

Title (en)

QUENCHING DEVICE AND METAL SHEET MANUFACTURING METHOD

Title (de)

ABSCHRECKVORRICHTUNG UND METALLBLECHHERSTELLUNGSVERFAHREN

Title (fr)

DISPOSITIF DE TREMPER ET PROCÉDÉ DE FABRICATION DE FEUILLE MÉTALLIQUE

Publication

**EP 3943619 A1 20220126 (EN)**

Application

**EP 20784745 A 20200317**

Priority

- JP 2019067348 A 20190329
- JP 2020011751 W 20200317

Abstract (en)

Provided are a quenching apparatus for a metal sheet with which it is possible to achieve sufficient cooling rate of the metal sheet when the metal sheet passes through a water-blowing device and to prevent a cooling rate from varying in accordance with the position in the metal sheet and a method for manufacturing a metal sheet by using the quenching apparatus for a metal sheet. The quenching apparatus according to the present invention is a quenching apparatus for dipping a high-temperature metal sheet in a liquid and for thereby cooling the metal sheet, the apparatus including a dipping tank for containing the liquid in which the metal sheet is dipped, a liquid-blowing device having plural nozzles for blowing a cooling liquid onto the metal sheet from both sides of the metal sheet, at least part of the liquid-blowing device being placed in the liquid contained in the dipping tank, and pairs of restraining rolls for restraining the metal sheet, each of the pairs of the restraining rolls being placed on a corresponding one of an upstream side and a downstream side in a traveling direction of the liquid-blowing device.

IPC 8 full level

**C21D 1/63** (2006.01); **C21D 1/18** (2006.01); **C21D 9/573** (2006.01)

CPC (source: EP KR)

**C21D 1/18** (2013.01 - EP KR); **C21D 1/56** (2013.01 - EP); **C21D 1/60** (2013.01 - EP); **C21D 1/63** (2013.01 - EP KR); **C21D 1/667** (2013.01 - KR); **C21D 9/46** (2013.01 - EP); **C21D 9/573** (2013.01 - EP KR); **C21D 1/667** (2013.01 - EP)

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)

**EP 3943619 A1 20220126**; **EP 3943619 A4 20220504**; **EP 3943619 B1 20231108**; CN 113677811 A 20211119; JP 7314989 B2 20230726; JP WO2020203261 A1 20211216; KR 20210130208 A 20211029; WO 2020203261 A1 20201008

DOCDB simple family (application)

**EP 20784745 A 20200317**; CN 202080026372 A 20200317; JP 2020011751 W 20200317; JP 2021511403 A 20200317; KR 20217030796 A 20200317