

Title (en)

METHOD FOR ENHANCING SELF-FEEDING ABILITY OF HEAVY SECTION CASTING BLANK

Title (de)

VERFAHREN ZUR VERBESSERUNG DER SELBSTSPEISUNGSFÄHIGKEIT EINES SCHWERLAST-GUSSROHLINGS

Title (fr)

PROCÉDÉ D'AMÉLIORATION DE LA CAPACITÉ D'AUTO-ALIMENTATION D'ÉBAUCHE DE COULÉE À PROFIL ÉPAIS

Publication

**EP 2656946 A4 20171025 (EN)**

Application

**EP 11851813 A 20110630**

Priority

- CN 201010604260 A 20101223
- CN 2011076640 W 20110630

Abstract (en)

[origin: US2013248056A1] The present invention relates to the field of casting blank manufacturing, in particular to a method for enhancing the self-feeding ability of a heavy section casting blank, which can solve the problems of poor centre quality, surface crack and high rejection rate of the heavy section casting blanks in the prior art. By controlling the outer cooling conditions of different solidification stages of the casting blank, the present invention quickly solidifies and crusts the outer surface of the casting blank to increase the strength and prevent surface crack at first, and then performs thermal insulation on the casting blank surface such that large area of the core forms the mushy region such that the solidified layer of the casting blank surface is maintained at a relatively high temperature to facilitate realization of the plastic deformation, thus realizing synchronous solidification and solid movement in the subsequent solidification and shrinkage processes of the casting blank, fulfilling the aim of radial self-feeding of the high-temperature deformable metal, eliminating the inner shrinkage voids and surface crack, and obviously eliminating the inner shrinkage of the casting blank. The present invention is applicable to the heavy section metal castings, in particular to the round and square heavy section casting blanks which have a large height-diameter ratio and cannot eliminate the axis shrinkage pipe through the feeder head.

IPC 8 full level

**B22D 27/04** (2006.01); **B22D 11/124** (2006.01); **B22D 27/00** (2006.01)

CPC (source: EP US)

**B22D 11/124** (2013.01 - EP US); **B22D 11/22** (2013.01 - EP US); **B22D 25/06** (2013.01 - EP US); **B22D 27/04** (2013.01 - EP US); **B22D 30/00** (2013.01 - EP US)

Citation (search report)

- [X] US 2007102136 A1 20070510 - WAGSTAFF ROBERT B [US], et al
- [A] JP H08206806 A 19960813 - KOBE STEEL LTD
- [A] JP 2007307574 A 20071129 - SUMITOMO METAL IND
- [A] EP 2174728 A1 20100414 - BAOSHAN IRON & STEEL [CN]
- [A] JP S5345610 A 19780424 - SUMITOMO METAL IND
- [A] JP 2001137901 A 20010522 - NIPPON KOKAN KK
- [A] JP 2007181861 A 20070719 - SUMITOMO METAL IND
- [A] JP 2002361376 A 20021217 - DAIDO STEEL CO LTD
- [A] CN 1640569 A 20050720 - NEW IRON & STEEL CO LTD ANGANG [CN]
- [A] J.J. MOORE, N.A. SHAH: "Mechanisms of formation of A- and V-segregation in cast steel", INTERNATIONAL METALS REVIEW, vol. 28, no. 6, 1983, XP002773446
- [A] J. SENGUPTA, B.G. THOMAS, M.A. WELLS: "The Use of Water Cooling during the Continuous Casting of Steel and Aluminum Alloys", METALLURGICAL AND MATERIALS TRANSACTIONS A, vol. 36A, 2005, XP002773447
- See references of WO 2012083671A1

Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

DOCDB simple family (publication)

**US 2013248056 A1 20130926**; CN 102161090 A 20110824; CN 102161090 B 20121107; EP 2656946 A1 20131030; EP 2656946 A4 20171025; JP 2014500801 A 20140116; JP 5852126 B2 20160203; KR 101588677 B1 20160127; KR 20130094330 A 20130823; WO 2012083671 A1 20120628

DOCDB simple family (application)

**US 201113991564 A 20110630**; CN 201010604260 A 20101223; CN 2011076640 W 20110630; EP 11851813 A 20110630; JP 2013539120 A 20110630; KR 20137011195 A 20110630