

Title (en)
IMPROVEMENT IN THE CHROMISING OF STEEL IN THE GASEOUS PHASE

Publication
EP 0010484 B1 19820908 (FR)

Application
EP 79400724 A 19791008

Priority
FR 7830308 A 19781025

Abstract (en)
[origin: US4242151A] The object of the present invention is an improvement in chromizing methods, constituted by a method of chromizing steels to a depth e greater than 30 microns, usable for steels with a carbon content of at least 0.2%, especially for steels for construction work and steels for tools, characterized by the combination of three successive treatments, the first of these three treatments consisting of an ionic nitriding of a surface layer between 100 and 350 microns thick, this ionic nitriding being realized in an atmosphere constituted by a mixture of nitrogen and hydrogen, at a temperature of between 450 DEG C. and 650 DEG C., for between 5 and 40 hours, so as to obtain between 1.5% and 2.5% nitrogen in the nitrided layer, the second of these treatments consisting of a chromizing by gaseous method forming chromium carbides, lasting between 5 and 30 hours, and realized at temperatures of between 850 DEG C. and 1,100 DEG C., the third of these three treatments being a thermal treatment comprising a quenching in oil of the chromized piece followed by a tempering at a temperature of between 600 DEG C. and 650 DEG C., lasting between 30 minutes and 10 hours, depending on the size of the piece treated.

IPC 1-7
C23F 17/00; **C21D 1/18**; **C23C 9/02**; **C23C 11/16**

IPC 8 full level
C23C 8/38 (2006.01); **C21D 1/06** (2006.01); **C21D 1/18** (2006.01); **C23C 10/10** (2006.01); **C23C 12/00** (2006.01); **C23F 17/00** (2006.01)

CPC (source: EP US)
C21D 1/18 (2013.01 - EP US); **C23C 12/00** (2013.01 - EP US)

Cited by
EP0043742A1; EP0018263A1

Designated contracting state (EPC)
AT BE CH DE GB IT NL SE

DOCDB simple family (publication)
EP 0010484 A1 19800430; **EP 0010484 B1 19820908**; AT E1529 T1 19820915; DE 2963643 D1 19821028; FR 2439824 A1 19800523; FR 2439824 B1 19810508; JP S5558366 A 19800501; JP S6035989 B2 19850817; US 4242151 A 19801230; ZA 795719 B 19801029

DOCDB simple family (application)
EP 79400724 A 19791008; AT 79400724 T 19791008; DE 2963643 T 19791008; FR 7830308 A 19781025; JP 13823979 A 19791025; US 8795479 A 19791024; ZA 795719 A 19791025