY 2009 (31.07.2009)

Date of mailing of the international search report

03 AUGUST 2009 (03.08.2009)

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
Government Complex-Daejeon, 139 Seonsa-ro, Seo-
gu, Daejeon 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

KIM, Su Seong

Telephone No. 82-42-481-5525



INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/KR2008/007490

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
KR 10-2005-0054849 A	10.06.2005	EP 1689892 A1 WO 2005-054520 A1	16.08.2006 16.06.2005
KR 10-2001-0041141 A	15.05.2001	AU 1999-32705 A1 US 05990436 A US 05749459 A US 05384441 A	19.02.1999 23.11.1999 12.05.1998 24.01.1995
KR 10-2003-0013057 A	15.07.2000	NONE	
KR 10-2005-0089836 A	08.09.2005	AU 2003-289518 A1 AU 2003-289518 A1 AU 2003-289518 B2 AU 2003-289518 B2 US 2006-0119023 A1	23.12.2003 14.07.2004 06.09.2007 23.12.2003 08.06.2006
JP 11-140529 A	25.05.1999	NONE	