



(11) **EP 1 548 153 A3**

(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
24.01.2007 Bulletin 2007/04

(51) Int Cl.:
C23C 28/00 ^(2006.01) **F16H 55/06** ^(2006.01)

(43) Date of publication A2:
29.06.2005 Bulletin 2005/26

(21) Application number: **04106968.3**

(22) Date of filing: **23.12.2004**

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HU IE IS IT LI LT LU MC NL PL PT RO SE SI SK TR**
Designated Extension States:
AL BA HR LV MK YU

(30) Priority: **24.12.2003 IT RM20030602**

(71) Applicant: **CENTRO SVILUPPO MATERIALI S.p.A.
00129 Roma (IT)**

(72) Inventors:
• **Casadei, Fabrizio**
Centro Sviluppo Materiali Spa
00129 Roma (IT)
• **Testani, Claudio**
Centro Sviluppo Materiali Spa
00129 Roma (IT)

(74) Representative: **Gervasi, Gemma et al**
NOTARBARTOLO & GERVASI Srl,
Corso di Porta Vittoria, 9
20122 Milano (IT)

(54) **Process for producing multilayer coating with high abrasion resistance**

(57) Procedure to obtain multilayer coatings with high wear resistance, in particular for light alloy metal materials and for metal matrix composite materials, wherein the material to be coated is subjected to the following operations: a) surface deposition, using thermal spray techniques, of a first cermet coating, with thickness

ranging from 20 to 600 μm ; b) surface finishing treatment; c) deposition on the first coating, using vapour phase deposition techniques, of a second nitride or carbon coating, with thickness ranging from 1 to 10 μm .

EP 1 548 153 A3



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 04 10 6968

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	JP 07 268594 A (SUMITOMO METAL IND) 17 October 1995 (1995-10-17) * abstract *	1-19	INV. C23C28/00 F16H55/06
A	US 6 129 994 A (HARADA YOSHIO [JP] ET AL) 10 October 2000 (2000-10-10) * claims 1-9 *	1-19	
A	WO 99/43861 A (GEN ELECTRIC [US]) 2 September 1999 (1999-09-02) * page 6, line 19 - page 8, line 2; claims 11,13 *	1-19	
A	JP 04 254571 A (TOCALO CO LTD) 9 September 1992 (1992-09-09) * abstract *	1-19	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
			C23C F16H
Place of search		Date of completion of the search	Examiner
Munich		21 December 2006	GONZALEZ-JUNQUERA, J
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

2
EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 04 10 6968

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

21-12-2006

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
JP 7268594	A	17-10-1995	JP 2845144 B2	13-01-1999

US 6129994	A	10-10-2000	DE 19681296 C2	23-01-2003
			DE 19681296 T0	26-02-1998
			GB 2313847 A	10-12-1997
			WO 9627694 A1	12-09-1996

WO 9943861	A	02-09-1999	CZ 20004537 A3	16-01-2002
			DE 69925590 D1	07-07-2005
			DE 69925590 T2	27-04-2006
			EP 1076727 A1	21-02-2001

JP 4254571	A	09-09-1992	JP 2029722 C	19-03-1996
			JP 7013292 B	15-02-1995
