

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
8 April 2004 (08.04.2004)

PCT

(10) International Publication Number
WO 2004/028746 A3

(51) International Patent Classification⁷: **B28D 1/02**

(21) International Application Number:
PCT/US2003/031463

(22) International Filing Date:
29 September 2003 (29.09.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10/259,168 27 September 2002 (27.09.2002) US

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

(71) Applicant and

(72) Inventor: SUNG, Chien-Min [US/—]; No. 4, Lane 32, Chung-Cheng Road, Tansui, 23911 (TW).

(74) Agents: WESTERN, Wayne, M. et al.; Thorpe North & Western L.L.P., P.O. Box 1219, Sandy, UT 84091-1219 (US).

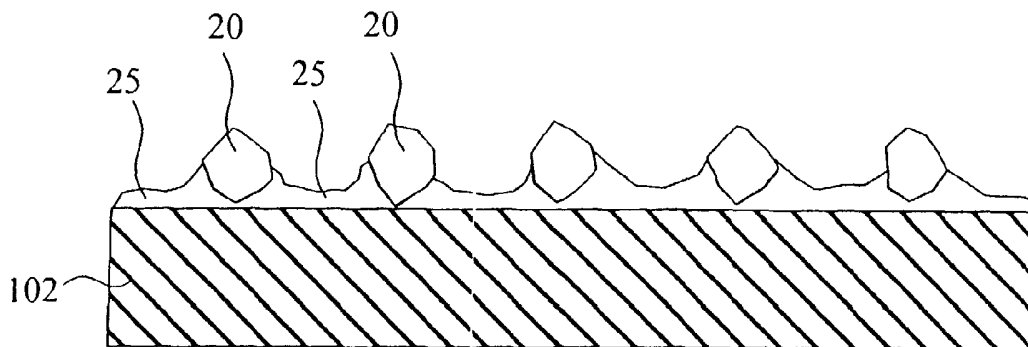
(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,

Published:
— with international search report

(88) Date of publication of the international search report:
10 September 2004

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.

(54) Title: BRAZED DIAMOND TOOLS AND METHODS FOR MAKING THE SAME



(57) Abstract: Superabrasive tools and methods for the making thereof are disclosed and described. In one aspect, superabrasive particles (20) are chemically bonded to a matrix support material according to a predetermined pattern by a braze alloy. The brazing alloy (25) may be provided as a powder, thin sheet, or sheet of amorphous alloy. A template (110) having a plurality of apertures (114) arranged in a predetermined pattern may be used to place the superabrasive particles on a given substrate or matrix support material.

WO 2004/028746 A3

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/31463

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : B28D 1/02

US CL : 125/12

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. : 51/297; 125/12, 16.02,21,22; 451/527,529,533,544

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.
A	US 1,988,065 A (WOODDELL) 15 January 1935 (15.01.1935)	1-45
A	US 2,078,354 A (WEBSTER) 27 April 1937 (27.04.1937)	1-45
A	US 2,268,663 A (KUZMICK) 06 January 1942 (06.01.1942)	1-45
A	US 2,952,951 A (SIMPSON) 20 September 1960 (20.09.1960)	1-45
A	US 4,355,489 A (HEYER et al) 26 October 1982 (26.10.1982)	1-45
A	US 4,883,500 A (DEAKINS et al) 28 November 1989 (28.11.1989)	1-45
A	US 5,092,082 A (PADBERG et al) 03 March 1992 (03.03.1992)	1-45
A	US 6,039,641 A (SUNG) 21 March 2000 (21.03.2000)	1-45
A	US 6,286,498 B1 (SUNG) 11 September 2001 (11.09.2001)	1-45

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

27 May 2004 (27.05.2004)

Date of mailing of the international search report

09 JUN 2004

Name and mailing address of the ISA/US

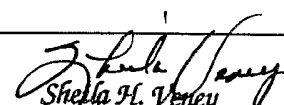
Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Facsimile No. (703) 305-3230

Authorized officer

Timothy V Eley

Telephone No. 703-308-1148



Sheila H. Veney
Paralegal Specialist
Tech. Center 3700