

Title (en)

Method of treating the surfaces of high carbon steel bodies and bodies of high carbon steel.

Title (de)

Verfahren zur Behandlung der Oberflächen hochgekoelter Stahlgegenstände und Gegenstände aus hochgekoeltem Stahl.

Title (fr)

Procédé de traitement de la surface d'articles en acier à haute teneur en carbone et articles en acier à haute teneur en carbone.

Publication

EP 0033403 A1 19810812 (EN)

Application

EP 80300295 A 19800131

Priority

EP 80300295 A 19800131

Abstract (en)

A method of developing compressive residual stresses in the surface region of a high carbon steel alloy composed of 0.8 - 1.6% carbon, 0.2 - 5% chromium, and 0 - 20% alloying ingredients selected from the group consisting of manganese, vanadium, molybdenum, tungsten, silicon, the remainder being iron; e.g. SAE 52100 steel, comprises heating said article to a temperature of 800-950 DEG C (1472 - 1742 DEG F) for 1 - 2.5 hours in a carburizing atmosphere effective to generate a differential in retained austenite, primary carbides and carbon between the surface region and core region of said article; and immersing said article in a cooling medium to quench the central core of said article at a rate sufficiently fast to effectively suppress the formation of non-martensitic austenite decomposition products, thereby establishing a residual compressive stress gradient proceeding from the surface region of said article to a depth between 0.007 - 0.03 inches, the residual compressive stress being in the range of 5 - 40 Ksi. The article may be tempered thereafter.

IPC 1-7

C23C 11/10; **C21D 1/58**; **C21D 1/613**; **C21D 1/72**; **C21D 1/74**; **C21D 1/78**; **C21D 6/00**; **C22C 38/18**

IPC 8 full level

C21D 1/78 (2006.01); **C23C 8/22** (2006.01); **C23C 8/80** (2006.01)

CPC (source: EP)

C21D 1/78 (2013.01); **C23C 8/22** (2013.01); **C23C 8/80** (2013.01)

Citation (search report)

- DE 2710748 A1 19771020 - AIRCO INC
- DE 1483040 A1 19690220 - UNITED STATES STEEL CORP
- US 4023988 A 19770517 - STICKELS CHARLES A, et al
- AT 347993 B 19790125 - HAWERA PROBST KG HARTMETALL [DE]

Cited by

WO2005066383A1; NL1010795C2; EP1847630A4; DE102006052834A1; CN115558847A; US11624106B2; WO9317146A1; WO0036164A1; US7169238B2

Designated contracting state (EPC)

IT SE

DOCDB simple family (publication)

EP 0033403 A1 19810812

DOCDB simple family (application)

EP 80300295 A 19800131