

Title (en)

METHOD FOR REDUCING SURFACE CRACKS OF CASTING BLANK BY USING FERRITE PHASE

Title (de)

VERFAHREN ZUR VERMINDERUNG VON OBERFLÄCHENRISSEN BEI GUSSROHLINGEN UNTER VERWENDUNG EINER FERRITPHASE

Title (fr)

PROCÉDÉ DE RÉDUCTION DE FISSURES DE SURFACE D'UNE ÉBAUCHE DE COULÉE À L'AIDE D'UNE PHASE DE FERRITE

Publication

EP 4144459 A4 20230830 (EN)

Application

EP 21829482 A 20210625

Priority

- CN 202010592850 A 20200625
- CN 2021102405 W 20210625

Abstract (en)

[origin: EP4144459A1] Provided is a method for reducing surface cracks of a casting slab by using ferrite phase. Cooling water is used to control the surface layer temperature of the casting slab before a straightening section of a casting machine, so that the surface layer of the casting slab is kept constant for a long time in the vicinity of the austenite-to-ferrite phase transition temperature of the steel; due to the long-time constant temperature, a ferrite layer is formed on the surface layer of the casting slab, thereby improving the proportion of ferrite in the surface layer structure of the casting slab, improving the plasticity of the surface layer structure of the casting slab by high plasticity property of the ferrite, and thus reducing cracks generated on the inner surface of the casting slab under the tensile stress in a straightening area. The method can not only control the surface layer structure of the casting slab, but also improve the plasticity of the surface layer of the casting slab, and reduce surface cracks of the casting slab.

IPC 8 full level

B22D 11/22 (2006.01); **B22D 11/124** (2006.01); **B22D 11/128** (2006.01); **C21D 1/84** (2006.01)

CPC (source: CN EP KR)

B22D 11/124 (2013.01 - EP); **B22D 11/1246** (2013.01 - CN KR); **B22D 11/1287** (2013.01 - EP); **B22D 11/225** (2013.01 - CN EP KR); **C21D 1/84** (2013.01 - CN KR); **C21D 9/0081** (2013.01 - EP); **C21D 1/60** (2013.01 - EP); **C21D 1/62** (2013.01 - EP); **C21D 1/667** (2013.01 - EP); **C21D 2211/005** (2013.01 - CN EP KR)

Citation (search report)

- [X] JP 2012176436 A 20120913 - JFE STEEL CORP
- [X] CN 102861890 A 20130109 - WISDRI ENG & RES INC LTD CHINA
- [X] US 2018363088 A1 20181220 - TSUZUMI KENJI [JP], et al
- See also references of WO 2021259376A1

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

Designated extension state (EPC)

BA ME

Designated validation state (EPC)

KH MA MD TN

DOCDB simple family (publication)

EP 4144459 A1 20230308; **EP 4144459 A4 20230830**; **EP 4144459 B1 20241002**; CN 113843403 A 20211228; CN 113843403 B 20230120; JP 2023530911 A 20230720; KR 20230015949 A 20230131; WO 2021259376 A1 20211230

DOCDB simple family (application)

EP 21829482 A 20210625; CN 202010592850 A 20200625; CN 2021102405 W 20210625; JP 2022576137 A 20210625; KR 20227044630 A 20210625