

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
15 October 2009 (15.10.2009)

(10) International Publication Number
WO 2009/126521 A3

(51) International Patent Classification:

B23B 27/14 (2006.01) *B23C 5/22* (2006.01)
B23B 27/18 (2006.01) *B23C 5/16* (2006.01)

(21) International Application Number:

PCT/US2009/039405

(22) International Filing Date:

3 April 2009 (03.04.2009)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

12/101,299 11 April 2008 (11.04.2008) US

(71) Applicant (for all designated States except US): **KEN-NAMETAL INC.** [US/US]; P.O. Box 231, 1600 Technology Way, Latrobe, PA 15650-0231 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **MAJAGI, Shiv-anand, I.** [US/US]; 1724 South 41st Street, Rogers, AR 72758 (US). **BITLER, Jonathan, W.** [US/US]; 476 E Fritz Court, Fayetteville, AR 72701 (US). **MARATHE, Aniruddha, S.** [IN/US]; 1409 SE O Street #A, Bentonville, AR 72712 (US).

(74) Agents: **SMITH, Matthew, W.** et al.; Kennametal Inc., P.O. Box 231, Latrobe, PA 15650 (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, 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, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, 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, 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, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, 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 (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:
14 January 2010

(54) Title: CUTTING BIT USEFUL FOR IMPINGEMENT OF EARTH STRATA

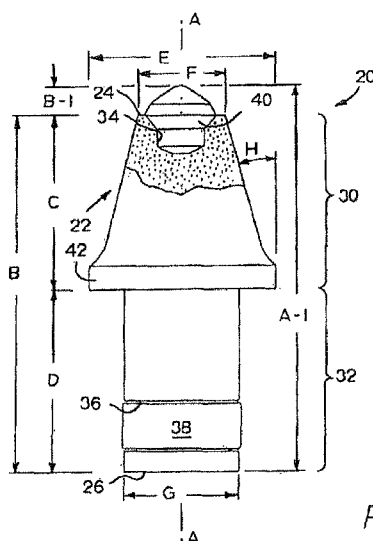


FIG. 1

(57) Abstract: A cutting bit (20) for impinging earth strata wherein the cutting bit includes a highly wear-resistant elongate cutting bit body (22), which has an axial forward end (24) and an axial rearward end (26), an enlarged dimension head portion (30) at the axial forward end and a reduced dimension shank portion (32) at the axial rearward end (26). The highly wear-resistant elongate cutting bit body (22) has a maximum transverse dimension (E) and a longitudinal axial length (B). The cutting bit includes a superhard insert (40), which is affixed to the head portion (30) at the axial forward end (24) of the cutting bit body (22). The cutting bit (40) has a slimness ratio, which comprises the ratio of the maximum transverse dimension (E) to the longitudinal axial length (B) wherein the cutting bit (40) exhibits a slimness ratio ranging between about 0.15 and about 0.60.



WO 2009/126521 A3

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2009/039405

A. CLASSIFICATION OF SUBJECT MATTER

B23B 27/14(2006.01)i, B23B 27/18(2006.01)i, B23C 5/22(2006.01)i, B23C 5/16(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)
IPC: B23B 27, E21C 35

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 since 1975
Japanese Utility models and applications for Utility models since 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
eKOMPASS (KIPO internal) & Keywords: cutting, boring, earth, strata, impinge

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X ----- Y	WO 2008-024193 A1 (KENNAMETAL INC. et al.) 28 February 2008 See page 5, lines 9 - 25; page 10, line 16 - page 12, line 26.	1,7,8,11-13,15,27,28 ----- 2-6,9,10,14,16-26
Y	US 06073518 A (CHOW, JACOB T. C. et al.) 13 June 2000 See Column 6, Line 19 - Column 9, Line 56.	2,6,9,10,14,16
Y	US 2006-219442 A1 (FELDERHOFF, FLOYD C. et al.) 05 October 2006 See Column 2, Line 37 - Column 3, Line 19.	3-5,17-26
Y	US 05435403 A (TIBBITTS, GORDON A.) 25 July 1995 See Column 4, Lines 50 - 63.	6,10



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
- "&" document member of the same patent family

Date of the actual completion of the international search <p style="text-align: center;">24 NOVEMBER 2009 (24.11.2009)</p>	Date of mailing of the international search report <p style="text-align: center;">24 NOVEMBER 2009 (24.11.2009)</p>
Name and mailing address of the ISA/KR  Korean Intellectual Property Office Government Complex-Daejeon, 139 Seonsa-ro, Seo-gu, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140	Authorized officer <p style="text-align: center;">LEE, Jeong Hak</p> Telephone No. 82-42-481-5433 

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2009/039405

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2008-024193 A1	28.02.2008	EP 2074285 A2 US 2008-0042484 A1	01.07.2009 21.02.2008
US 06073518 A	13.06.2000	EP 0930949 A1 EP 0930949 B1 US 06089123 A WO 1998-013159 A1	28.07.1999 04.04.2001 18.07.2000 02.04.1998
US 2006-219442 A1	05.10.2006	None	
US 05435403 A	25.07.1995	None	