Title (en)

NITRIDING METHOD FOR STEEL MEMBER

Title (de)

NITRIERVERFAHREN FÜR STAHLELEMENT

Title (fr)

PROCÉDÉ DE NITRURATION POUR ÉLÉMENT EN ACIER

Publication

EP 4296383 A4 20231227 (EN)

Application

EP 22756196 A 20220216

Priority

- JP 2021023129 A 20210217
- JP 2022006065 W 20220216

Abstract (en)

[origin: WO2022176878A1] A nitriding method for a steel member that has at least two nitriding steps. The nitriding method for a steel member has: a first nitriding step in which a steel member is nitrided in a nitriding gas atmosphere that has a first nitriding potential; and a second nitriding step in which, after the first nitriding step, the steel member is further nitrided in a nitriding gas atmosphere that has a second nitriding potential that is lower than the first nitriding potential. The first nitriding step and the second nitriding step are performed at a temperature of 500°C–590°C, the first nitriding potential is a value within the range of 0.300–10.000, and the second nitriding potential is a value within the range of 0.253–0.600.

IPC 8 full level

C21D 9/32 (2006.01); **C21D 1/06** (2006.01); **C23C 8/02** (2006.01); **C23C 8/26** (2006.01); **C23C 8/80** (2006.01)

CPC (source: EP KR US)

C21D 1/06 (2013.01 - EP KR); **C21D 8/0257** (2013.01 - US); **C21D 9/32** (2013.01 - EP KR); **C23C 8/02** (2013.01 - EP); **C23C 8/26** (2013.01 - EP KR); **C23C 8/80** (2013.01 - EP); C23C 8/34 (2013.01 - KR)

Citation (search report)

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- [XA] JP 2020164994 A 20201008 - DOWA THERMOTECH KK
- [XA] US 2019177829 A1 20190613 - SHIMIZU KATSUSHIGE [JP], et al
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- See also references of WO 2022176878A1

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

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Designated validation state (EPC)

KH MA MD TN

DOCDB simple family (publication)

EP 4296383 A1 20231227; **EP 4296383 A4 20231227**; CN 116917529 A 20231020; JP 2022125513 A 20220829; KR 20230145118 A 20231017; MX 2023009143 A 20230817; TW 202237866 A 20221001; TW I809714 B 20230721; US 2024132985 A1 20240425; WO 2022176878 A1 20220825

DOCDB simple family (application)

EP 22756196 A 20220216; CN 202280014939 A 20220216; JP 2021023129 A 20210217; JP 2022006065 W 20220216; KR 20237030522 A 20220216; MX 2023009143 A 20220216; TW 111105406 A 20220215; US 202218546438 A 20220216