(51) International Patent Classification: E21B 3/00 (2006.01)

(21) International Application Number: PCT/US2009/061872

(22) International Filing Date: 23 October 2009 (23.10.2009)

(25) Filing Language: English

(26) Publication Language: English


(71) Applicant (for all designated States except US): BAKER HUGHES INCORPORATED [US/US]; P.O. Box 4740, Houston, TX 77210-4740 (US).

(72) Inventor: and

(75) Inventor/Applicant (for US only): SCHOLZ, Eckard [DE/DE]; Blockkamp 26, D-29351 Eldingen (DE).

(74) Agents: CARSON, Matt. W. et al; Baker Hughes Incorporated, P.O. Box 4740, Houston, TX 77210-4740 (US).


(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, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:
— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(H))
— as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(Hi))

Published:
— with international search report (Art. 21(3))

(54) Title: COUPLING FOR DOWNHOLE TOOLS

(57) Abstract: Transferring rotary power between a first rotating member and a second rotating member may be performed by using a first element associated with the first rotating member; and a second element associated with the second rotating member. The first element and the second element may be configured to rotate the first rotating member either substantially synchronously or non-synchronously with the second rotating member. A hysteresis material may be utilized in either or both of the first element and the second element. A modulator may be used to control a speed of the first element or the second element.
— 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:
19 August 2010
**INTERNATIONAL SEARCH REPORT**

**A. CLASSIFICATION OF SUBJECT MATTER**

**E21B 3/00(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)

E21B 3/00, B60T 8/12, E21B 4/02, E21B 7/04, E21B 7/08, F16D 65/853, GOIV 1/44

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, motor, oil pump, magnetic contact, synchronous rotation

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

<table>
<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</td>
<td>US 4137473 AI (PFISTER) 30 January 1979 See the abstract; Fig. 1; column 4, line 4-column 6, line 18.</td>
<td>1-3, 7, 10, 13, 18-20</td>
</tr>
<tr>
<td>A</td>
<td>US 5215501 AI (USHIKOSHI) 01 June 1993 See the abstract; Fig. 1; column 1, line 10-column 2, line 51.</td>
<td>1-20</td>
</tr>
<tr>
<td>A</td>
<td>US 6092610 AI (KOSMALA et al.) 25 July 2000 See the abstract; Figs. 4, 12, and 14; column 11, line 30-column 14, line 17.</td>
<td>1-20</td>
</tr>
<tr>
<td>A</td>
<td>US 2008-0030091 AI (UNSELDE et al.) 07 February 2008 See the abstract; Fig. IA; paragraph [0025].</td>
<td>1-20</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
  - "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**

10 JUNE 2010 (10.06.2010)

**Date of mailing of the international search report**

10 JUNE 2010 (10.06.2010)

**Name and mailing address of the ISA/KR**

Korean Intellectual Property Office
Government Complex-Daejeon, 139 Seonsa-ro, Seogu, Daejeon 302-701, Republic of Korea

Facsimile No 82-42-472-7140

**Authorized officer**

YANG Kyung Jin

**Telephone No** 82-42-481-8556

Form PCT/ISA/210 (second sheet) (July 2009)
<table>
<thead>
<tr>
<th>Patent document cited in search report</th>
<th>Publication date</th>
<th>Patent family member(s)</th>
<th>Publication date</th>
</tr>
</thead>
<tbody>
<tr>
<td>US 4137473 A1</td>
<td>30.01.1979</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>EP 0334646 B1</td>
<td>20.10.1993</td>
</tr>
<tr>
<td></td>
<td></td>
<td>JP 2078089 C</td>
<td>09.08.1996</td>
</tr>
<tr>
<td>US 6092610 A1</td>
<td>25.07.2000</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>DE 102006031310 A1</td>
<td>24.01.2008</td>
</tr>
</tbody>
</table>