

Title (en)

METHOD FOR THE SURFACE IMPROVEMENT OF MACHINE PARTS AND CUTTING TOOLS OF FERROUS ALLOYS

Publication

EP 0034761 A3 19810909 (DE)

Application

EP 81100963 A 19810211

Priority

PL 22192980 A 19800211

Abstract (en)

[origin: EP0034761A2] 1. A method for the surface hardening of machine parts and cutting tools made from ferrous alloys by treatment with sulphurous gases and nitriding in an ammonia atmosphere, wherein the machine parts and cutting tools to be treated are brought into a vessel, characterized in that the parts to be treated are heated and the pressure prevailing in the vessel reduced if necessary and then sulphur vapors brought into the vessel for 5 seconds to 60 minutes, that the parts to be treated are then subjected to a two-phase nitriding process in an ammonia atmosphere or in an atmosphere containing ammonia and known gas additives, the nitriding process in the first phase being performed at a pressure at least ten times lower and five times longer than in the second phase of the nitriding process in which the pressure of the treatment atmosphere is lower than 107 kPa (800 Torr).

IPC 1-7

C23C 11/00

IPC 8 full level

C21D 1/76 (2006.01); **C23C 8/26** (2006.01); **C23C 8/34** (2006.01); **C23C 16/00** (2006.01)

CPC (source: EP)

C23C 8/26 (2013.01); **C23C 8/34** (2013.01)

Citation (search report)

- [A] FR 1104196 A 19551117
- [A] FR 1057237 A 19540305 - PARTIOT CEMENTATION ATEL
- [A] DE 2336680 A1 19750130 - DEGUSSA
- [A] CHEMICAL ABSTRACTS, Band 64, 1966, Spalte 3120b Columbus, Ohio, USA HAS "Sulfatizing and nitriding of high-speed steels in H₂S and NH₂ gases" & ZESZYTY NAUK POLITCH.LODZ.MECH No. 12, 89-107 (1965)
- [A] CHEMICAL ABSTRACTS, Band 87, 1977 Seite 420, Zusammenfassung 91160n Columbus. Ohio. USA GRABKE et al. "Chemisorption of sulfur on iron and its influence on iron-gas reactions, surface self diffusion and sintering of iron" & React. solids, (Proc. Int. Symp.) 8th, 1976 (Pub. 1977) 55-61.

Cited by

EP0464799A1; US5187017A

Designated contracting state (EPC)

AT BE CH DE FR GB IT

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EP 0034761 A2 19810902; **EP 0034761 A3 19810909**; **EP 0034761 B1 19850605**; AT E13696 T1 19850615; AU 2516788 A 19890316; DE 3170794 D1 19850711; JP S56127769 A 19811006; JP S5749628 B2 19821022; PL 126128 B1 19830730; PL 221929 A1 19810821

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