



US009410743B2

(12) **United States Patent**
Takahashi

(10) **Patent No.:** **US 9,410,743 B2**
(45) **Date of Patent:** **Aug. 9, 2016**

(54) **METAL MELTING FURNACE VORTEX CHAMBER BODY AND METAL MELTING FURNACE USING THE SAME**

(58) **Field of Classification Search**
CPC F27D 27/00; F27B 3/04
USPC 266/233, 234
See application file for complete search history.

(71) Applicant: **Kenzo Takahashi**, Matsudo (JP)

(56) **References Cited**

(72) Inventor: **Kenzo Takahashi**, Matsudo (JP)

U.S. PATENT DOCUMENTS

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 49 days.

4,685,657 A * 8/1987 Okubo C22B 9/02
266/234
4,839,904 A 6/1989 Harberts et al.

(Continued)

(21) Appl. No.: **14/126,171**

FOREIGN PATENT DOCUMENTS

(22) PCT Filed: **Sep. 27, 2012**

CA 2 535 528 A1 8/2006
CN 201688718 U 12/2010

(86) PCT No.: **PCT/JP2012/074913**

(Continued)

§ 371 (c)(1),
(2) Date: **Dec. 13, 2013**

OTHER PUBLICATIONS

(87) PCT Pub. No.: **WO2013/047668**

U.S. Appl. No. 14/115,788, filed Nov. 5, 2013, Takahashi.

PCT Pub. Date: **Apr. 4, 2013**

(Continued)

(65) **Prior Publication Data**

Primary Examiner — Scott Kastler

US 2014/0210145 A1 Jul. 31, 2014

(74) *Attorney, Agent, or Firm* — Oblon, McClelland, Maier & Neustadt, L.L.P.

(30) **Foreign Application Priority Data**

(57) **ABSTRACT**

Sep. 30, 2011 (JP) 2011-217851

A metal melting furnace vortex chamber body having a vortex chamber capable of communicating with a storage space of a furnace body having the storage space storing molten metal. The metal melting furnace vortex chamber body has a drop weir part which switches a communication state and an interruption state between the storage space and the vortex chamber. The drop weir part includes a blind drop weir and an opening type drop weir which are formed as separate members. At least the blind drop weir is movable up and down with respect to the vortex chamber body and is selectively positioned at an upward movement position and a downward movement position so as to switch the communication state and the interruption state.

(51) **Int. Cl.**
F27B 3/04 (2006.01)
B22D 1/00 (2006.01)

(Continued)

(52) **U.S. Cl.**
CPC ... **F27B 3/04** (2013.01); **B22D 1/00** (2013.01);
F27B 3/045 (2013.01); **F27B 3/19** (2013.01);
F27B 19/02 (2013.01); **F27D 3/14** (2013.01);
F27D 27/00 (2013.01); **F27D 99/007**
(2013.01); **F27D 2003/0054** (2013.01)

13 Claims, 5 Drawing Sheets

