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(71) **Applicant** (for all designated States except US):
LONGYEAR TM, INC. [US/US]; 10808 South River
 Front Parkway, Suite 600, South Jordan, UT 84095 (US).

(72) Inventors: and

(75) **Inventors/Applicants (for US only): DRENTH, Christopher, L.** [CA/US]; 14123 Stone Canyon Dr., Draper, UT

84020 (US). **IONDOV, George** [CA/CA]; 3400 Riverspray Cr. #1715, Milton, ON L4Y 3M5 (CA). **IBRAHIM, George** [CA/CA]; #701-3575 Kaneff Crescent, Mississauga, ON L5A 3Y5 (CA).

(74) **Agent: ISRAELSEN, R., Burns;** WORKMAN NYDEGER, 1000 Eagle Gate Tower, 60 East South Temple, Salt Lake City, UT 84111 (US).

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(54) Title: DRIVEN LATCH MECHANISM

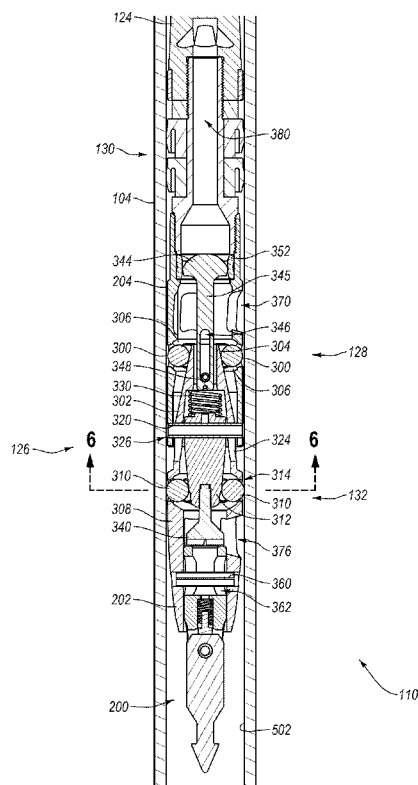


Fig. 5

(57) Abstract: Implementations of the present invention include a core barrel assembly having a driven latch mechanism. The driven latch mechanism can lock the core barrel assembly axially and rotationally relative to a drill string. The driven latch mechanism can include a plurality of wedge members positioned on a plurality of driving surfaces. Rotation of the drill string can cause the plurality of wedge members to wedge between an inner diameter of the drill string and the plurality of driving surfaces, thereby rotationally locking the core barrel assembly relative to the drill string. Implementations of the present invention also include drilling systems including such driven latch mechanisms, and methods of retrieving a core sample using such drilling systems.



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).

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2010/051747**A. CLASSIFICATION OF SUBJECT MATTER*****E21B 17/02(2006.01)i, E21B 25/04(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)

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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: core barrel, latch, wedge, ball

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2004-0216927 A1 (BEACH ANDREW) 04 November 2004 See paragraphs 0002,0036,0037,0054,0056,0059 and figure 1	19,23,27-28,30
A	US 2005-0034894 A1 (ANDREW BEACH et al.) 17 February 2005 See paragraphs 0050,0063,0064 and figures 1,3,4	1-30
A	US 06019181 A (SOINSKI FREDERICK J. et al.) 01 February 2000 See column 5, lines 6-34 and figures 1-3	1-30
A	US 04418770 A (LAMBOT; HONORE J.) 06 December 1983 See column 4, lines 64-68 and figure 1	1-30

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

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Korean Intellectual Property Office
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Authorized officer

YOO, Hyun Duk

Telephone No. 82-42-481-8308



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Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2004-0216927 A1	04.11.2004	AU 2001-48002 B3 AU 2002-308426 B2 CA 2486866 A1 US 7314101 B2 WO 02-095183 A1 ZA200309961A	13.09.2001 29.11.2007 28.11.2002 01.01.2008 28.11.2002 20.01.2005
US 2005-0034894 A1	17.02.2005	AT 468469 T AU 2002-336809 B2 CA 2465658 A1 DE 60236452 D1 EP 1454033 A1 EP 1454033 A4 EP 1454033 B1 N020041772A US 7296638 B2 WO 03-038232 A1 WO 0303-8232A1	15.06.2010 03.05.2007 08.05.2003 01.07.2010 08.09.2004 22.02.2006 19.05.2010 29.06.2004 20.11.2007 08.05.2003 08.05.2003
US 06019181 A	01.02.2000	AU 1997-38400 B2 CA 2214755 C US 05799742 A US 05992543 A	01.02.2001 17.09.2002 01.09.1998 30.11.1999
US 04418770 A	06.12.1983	EP 0052672 A1 EP 0052672 B1 EP 0052672 B1	02.06.1982 20.03.1985 29.12.1999