Title (en)

COOLING OF FLAT ROLLED MATERIAL WITHOUT POST-RUNNING OF THE HEADER

Title (de

KÜHLUNG VON FLACHEM WALZGUT OHNE NACHLAUFEN DES HEADERS

Title (fr)

REFROIDISSEMENT D'UN PRODUIT LAMINÉ PLAN SANS ARRÊT RETARDÉ DE LA COULÉE

Publication

EP 3941654 A1 20220126 (DE)

Application

EP 20711872 A 20200313

Priority

- DE 102019106730 A 20190318
- EP 2020056872 W 20200313

Abstract (en)

[origin: WO2020187749A1] The invention relates to a flat rolled material (1) made of metal, which flat rolled material is conveyed on a conveying path in a transport direction (x). A device for cooling the flat rolled material (1) by means of a liquid coolant (5) has at least one cooling bar (3), which is arranged above the conveying path and to which the liquid coolant (5) is fed via a supply line (4). The cooling bar (3) extends substantially perpendicularly to the transport direction (x) and has a plurality of outlet tubes (6), which in turn each have an inlet opening (7) and an outlet opening (8). The liquid coolant (5) enters the outlet tubes (6) from the cooling bar (3) via the respective inlet openings (7) and exits the outlet tubes (6) via the respective outlet openings (8). Each outlet tube (6) has, in the flow direction of the liquid coolant (5), an initial portion (9), which proceeds from the inlet opening (7) and extends upward, a middle portion (10), which adjoins the initial portion, and an end portion (11), which adjoins the middle portion, extends downward and extends to the output opening (8). The middle portion (10) therefore contains a vertex (12), at which the coolant (5) flowing through the outlet tube (6) in question reaches a highest point. The outlet openings (8) are located above the cooling bar (3). A height distance (h1) of the inlet opening (7) from the vertex (12) is at least twice as large, in particular at least three times as large, as a height distance (h2) of the outlet opening (8) from the vertex (12).

IPC 8 full level

B21B 45/02 (2006.01)

CPC (source: EP US)

B05C 11/1002 (2013.01 - US); B21B 45/0218 (2013.01 - EP US); B21B 45/0233 (2013.01 - EP US); C21D 11/005 (2013.01 - US); B05B 1/30 (2013.01 - US); B05C 5/02 (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)

DE 102019106730 A1 20200102; CN 113543902 A 20211022; EP 3941654 A1 20220126; EP 3941654 B1 20240724; EP 3941654 C0 20240724; US 11548044 B2 20230110; US 2022088658 A1 20220324; WO 2020187749 A1 20200924

DOCDB simple family (application)

DE 102019106730 À 20190318; CN 202080022338 A 20200313; EP 2020056872 W 20200313; EP 20711872 A 20200313; US 202017440938 A 20200313