Title (en)

RELAXATION-RESISTANT STEEL SPRING

Title (de)

RELAXATIONSFESTE STAHLFEDER

Title (fr)

RESSORT D'ACIER RESISTANT AU RELACHEMENT

Publication

EP 0906453 A1 19990407 (DE)

Application

EP 96919601 A 19960529

Priority

DE 9600935 W 19960529

Abstract (en)

[origin: WO9745565A1] The invention concerns a very strong steel spring having a bright surface which is free from residual dirt, the spring also being resistant to relaxation at high operating temperatures. A spring of this type is produced from a steel wire of the following composition: between 0.45 and 0.85 wt % carbon; between 0.2 and 1.60 wt % silicon; between 0.3 and 1.50 wt % manganese; between 0.4 and 1.2- wt % chromium; the remainder being iron and unavoidable impurities. The wire is austenitized and then treated isothermally at temperatures ranging from 450 to 650 DEG C. The wire is then drawn to a tensile strength of between 1600 and 2300 N/mm<2> at a contraction in area when breaking of at least 40 %. The wire is cold formed to produce a spring and is then stress-free annealed at temperatures ranging from 200 to 350 DEG C.

IPC 1-7

C22C 38/18; C21D 9/02

IPC 8 full level

C21D 9/02 (2006.01); **C22C 38/18** (2006.01); C21D 8/06 (2006.01)

CPC (source: EP)

C21D 9/02 (2013.01); **C22C 38/18** (2013.01); C21D 8/06 (2013.01)

Citation (search report)

See references of WO 9745565A1

Designated contracting state (EPC)

AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

DOCDB simple family (publication)

WO 9745565 A1 19971204; AT E204612 T1 20010915; AU 5810896 A 19980105; CA 2256384 A1 19971204; DE 59607551 D1 20010927; EP 0906453 A1 19990407; EP 0906453 B1 20010822

DOCDB simple family (application)

DE 9600935 W 19960529; AT 96919601 T 19960529; AU 5810896 A 19960529; CA 2256384 A 19960529; DE 59607551 T 19960529; EP 96919601 A 19960529