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(71) Applicant: **Japan Atomic Energy Research
Institute
Chiyoda-ku, Tokyo (JP)**

(72) Inventors:
• **Kawamura, Hiroshi,
c/o Japan Atomic Energy Rch Ins
Higashi-Ibaraki-gun, Ibaraki-ken (JP)**

- **Nakamichi, Masaru,
c/o Japan Atomic Energy Rch Ins
Higashi-Ibaraki-gun, Ibaraki-ken (JP)**
- **Tani, Kazumi, c/o Tocalo Co. Ltd.
Kobe-shi, Hyogo-ken (JP)**
- **Miyajima, Kiyoshi, c/o Tocalo Co. Ltd.
Kobe-shi, Hyogo-ken (JP)**
- **Teratani, Takema, c/o Tocalo Co. Ltd.
Kobe-shi, Hyogo-ken (JP)**

(74) Representative: **Pfenning, Meinig & Partner
Mozartstrasse 17
80336 München (DE)**

(54) **Members coated with composite oxide coatings for preventing the permeation of hydrogen isotopes and a process for producing such members**

(57) The surface of a chemical densified coating formed on the surface of a stainless steel substrate is coated or sprayed with an aqueous solution based on chromic acid and a material capable of forming an amorphous inorganic substance upon sintering or the chemical densified coating is dipped in the aqueous solution and recovered; the chemical densified coating is then

sintered by heating at 250 - 750°C so that the pores and cracks in the chemical densified coating are filled with the fine particles of a composite of chromium oxide and an amorphous inorganic material and that the surface of the chemical densified coating is covered with a layer of such fine particles.

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EUROPEAN SEARCH REPORT

Application Number
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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	US 5 820 976 A (KAMO LLOYD) 13 October 1998 (1998-10-13) * column 3, line 10 - column 5, line 51 *	1-6	C23C28/04 C23C4/18 C04B41/52 C23C30/00 C23C20/00
A	US 3 956 531 A (CHURCH PETER K ET AL) 11 May 1976 (1976-05-11)		
A	US 5 360 634 A (KAMO LLOYD) 1 November 1994 (1994-11-01)		
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			C23C C04B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 17 June 2003	Examiner Chebeleu, A
<p>CATEGORY OF CITED DOCUMENTS</p> <p>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</p> <p>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</p>			

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

EP 02 09 0080

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
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17-06-2003

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5820976 A	13-10-1998	US 5432008 A	11-07-1995
		US 5360634 A	01-11-1994
US 3956531 A	11-05-1976	BE 804982 A1	18-03-1974
		CA 1053996 A1	08-05-1979
		CH 595457 A5	15-02-1978
		DE 2346918 A1	04-04-1974
		DE 2366346 C2	05-09-1985
		ES 418825 A1	16-03-1976
		FR 2200375 A1	19-04-1974
		GB 1466075 A	02-03-1977
		GB 1466076 A	02-03-1977
		GB 1466074 A	02-03-1977
		IT 995411 B	10-11-1975
		JP 1024977 C	18-12-1980
		JP 49070837 A	09-07-1974
		JP 55014833 B	18-04-1980
		JP 55054575 A	21-04-1980
		LU 68436 A1	21-05-1975
		NL 7312803 A	20-03-1974
		BE 733865 A	01-12-1969
		DE 1771504 A1	07-09-1972
		FR 1580247 A	05-09-1969
		GB 1234043 A	03-06-1971
		JP 49028011 B	23-07-1974
		US 3817781 A	18-06-1974
		US 3873344 A	25-03-1975
		BE 726180 A	27-06-1969
		CA 953584 A2	27-08-1974
		CH 535725 A	15-04-1973
		CH 525170 A	15-07-1972
		CH 542938 A	30-11-1973
		DE 1816663 A1	28-08-1969
		ES 361960 A1	01-09-1970
		FR 95838 E	01-06-1971
		GB 1247374 A	22-09-1971
		JP 51018445 B	10-06-1976
		LU 57684 A1	01-07-1970
		NL 6818799 A ,B,	01-07-1969
		US 3944683 A	16-03-1976
		US 3925575 A	09-12-1975
		US 3789096 A	29-01-1974
US 5360634 A	01-11-1994	US 5820976 A	13-10-1998
		US 5432008 A	11-07-1995

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82