

Title (en)  
Method for producing a component with a hardened surface

Title (de)  
Verfahren zum Herstellen eines Bauteils mit gehärteter Oberfläche

Title (fr)  
Procédé de fabrication d'un composant doté d'une surface durcie

Publication  
**EP 2065107 A1 20090603 (DE)**

Application  
**EP 08017161 A 20080930**

Priority  
• DE 102007055345 A 20071119  
• DE 102007059229 A 20071207

Abstract (en)  
The method for the production of functional elements such as clock housing and housing cover, housing base, a latchkey or a crown, with hardened surface for wrist watch, comprises producing a blank of the functional elements as sintered body by sintering under use of stainless steel as sintered material and carrying out a carbon diffusion for arriving carbon atom to form a diffusion zone or diffusion layer on the surface of the blank, in the presence of carbonates in a salt bath at below 300[deg] C. The blank is treated for the carbon diffusion in a protective gas atmosphere. The method for the production of functional elements such as clock housing, and housing cover, housing base, a latchkey or a crown, with hardened surface for wrist watch, comprises producing a blank of the functional elements as sintered body by sintering under use of stainless steel as sintered material and carrying out a carbon diffusion for arriving carbon atom to form a diffusion zone or diffusion layer on the surface of the blank, in the presence of carbonates in a salt bath at below 300[deg] C. The blank is treated for the carbon diffusion in a protective gas atmosphere at a temperature over room temperature and is impregnated after the carbon diffusion, with a hardening plastic material closing the pores of the blank. The blank is manufactured with a density of 6.8-7.25 kg/dm 3 and with a pore size of 0.1-0.5 µm. The carbon diffusion is carried out over a period of 5-6 days in a carbon containing protective gas atmosphere. The surface of the blank is chemically and/or mechanically processed for exposing the pores before the carbon diffusion. A hard material or hard metal coating is subjected on the functional elements for increasing the wear resistance.

Abstract (de)  
Bei einem Verfahren zum Herstellen eines Bauteils mit gehärteter Oberfläche, insbesondere eines Funktionselementes für Armbanduhren, wird ein Rohlings des Bauteils als Sinterkörper durch Sintern unter Verwendung eines Edelstahles als Sintermaterial hergestellt und einer Kohlenstoffdiffusion zur Einlagerung von Kohlenstoffatomen in das Metallgitter des Rohlings in einer Salzschnmelze bei einer Temperatur über 100 °C unterzogen. Die Kohlenstoffdiffusion erfolgt bei einer Temperatur unterhalb von 300 °C und bei Anwesenheit wenigstens eines Carbonats in der Salzschnmelze.

IPC 8 full level  
**B22F 3/10** (2006.01); **B22F 3/11** (2006.01); **B22F 5/10** (2006.01); **B22F 7/00** (2006.01); **C22C 38/00** (2006.01); **C23C 8/22** (2006.01); **C23C 8/46** (2006.01); **G04B 37/22** (2006.01)

CPC (source: EP)  
**B22F 3/24** (2013.01); **C22C 1/08** (2013.01); **C23C 8/46** (2013.01); **G04B 37/223** (2013.01); **B22F 2003/241** (2013.01); **B22F 2003/242** (2013.01); **B22F 2003/247** (2013.01); **B22F 2998/10** (2013.01); **B22F 2999/00** (2013.01)

Citation (applicant)  
• DE 3940426 C1 19910613  
• GB 665794 A 19520130 - ISTHMIAN METALS INC  
• DE 102004056880 A1 20060309 - DAMASKO PETRA [DE]  
• US 5364586 A 19941115 - TRUSOV LEV I [RU], et al

Citation (search report)  
• [XD] DE 102004056880 A1 20060309 - DAMASKO PETRA [DE]  
• [A] DE 3940426 C1 19910613  
• [AD] GB 665794 A 19520130 - ISTHMIAN METALS INC  
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Designated contracting state (EPC)  
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MT NL NO PL PT RO SE SI SK TR

Designated extension state (EPC)  
AL BA MK RS

DOCDB simple family (publication)  
**EP 2065107 A1 20090603**; **EP 2065107 B1 20110907**; AT E523274 T1 20110915; DE 102007059229 A1 20090520

DOCDB simple family (application)  
**EP 08017161 A 20080930**; AT 08017161 T 20080930; DE 102007059229 A 20071207