

Title (en)
ULTRASONIC ENHANCEMENT OF DIRECT CHILL CAST MATERIALS

Title (de)
ULTRASCHALLVERBESSERUNG VON DIREKTEN KOKILLENGUSSMATERIALIEN

Title (fr)
AMÉLIORATION PAR ULTRASONS DE MATÉRIAUX COULÉS PAR REFROIDISSEMENT INTENSE ET DIRECT

Publication
EP 3826787 A1 20210602 (EN)

Application
EP 19841973 A 20190725

Priority
• US 201862703035 P 20180725
• US 2019043445 W 20190725

Abstract (en)
[origin: WO2020023751A1] A method and apparatus for direct chill casting of metals and metal alloys which includes application of vibrational energy to the molten material in an open-ended mold and at the outlet of the mold are provided. In an aspect, the method is directed to the production of cast aluminum alloys.

IPC 8 full level
B22D 11/041 (2006.01); **B22D 11/045** (2006.01); **B22D 11/049** (2006.01); **B22D 11/114** (2006.01); **B22D 11/115** (2006.01); **B22D 11/117** (2006.01)

CPC (source: EP KR US)
B22D 11/041 (2013.01 - US); **B22D 11/049** (2013.01 - EP KR US); **B22D 11/114** (2013.01 - EP); **B22D 11/115** (2013.01 - EP KR US); **B22D 11/117** (2013.01 - EP KR US); **B22D 11/1246** (2013.01 - US)

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

DOCDB simple family (publication)
WO 2020023751 A1 20200130; **WO 2020023751 A8 20201217**; AU 2019310103 A1 20210218; BR 112021001244 A2 20210427; CA 3107465 A1 20200130; CN 112703073 A 20210423; CN 112703073 B 20240206; CN 118002755 A 20240510; EP 3826787 A1 20210602; EP 3826787 A4 20220330; EP 3826787 B1 20240221; EP 3826787 C0 20240221; ES 2974279 T3 20240626; JP 2021532988 A 20211202; JP 7457691 B2 20240328; KR 20210037699 A 20210406; MX 2021000918 A 20210623; PL 3826787 T3 20240624; US 2021316357 A1 20211014

DOCDB simple family (application)
US 2019043445 W 20190725; AU 2019310103 A 20190725; BR 112021001244 A 20190725; CA 3107465 A 20190725; CN 201980058785 A 20190725; CN 202410092930 A 20190725; EP 19841973 A 20190725; ES 19841973 T 20190725; JP 2021503793 A 20190725; KR 20217005602 A 20190725; MX 2021000918 A 20190725; PL 19841973 T 20190725; US 201917262860 A 20190725