

Title (en)

Improvement of properties of the surface of a titanium alloy engine valve.

Title (de)

Verbesserung der Oberflächeneigenschaften eines Maschinenventils aus einer Titanlegierung.

Title (fr)

Amélioration des propriétés de surface d'une soupape de moteur en alliage de titane.

Publication

EP 0679736 A1 19951102 (EN)

Application

EP 94201220 A 19940428

Priority

EP 94201220 A 19940428

Abstract (en)

There is provided a new method of improving properties of the surface of an internal combustion engine valve made from titanium alloy, which comprises; the steps of (a) forming a surface undercoat layer of nickel on a surface of the engine valve (T7); (b) heating the resulting nickel undercoated valve in vacuum or in an atmosphere of inert gas (T9); (c) forming further a three component coat layer comprising nickel, phosphorus and particles of material selected from the group consisting of silicone carbide,, silicone nitride, boron nitride, and the combination thereof, on the surface of the nickel undercoat layer (T11); and (d) heating the resulting coat layer formed on the nickel undercoat layer, at the temperature of 350 DEG C to 550 DEG C, for one to four hours (T13, so as to make the particles of ceramic material uniformly and homogenously dispersed in said coat layer.

IPC 1-7

C25D 15/02; **F01L 3/04**; **C25D 5/50**

IPC 8 full level

C25D 5/50 (2006.01); **C25D 15/02** (2006.01); **F01L 3/04** (2006.01)

CPC (source: EP)

C25D 5/50 (2013.01); **C25D 15/02** (2013.01); **F01L 3/04** (2013.01)

Citation (search report)

- [A] EP 0441636 A1 19910814 - NIHON PARKERIZING [JP]
- [A] DATABASE WPI Week 9326, Derwent World Patents Index; AN 93-209069

Cited by

EP3061852A3; DE102018218205A1; WO2009056239A1; WO2016198205A1; EP0681039B1

Designated contracting state (EPC)

DE FR GB IT

DOCDB simple family (publication)

EP 0679736 A1 19951102; **EP 0679736 B1 19980304**; DE 69408829 D1 19980409; DE 69408829 T2 19981022

DOCDB simple family (application)

EP 94201220 A 19940428; DE 69408829 T 19940428