



(51) International Patent Classification:

C04B 35/565 (2006.01) **C04B 35/597** (2006.01)
B21B 27/03 (2006.01) **C04B 35/626** (2006.01)
B21B 39/00 (2006.01) **C04B 41/50** (2006.01)
B65G 39/07 (2006.01) **C23C 4/10** (2006.01)
C03C 17/00 (2006.01) **F27B 9/24** (2006.01)
C03C 17/22 (2006.01) **F27D 3/02** (2006.01)
C04B 35/584 (2006.01)

(21) International Application Number:

PCT/EP2015/065614

(22) International Filing Date:

8 July 2015 (08.07.2015)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

14176297.1 9 July 2014 (09.07.2014) EP

(71) Applicant: **VESUVIUS FRANCE SA** [FR/FR]; 68 Rue Paul Deudon, 59750 Feignies (FR).

(72) Inventors: **NICOLAS, Jean-denis**; 68 rue Paul Deudon, F-59750 Feignies (FR). **RANCOULE, Gilbert**; 68 Rue Paul Deudon, F-59750 Feignies (FR). **BERRY, Christian**; 68 Rue Paul Deudon, F-59750 Feignies (FR).

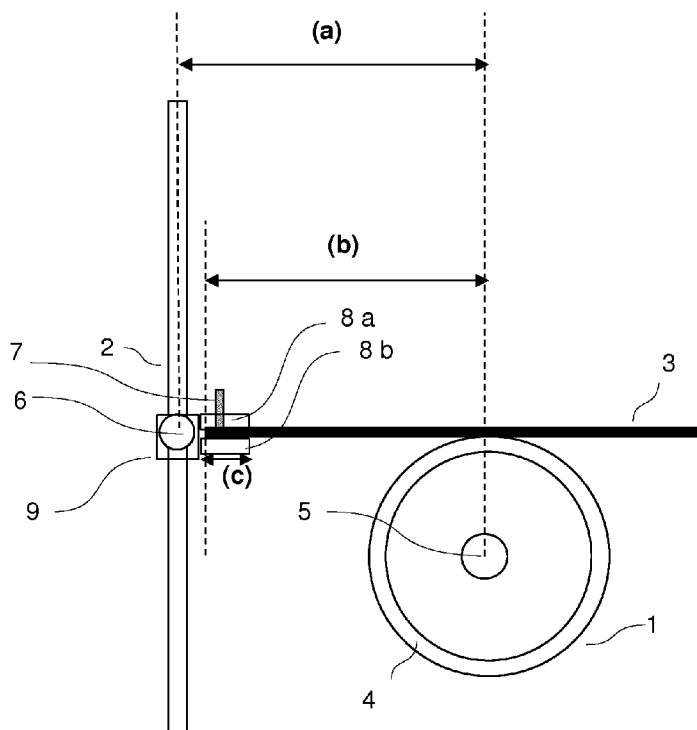
(74) Agent: **DEBLED, Thierry**; VESUVIUS GROUP SA, Rue de Douvrain, 17, 7011 Ghlin (BE).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH,

[Continued on next page]

(54) Title: ROLL COMPRISING AN ABRADABLE COATING

**FIG.1**

(57) Abstract: The present application relates to a protective and abradable coating composition for application on rolls and more particularly to conveyor rolls comprising an abradable coating for use in high temperature applications, to a process for making such rolls and to the use thereof. Corrosion by aluminium melt is reduced and build-up substances are removed by friction. The life time of the roll is then increased. The coating comprises 83-98 wt% of an aggregate comprising particles of Si₃N₄, SiC or SiAlON or a mixture thereof and 2-17 wt% of sub-micronic particles of Al₂O₃, SiO₂, ZrO₂, CeO₂, Y₂O₃ or a mixture thereof.



GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

— of inventorship (Rule 4.17(iv))

Published:

— with international search report (Art. 21(3))

— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

Declarations under Rule 4.17:

— as to the identity of the inventor (Rule 4.17(i))

— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))

(88) Date of publication of the international search report:

3 March 2016

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2015/065614

A. CLASSIFICATION OF SUBJECT MATTER

INV. C04B35/565 B21B27/03 B21B39/00 B65G39/07 C03C17/00
C03C17/22 C04B35/584 C04B35/597 C04B35/626 C04B41/50
C23C4/10 F27B9/24 F27D3/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

C04B B21B B65G C03C C23C F27B F27D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data, INSPEC, COMPENDEX

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2013/260982 A1 (HAN KYOUNG RAN [KR] ET AL) 3 October 2013 (2013-10-03) paragraph [0021] - paragraph [0022]; table 1 -----	1-8, 11-14
Y	DATABASE WPI Week 199734 Thomson Scientific, London, GB; AN 1997-369295 XP002744339, & JP H09 157043 A (NIPPON STEEL CORP) 17 June 1997 (1997-06-17) abstract -----	1-8, 11-14



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

10 September 2015

Date of mailing of the international search report

07/01/2016

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer

Raming, Tomas

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2015/065614

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-8, 11-14

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-8, 11-14

The coated roll of claims 1-8, it's method of making of claims 11-13 and it's use of claim 14

2. claims: 9, 10

The composition of claims 9 and 10

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2015/065614

Patent document cited in search report	Publication date	Patent family member(s)	Publication date	
US 2013260982	A1	03-10-2013	KR 20130112979 A	15-10-2013
			US 2013260982 A1	03-10-2013
			WO 2013147354 A1	03-10-2013

JP H09157043	A	17-06-1997	NONE	
