



(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
10.12.2003 Bulletin 2003/50

(51) Int Cl.7: **B24D 3/06**, B24D 7/00,
B24B 37/04, B24B 53/12,
B24D 18/00

(43) Date of publication A2:
08.08.2001 Bulletin 2001/32

(21) Application number: **01101689.6**

(22) Date of filing: **30.01.2001**

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE TR**
Designated Extension States:
AL LT LV MK RO SI

- Shimomae, Naoki, Mitsubishi Materials Corp. Iwaki-shi, Fukushima-ken (JP)
- Yamashita, Tetsuji, Mitsubishi Materials Corp. Iwaki-shi, Fukushima-ken (JP)
- Hata, Hanako, Mitsubishi Materials Corp. Iwaki-shi, Fukushima-ken (JP)

(30) Priority: **07.02.2000 JP 2000029614**

(71) Applicant: **MITSUBISHI MATERIALS
CORPORATION**
Chiyoda-ku, Tokyo (JP)

(74) Representative: **HOFFMANN - EITLÉ**
Patent- und Rechtsanwälte
Arabellastrasse 4
81925 München (DE)

(72) Inventors:
• Takahashi, Tsutomu, Mitsubishi Materials Corp. Iwaki-shi, Fukushima-ken (JP)

(54) **Abrasive tool**

(57) In the electrodeposited abrasive wheel 20 of the abrasive tool according to the present invention, plural mound parts 21, which are upheaved at the central domain of base metal 19 in almost columnar shape, are arranged mostly in the shape of lattice.

An abrasive grain layer 22 is formed on a base metal 19, and plural ultra abrasive grains 14 are adhered only to each mound parts 21 by electrodeposited metal phase 25, and referred as the small abrasive-grain-layer parts 24, respectively.

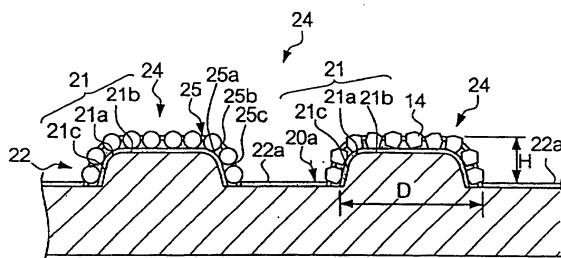
Ultra abrasive grains are laid out at corner R part

21a and top 21b of the mound parts 21 at the small abrasive-grain-layer parts 24.

Ultra abrasive grains at each small abrasive-grain-layer parts are set as 11-500 pieces, and the rate which ultra abrasive grains occupy to the whole area of abrasive grain layer accounted by plane projection is set as 20% - 80% of the range.

At the time of grinding, only ultra abrasive grains contact to grinding work piece, then high abutment pressure is maintained, and sharpness and the discharge performance of ground wastes are good.

FIG.3





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 01 10 1689

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 5 989 405 A (KAKUI KENJI ET AL) 23 November 1999 (1999-11-23) * abstract; figures 8-10 * ---	1-33	B24D3/06 B24D7/00 B24B37/04 B24B53/12 B24D18/00
X	US 6 001 008 A (MATSUO JUNJI ET AL) 14 December 1999 (1999-12-14) * claims 1,2; figures 1,2 * ---	1-33	
X	US 6 004 196 A (DOAN TRUNG T ET AL) 21 December 1999 (1999-12-21) * figures 2-6 * ---	1-33	
X	PATENT ABSTRACTS OF JAPAN vol. 1999, no. 08, 30 June 1999 (1999-06-30) -& JP 11 077535 A (ASAHI DIAMOND IND CO LTD), 23 March 1999 (1999-03-23) * abstract * ---	1-33	
X	PATENT ABSTRACTS OF JAPAN vol. 018, no. 396 (M-1644), 25 July 1994 (1994-07-25) -& JP 06 114743 A (OSAKA DIAMOND IND CO LTD), 26 April 1994 (1994-04-26) * the whole document * ---	1-32	TECHNICAL FIELDS SEARCHED (Int.Cl.7) B24B B24D
D,A	PATENT ABSTRACTS OF JAPAN vol. 1997, no. 05, 30 May 1997 (1997-05-30) -& JP 09 019868 A (ASAHI DAIYAMONDO KOGYO KK), 21 January 1997 (1997-01-21) * abstract * -----		
The present search report has been drawn up for all claims			
Place of search MUNICH		Date of completion of the search 15 October 2003	Examiner Gelder, K
<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>			

EPO FORM 1503 03.82 (P04C01)

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

EP 01 10 1689

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.

15-10-2003

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
US 5989405	A	23-11-1999	JP	2896657 B2	31-05-1999
			JP	10015819 A	20-01-1998

US 6001008	A	14-12-1999	JP	3295888 B2	24-06-2002
			JP	11300600 A	02-11-1999
			TW	410185 B	01-11-2000

US 6004196	A	21-12-1999	NONE		

JP 11077535	A	23-03-1999	NONE		

JP 06114743	A	26-04-1994	JP	6114743 T1	16-04-1994

JP 09019868	A	21-01-1997	JP	3020434 B2	15-03-2000
