

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
16 February 2006 (16.02.2006)

PCT

(10) International Publication Number
WO 2006/017414 A3

(51) International Patent Classification:
E21B 7/00 (2006.01)

(21) International Application Number:
PCT/US2005/027172

(22) International Filing Date: 29 July 2005 (29.07.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10/912,432 5 August 2004 (05.08.2004) US

(71) Applicants and

(72) Inventors: **HOLTE, Ardis, L.** [US/US]; Holte Manufacturing, 181 Polk Street, Eugene, OR 97402 (US). **CONN, Timothy, W.** [US/US]; Holte Manufacturing, 181 Polk Street, Eugene, OR 97402 (US).

(74) Agent: **ALAVI, David, S.**; 3762 West 11th Avenue #408, Eugene, OR 97402 (US).

(81) Designated States (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM,

AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, 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, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

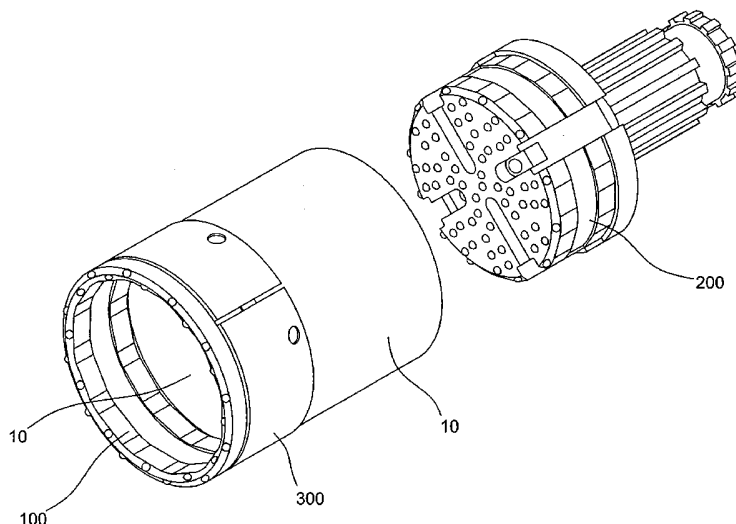
Published:

— with international search report

(88) Date of publication of the international search report:
5 October 2006

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: DRILL BIT ASSEMBLY



(57) Abstract: A drilling apparatus comprises a casing shoe, ring bit, and center bit. The casing shoe may be connected to a casing received within the casing shoe. The ring bit is received within the casing shoe and retained at the end of the casing. The ring bit rotates relative to the casing shoe, and drills a peripheral portion of a hole. The center bit drills a central portion of the hole, and may be rotated and percussively driven to drill the hole. The center and ring bits are adapted for: engaging one another so that rotating and percussively driving the center bit also rotates and percussively drives the ring bit; engaging one another so that retracting the center bit also retracts the ring bit, casing shoe, and casing; enabling disengagement from one another and withdrawal of the center bit from the ring bit and the casing shoe.

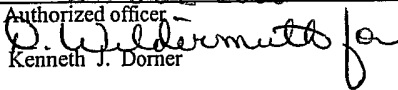


WO 2006/017414 A3

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US05/27172

A. CLASSIFICATION OF SUBJECT MATTER IPC: E21B 7/00 (2006.01) USPC: 175/57 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. : 175/57, 171, 34, 385, 389, 415 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) US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB																	
C. DOCUMENTS CONSIDERED TO BE RELEVANT <table border="1"> <thead> <tr> <th>Category *</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>X --- Y</td> <td>US 5,921,332 (SPEDALE, JR) 13 July 1999 (13. 07.1999), see entire document.</td> <td>1,2,5,7,14,16-18,22,24 and 31 ----- 19</td> </tr> <tr> <td>A</td> <td>US 6,035,952 A (REAR) 14 March 2000 (14.03.2000).</td> <td></td> </tr> <tr> <td>A</td> <td>US 2004/0104050 A1 (JARVELA et al.) 03 June 2004 (03.06.2004).</td> <td></td> </tr> <tr> <td>A</td> <td>US 2006/0021801 A1 (HUGHES et al.) 02 February 2006 (02.02.2006).</td> <td></td> </tr> </tbody> </table>			Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	X --- Y	US 5,921,332 (SPEDALE, JR) 13 July 1999 (13. 07.1999), see entire document.	1,2,5,7,14,16-18,22,24 and 31 ----- 19	A	US 6,035,952 A (REAR) 14 March 2000 (14.03.2000).		A	US 2004/0104050 A1 (JARVELA et al.) 03 June 2004 (03.06.2004).		A	US 2006/0021801 A1 (HUGHES et al.) 02 February 2006 (02.02.2006).	
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.															
X --- Y	US 5,921,332 (SPEDALE, JR) 13 July 1999 (13. 07.1999), see entire document.	1,2,5,7,14,16-18,22,24 and 31 ----- 19															
A	US 6,035,952 A (REAR) 14 March 2000 (14.03.2000).																
A	US 2004/0104050 A1 (JARVELA et al.) 03 June 2004 (03.06.2004).																
A	US 2006/0021801 A1 (HUGHES et al.) 02 February 2006 (02.02.2006).																
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.																	
<table border="1"> <thead> <tr> <th colspan="2">* Special categories of cited documents:</th> </tr> </thead> <tbody> <tr> <td>"A" document defining the general state of the art which is not considered to be of particular relevance</td> <td>"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</td> </tr> <tr> <td>"E" earlier application or patent published on or after the international filing date</td> <td>"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</td> </tr> <tr> <td>"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)</td> <td>"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</td> </tr> <tr> <td>"O" document referring to an oral disclosure, use, exhibition or other means</td> <td>"&" document member of the same patent family</td> </tr> <tr> <td>"P" document published prior to the international filing date but later than the priority date claimed</td> <td></td> </tr> </tbody> </table>			* 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				
* 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 23 June 2006 (23.06.2006)		Date of mailing of the international search report 11 JUL 2006															
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. (571) 273-3201		Authorized officer  Kenneth J. Dorner Telephone No. 571-272-3600															