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- (72) Inventor; and
- (71) Applicant : **WHITE, Christopher L.** [US/US]; 12936 West Chenango Avenue, Morrison, Colorado 80456 (US).
- (74) Agents: **TREGO, Brandon C.** et al.; Trego, Hines & Laddenheim, PLLC, 9300 Harris Corners Parkway, Suite 210, Charlotte, North Carolina 28269 (US).
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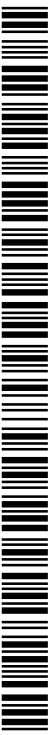
HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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(54) Title: DRILL BIT

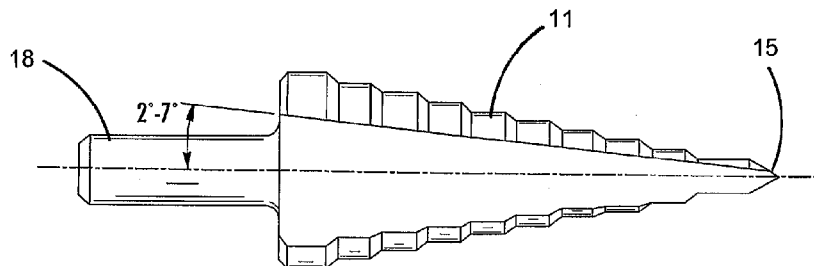


FIG. 8

(57) Abstract: A drill bit for cutting successively larger holes in a substrate includes a conically-shaped body having first and second cutting flutes extending along the length of the body. The first cutting flute includes a first cutting edge and the second cutting flute includes a second cutting edge. The first and second cutting edges are offset relative to each other to create a cutting angle adapted to reduce chatter.

A. CLASSIFICATION OF SUBJECT MATTER***B23B 51/02(2006.01)i, B23B 51/08(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)

B23B 51/02; B23B 51/00; B21K 5/04

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) & Keywords: drill, bit, step, flute, cutting edge, angle.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2008-0166195 A1 (GENTRY, CHARLES L. et al.) 10 July 2008 See abstract, figures 1-10 and paragraph [0004]-[0009], [0024]-[0053].	1-17
Y	US 04913603A A (FRIEDLI, PAUL et al.) 03 April 1990 See abstract, figure 1, column 1, line 4 - column 2, line 12 and claims 1-4.	1-17
Y	JP 3165636 U9 (HYUPJUNG METAL INDUSTRY CO., LTD.) 05 January 2011 See abstract and figures 1, 6.	15
A	paragraph [0003]-[0018] and figures 1, 6.	1-14, 16, 17
A	JP 2007-203396 A (JEFCOM CO., LTD.) 16 August 2007 See abstract and figures 1-3.	1-17
A	WO 2009-153066 A1 (MAPAL FABRIK FUR PRAZISIONSWERKZEUGE DR. KRESS KG) 23 December 2009 See abstract, page 3, line 25 - page 4, line 6 and figure 1.	1-17

 Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:

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INTERNATIONAL SEARCH REPORT

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2008-0166195 A1	10.07.2008	CA 2617025 A1 US 8029215 B2	05.07.2008 04.10.2011
US 04913603A A	03.04.1990	EP 0290520 A1 EP 0290520 B1 WO 88-03849 A1	17.11.1988 30.10.1991 02.06.1988
JP 3165636 U9	05.01.2011	None	
JP 2007-203396 A	16.08.2007	None	
WO 2009-153066 A1	23.12.2009	CN 102066028 A EP 2291256 A1 JP 2011-525152 A KR 10-2011-0025963 A MX 2010013619 A US 2011-0103910 A1	18.05.2011 09.03.2011 15.09.2011 14.03.2011 24.02.2011 05.05.2011