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14 October 2010

(54) Title: VALVE-CONTROLLED DOWNHOLE MOTOR

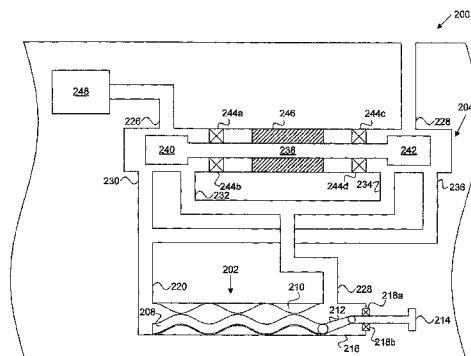


FIG. 2A

(57) Abstract: The present invention relates to systems and methods for controlling downhole motors. One aspect of the invention provides a valve-controlled downhole motor (202) including: a downhole motor and a spool valve (204). The downhole motor includes a sealed chamber having a first port (220) and a second port (228), a stator (210) received within the sealed chamber, and a rotor received within the stator. The spool valve includes a barrel and a spool (238) received within the barrel. The barrel includes an inlet port (226), an exhaust port, a first feed port (230), a second feed port (232), a first return port (234), and a second return port (236). The inlet port is located in proximity to the first feed port and second port. The exhaust port is located in proximity to the first return port and the second return port. The spool includes a first gland (240) and a second gland (242).

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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
INV. E21B4/02 F03C2/08
ADD.

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 F03C

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 practical, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 289 998 B1 (KRUEGER VOLKER [DE] ET AL) 18 September 2001 (2001-09-18) column 4, line 23 - line 39 column 6, line 61 - line 65	1-27, 35, 36
X	US 2006/243493 A1 (EL-RAYES KOSAY I [AE] ET AL EL-RAYES KOSAY I [AE] ET AL) 2 November 2006 (2006-11-02) page 3, paragraph 37	1-27, 35, 36
X	US 2008/164062 A1 (BRACKIN VAN J [US] ET AL) 10 July 2008 (2008-07-10) page 5, paragraph 48	1-27, 35, 36
X	WO 02/079604 A2 (ROTECH HOLDINGS LTD [GB]; VAN DRENTHAM-SUSMAN HECTOR FIL [GB]; STEWART) 10 October 2002 (2002-10-10) line 23 - page 11, line 4; figures 4-6	28, 29

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 document 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 another 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

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INTERNATIONAL SEARCH REPORT

International application No
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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 99/64715 A1 (SHELL INT RESEARCH [NL]; SHELL CANADA LTD [CA]) 16 December 1999 (1999-12-16) page 5, line 7 - page 5, line 35	28, 29, 33
X	US 1 731 553 A (KEULEN GODEFRIDUS HENDRIKUS CL) 15 October 1929 (1929-10-15) page 1, line 38 - page 2, line 72	28, 29

INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB2009/002670

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-27, 35, 36

A valve-controlled downhole motor comprising: a downhole motor having: a sealed chamber having a first port and a second port; a stator received within the sealed chamber; and a rotor received within the stator; and; and a spool valve including: a barrel having: an inlet port; an exhaust port; a first feed port; a second feed port; a first return port; and a second return port; wherein the inlet port is located in proximity to the first feed port and second port; and wherein the exhaust port is located in proximity to the first return port and the second return port; and a spool received within the barrel, the spool having: a first gland; and a second gland. A drilling method comprising: providing a drill string having: said valve-controlled downhole motor. A drill string comprising: said valve-controlled downhole motor.

2. claims: 28-34

A bottom hole assembly comprising: a drill string collar; and an actuatable arm coupled with the drill string collar.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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