

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
30 June 2011 (30.06.2011)

PCT

(10) International Publication Number  
WO 2011/079059 A3

(51) International Patent Classification:

B24D 7/02 (2006.01) B24D 7/00 (2006.01)  
B24D 18/00 (2006.01) B24B 37/04 (2006.01)

(21) International Application Number:

PCT/US2010/061210

(22) International Filing Date:

20 December 2010 (20.12.2010)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

200910259760.3 25 December 2009 (25.12.2009) CN

(71) Applicant (for all designated States except US): **3M INNOVATIVE PROPERTIES COMPANY** [US/US]; 3M Center, Post Office Box 33427, Saint Paul, Minnesota 55133-3427 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **WU, Yu-Lung**; 6F, No. 95 Dunhua S. Road, Sec. 2, Taipei 10682, Taiwan (CN). **LEE, Yang-Wen**; 6F, No. 95 Dunhua S. Road, Sec. 2, Taipei 10682, Taiwan (CN). **CHANG, Ming-Tien**; 6F, No. 95 Dunhua S. Road, Sec. 2, Taipei 10682, Taiwan (CN).

(74) Agents: **BAUM, Scott A.** et al.; 3M Center, Office of Intellectual Property Counsel, Post Office Box 33427, Saint Paul, Minnesota 55133-3427 (US).

(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, 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, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, 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, GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, 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, ML, MR, NE, SN, TD, TG).

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))

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

6 October 2011

(54) Title: METHOD OF MAKING A GRINDING DISK AND A GRINDING DISK

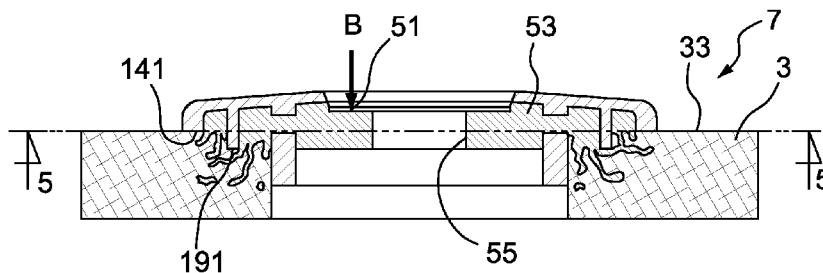


FIG. 4

(57) Abstract: The invention relates to a method of making a grinding disk, comprising the steps of: providing a cap; providing an abrasive part; placing the cap on the abrasive part to form an assembly; holding the assembly and injecting a molding material into a space between the cap and the abrasive part and into the abrasive part to bond the cap and the abrasive part. A grinding disk made by the method is also disclosed.



WO 2011/079059 A3

## INTERNATIONAL SEARCH REPORT

International application No.  
**PCT/US2010/061210****A. CLASSIFICATION OF SUBJECT MATTER***B24D 7/02(2006.01)i, B24D 18/00(2006.01)i, B24D 7/00(2006.01)i, B24B 37/04(2006.01)i*

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)

B24D 7/02; B24D 5/12; B24D 5/00; B24B 7/00; B29C 44/06; B24D 18/00; B29C 44/12

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

Korean utility models and applications for utility models  
Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) &amp; Keywords: grinding, disk, cap, abrasive, molding, inject, bond

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2009-0023366 A1 (LISE JONATHAN M. et al.) 22 January 2009 see paragraph 30 - paragraph 48 and figure 3.	1,3,12,14
Y	EP 1795304 A1 (FICAI, GIOVANNI) 13 June 2007 see column 3, line 3 - column 4, line 44 and figure 1.	1,3,12,14
A	US 05895612A A (WARNER; RUBBEN BROWN et al.) 20 April 1999 see column 4, line 7 - column 11, line 36 and figure 11.	1-22

 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 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

"&amp;" document member of the same patent family

Date of the actual completion of the international search

19 AUGUST 2011 (19.08.2011)

Date of mailing of the international search report

**19 AUGUST 2011 (19.08.2011)**

Name and mailing address of the ISA/KR

Korean Intellectual Property Office  
Government Complex-Daejeon, 189 Cheongsu-ro,  
Seo-gu, Daejeon 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

KIM, DONG JIN

Telephone No. 82-42-481-5415



**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/US2010/061210**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2009-0023366 A1	22.01.2009	CN 101018644 A EP 1778438 A1 GB 0418633 D0 KR 10-2007-0035620 A US 2009-023366 A1 WO 2006-023178 A1	15.08.2007 02.05.2007 22.09.2004 30.03.2007 22.01.2009 02.03.2006
EP 1795304 A1	13.06.2007	CA 2569963 A1 IT M020050327A1 US 2007-0128996 A1 US 7357702 B2	07.06.2007 08.06.2007 07.06.2007 15.04.2008
US 05895612A A	20.04.1999	GB 2308997 A US 05895612A A US 6312323 B1	16.07.1997 20.04.1999 06.11.2001