

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
28 April 2005 (28.04.2005)

PCT

(10) International Publication Number  
WO 2005/037726 A3

(51) International Patent Classification<sup>7</sup>: B22D 19/00, 23/00, 29/00, B65B 33/00, B05D 1/18

(21) International Application Number: PCT/US2004/034112

(22) International Filing Date: 14 October 2004 (14.10.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data: 60/511,572 14 October 2003 (14.10.2003) US

(71) Applicant (for all designated States except US): M CUBED TECHNOLOGIES, INC. [US/US]; 921 Main Street, Monroe, Connecticut 06468 (US).

(72) Inventor; and

(75) Inventor/Applicant (for US only): KARANDIKAR, Prashant G. [IN/US]; 113 Cypress Point, Avondale, PA 19311 (US).

(74) Agent: RAMBERG, Jeffrey R.; c/o M Cubed Technologies, Inc., 1 Tralee Industrial Park, Newark, DE 19711 (US).

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

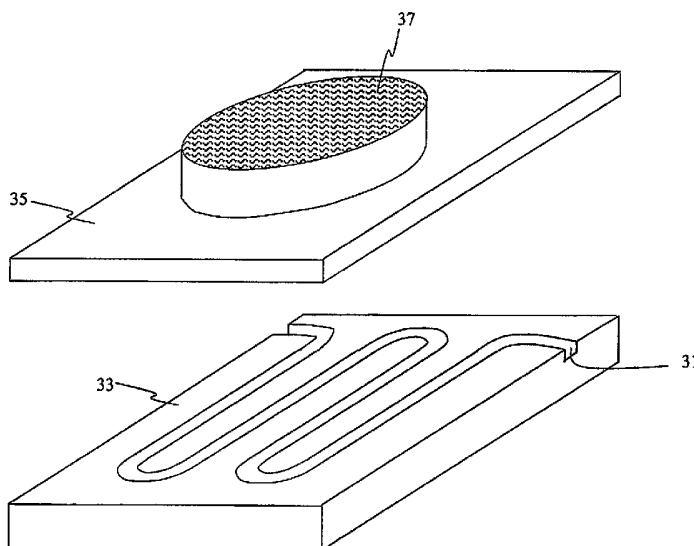
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:  
— with international search report

(88) Date of publication of the international search report:  
6 October 2005

[Continued on next page]

(54) Title: METHOD FOR MAKING CAVITIES IN METAL-CERAMIC COMPOSITE BODIES, AND ARTICLES MADE THEREBY



(57) Abstract: A metal-ceramic composite structure featuring a cavity or other hollow structure therein. A preform is provided that contains at least one desired cavity, or an assemblage of subunit performs are joined together to provide or define at least one cavity. A material that is substantially not infiltratable by the molten infiltrant material is contacted to substantially all interior surfaces, e.g., walls, of the cavity. The contacting can consist essentially of a coating on the walls, or may consist of substantially filling up the cavity with the non-infiltratable material, or some variation in between. The infiltrant does not infiltrate into the cavity, it being locally stopped by the non-infiltratable material at the walls of the cavity. Following solidification of the infiltrant to form a RBSC body, the non-infiltratable material is removed readily. In addition, one or more temporary access ports to the cavity may be machined in the composite structure.

WO 2005/037726 A3



---

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/34112

**A. CLASSIFICATION OF SUBJECT MATTER**  
 IPC(7) : B22D 19/00, 23/00, 29/00; B65B 33/00; B05D 1/18  
 US CL : 164/91,97,132,137,105,100; 427/430.1,154,431  
 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)  
 U.S. : 164/91,97,122, 123, 132,137,105,100; 427/430.1,154,431

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)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US 5267601(Dwivedi) 7 Dec 1993 (12.07.1993), Abstract, Column 9, line 60 - Column 10, line	1, 5, 6, 9,10,12,17-19 ----- 16
Y	US 5,666,269 (Romero et al.) 9 Sept. 1997 (09.09.1997), column 2, lines 38-56; Column 3, lines 38-51; Column 3, line 63-Column 4, line 19	1-5 ,7-20
Y	US 3857744 (Moss) 31 Dec 1974 (12.31.1974) Abstract; Column 1, lines 10-20; Column 2, lines 14-61	1-5 ,7-20
Y	US 5,839,329 (Smith et al) 24. Nov 1998 (24.11.1998), Column 7, lines 47-53)	8

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	"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
"E" earlier application or patent published on or after the international filing date	"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
"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)	"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
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 17 June 2005 (17.06.2005)	Date of mailing of the international search report <b>05 JUL 2005</b>
--	--

Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230	Authorized officer Timothy Meeks Telephone No. 866-217-9197 <i>J. Whitefield</i> <i>for</i>
---	---