Title (en)

Process for the manufacturing of a steel spring, the obtained product and the steel used for manufacturing said spring

Title (de)

Verfahren zur Herstellung einer Stahlfeder, Stahlfeder und Stahl zur Herstellung der Stahlfeder

Title (fr)

Procédé de fabrication d'un ressort en acier, ressort obtenu et acier pour la fabrication d'un tel ressort

Publication

EP 0884399 B1 20020814 (FR)

Application

EP 98401309 A 19980602

Priority

FR 9706848 A 19970604

Abstract (en)

[origin: EP0884399A1] Steel for making nitride-coated springs comprises by weight 0.57-0.6% carbon, 1.5-1.6% silicon, 0.65-0.7% manganese, 0.7-0.8% chromium, 0.05-0.08% molybdenum and 0.15-0.2% vanadium, plus iron and impurities. Also claimed is a spring made from wire drawn from that steel which has a nitride surface layer over 150 mu m thick. At least the outer 20 mu m contains over 0.4% nitrogen, the layer having a superficial hardness of over 64 HRC while the hardness of the spring interior is over 50 HRC and the layer is free of white epsilon nitrides. Also claimed is the manufacture of a spring from steel wire containing 0.4-0.7% C, 1-1.7% Si, 0.4-1% Mn, 0.3-1% Cr, 0-0.2% Mo and 0-0.2% V, plus Fe and impurities. The wire is tempered at temperature (T) up to 500 degrees C and exhibits a tensile strength of at least 1990 MPa. The spring is given a nitride surface layer by heating below temperature T, and the layer contains over 0.4% N in at least its outer surface 20 mu m and is free of white epsilon nitrides.

IPC 1-7

C22C 38/22; C22C 38/24; C23C 8/26; C23C 8/50

IPC 8 full level

C22C 38/22 (2006.01); **C22C 38/24** (2006.01); **C23C 8/02** (2006.01); **C23C 8/26** (2006.01)

CPC (source: EP)

C22C 38/22 (2013.01); **C22C 38/24** (2013.01); **C23C 8/02** (2013.01); **C23C 8/26** (2013.01)

Cited by

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