

Title (en)

REFRACTORY NOZZLE AND INDUCTION COIL THEREFOR

Publication

**EP 0379647 A3 19910313 (DE)**

Application

**EP 89119300 A 19891018**

Priority

DE 3842690 A 19881219

Abstract (en)

[origin: EP0379647A2] The invention relates to a refractory nozzle between a vessel containing a metal melt and a withdrawal device for the metal melt, in particular a refractory outlet for molten steel. <??>To avoid the metal melt freezing in and to avoid deposits of constituents of the metal melt on the inner surface (2) of the wall of the outlet, the invention essentially proposes that the inner wall (1) of the outlet be composed completely or partially of a ceramic material which is electrically conductive at least at the liquidus temperature of the metal melt and can be inductively heated by means of an induction coil (4), or contains such a material. The invention also relates to the particular design of an induction coil (4) which is economic to use for this purpose or, indeed, in another context.

IPC 1-7

**B22D 41/60; H05B 6/36**

IPC 8 full level

**H05B 6/10** (2006.01); **B22D 11/10** (2006.01); **B22D 35/06** (2006.01); **B22D 41/60** (2006.01); **B32B 43/00** (2006.01); **H01F 5/00** (2006.01);  
**H05B 6/36** (2006.01)

CPC (source: EP KR US)

**B22D 39/00** (2013.01 - KR); **B22D 41/60** (2013.01 - EP US); **H05B 6/367** (2013.01 - EP US)

Citation (search report)

- [X] FR 2609914 A1 19880729 - AUBERT & DUVAL ACIERIES [FR], et al
- [YD] GB 2121028 A 19831214 - WESTERN ELECTRIC CO
- [X] US 2779073 A 19570129 - OSBORN JR HARRY B
- [X] FR 1525154 A 19680517
- [X] DE 2234127 A1 19740124 - SIGRI ELEKTROGRAPHIT GMBH
- [XP] EP 0328316 A2 19890816 - SHINAGAWA REFRactories CO [JP]
- PATENT ABSTRACTS OF JAPAN, Band 7, Nr. 95 (M-209)[1240], 21. April 1983; & JP,A,58 020 355 (HITACHI SEISAKUSHO K.K.) 05-02-1983; Zusammenfassung.

Cited by

US7028868B2; EP1275452A3; FR2701225A1; US5708257A; DE19607560A1; DE19607560C2; DE19620403C1; US6156446A; DE10150032A1; DE10150032C2; AU715986B2; CN1072054C; EP2486156A4; CN106334788A; WO9747412A1; WO9417938A1; WO9215413A1; WO9744152A1

Designated contracting state (EPC)

AT BE CH DE ES FR GB GR IT LI LU NL SE

DOCDB simple family (publication)

**EP 0379647 A2 19900801; EP 0379647 A3 19910313; EP 0379647 B1 19930922;** AT E94791 T1 19931015; BR 8906446 A 19900821; CA 2005657 A1 19900619; CA 2005657 C 19990615; CN 1043648 A 19900711; DE 3842690 A1 19900621; DE 3842690 C2 19980430; DE 58905694 D1 19931028; JP 2884246 B2 19990419; JP H02274368 A 19901108; KR 900009184 A 19900702; US 5052597 A 19911001; US 5054664 A 19911008; ZA 898396 B 19900725

DOCDB simple family (application)

**EP 89119300 A 19891018;** AT 89119300 T 19891018; BR 8906446 A 19891214; CA 2005657 A 19891215; CN 89109294 A 19891215; DE 3842690 A 19881219; DE 58905694 T 19891018; JP 31551689 A 19891206; KR 890018363 A 19891212; US 45092189 A 19891214; US 56238290 A 19900803; ZA 898396 A 19891103