

Title (en)  
SEMI-CONTINUOUS CASTING OF A STEEL INGOT

Title (de)  
SEMI-KONTINUIERLICHES STRANGGIESSEN EINES STAHLSTRANGS

Title (fr)  
COULÉE SEMI-CONTINUE D'UNE BARRE EN ACIER

Publication  
**EP 3122492 B1 20170705 (DE)**

Application  
**EP 15702712 A 20150127**

Priority  
• EP 14162061 A 20140327  
• EP 2015051619 W 20150127

Abstract (en)  
[origin: WO2015079071A2] The present invention relates to a method for the semi-continuous casting of a strand (1) of steel in a continuous casting machine and the continuous casting machine itself. The aim of the invention is to devise a method for the semi-continuous casting of a strand (1) of steel, the strand having little segregation of the center and porosity, yet being castable rapidly. For this purpose, the following method steps are used: - casting start of the continuous casting machine, liquid steel being poured into the open-ended mold (2) which is closed by a cold strand (6) and the liquid steel forming, together with the cold strand, a completely solidified strand start (1a) and subsequently a semi-solidified strand (1b); - extraction of the semi-solidified strand (1b) from the open-ended mold (2); - support and guidance of the semi-solidified strand (1b) in the strand guide (3), the semi-solidified strand (1b) being cooled by secondary cooling (4); - casting end of the continuous casting machine, the pouring of liquid steel into the open-ended mold (2) being ended and a strand end (1c) being formed; - extraction of the strand end (1c) from the open-ended mold (2); - end of the extraction such that the strand end (1c) lies outside the open-ended mold (2); - end of secondary cooling (4); - controlled or regulated cooling of the semi-solidified strand (1b) until complete solidification of the strand (1) in the tertiary cooling zone (5) of the continuous casting machine is obtained, the cooling effect being stronger at the strand start (1a) and decreasing towards the strand end (1c); and - discharge of the strand (1) from the continuous casting machine.

IPC 8 full level  
**B22D 11/12** (2006.01); **B22D 11/128** (2006.01)

CPC (source: AT EP RU US)  
**B22D 11/041** (2013.01 - US); **B22D 11/055** (2013.01 - US); **B22D 11/08** (2013.01 - AT); **B22D 11/1213** (2013.01 - EP US); **B22D 11/124** (2013.01 - RU US); **B22D 11/128** (2013.01 - AT); **B22D 11/1281** (2013.01 - EP US); **B22D 11/20** (2013.01 - AT); **B22D 11/225** (2013.01 - AT US)

Citation (opposition)  
Opponent : SMS Concast AG  
• DE 3542518 A1 19870604 - MANNESMANN AG [DE]  
• DE 3621234 A1 19880121 - THYSEN EDELSTAHLWERKE AG [DE]  
• DE 2042546 A1 19720302  
• WO 2013174512 A2 20131128 - ERGOLINES LAB S R L [IT]

Cited by  
EP3437757A1; EP3437756A1; EP3437759A1; EP3600721B1

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)  
**WO 2015079071 A2 20150604; WO 2015079071 A3 20150730**; AT 15215 U1 20170315; AT 15223 U1 20170315; AT 515731 A2 20151115; AT 515731 A3 20170115; AT 515731 B1 20180815; CN 106457371 A 20170222; CN 106457371 B 20190507; EP 3122492 A2 20170201; EP 3122492 B1 20170705; EP 3122492 B2 20200610; EP 3251773 A1 20171206; EP 3251773 B1 20200506; RU 2016141648 A 20180427; RU 2016141648 A3 20180629; RU 2675880 C2 20181225; US 10307819 B2 20190604; US 2017216908 A1 20170803

DOCDB simple family (application)  
**EP 2015051619 W 20150127**; AT 500522015 A 20150127; AT 501792016 U 20150127; AT 502162016 U 20150127; CN 201580016900 A 20150127; EP 15702712 A 20150127; EP 17173954 A 20150127; RU 2016141648 A 20150127; US 201515129576 A 20150127