



(51) International Patent Classification:

E21B 43/26 (2006.01) E21B 34/14 (2006.01)  
E21B 23/03 (2006.01) E21B 23/08 (2006.01)

(21) International Application Number:

PCT/GB2014/050789

(22) International Filing Date:

14 March 2014 (14.03.2014)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

1304833.5 15 March 2013 (15.03.2013) GB

(71) Applicant: **PETROWELL LIMITED** [GB/GB];  
Weatherford Centre, Souterhead Road, Altens Industrial  
Estate, Aberdeen, Aberdeenshire AB12 3LF (GB).

(72) Inventor: **PATTON, Damien Gerard**; The Lodge, Ken-  
nethmont, Huntly, Aberdeen AB54 4NL (GB).

(74) Agent: **MORELAND, David**; Aurora, 120 Bothwell  
Street, Glasgow G2 7JS (GB).

(81) Designated States (unless otherwise indicated, for every  
kind of national protection available): AE, AG, AL, AM,  
AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY,  
BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM,

DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT,  
HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, 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, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA,  
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.

(84) Designated States (unless otherwise indicated, for every  
kind of regional protection available): ARIPO (BW, GH,  
GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ,  
UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, 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,  
KM, ML, MR, NE, SN, TD, TG).

Published:

- with international search report (Art. 21(3))
- 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:

21 May 2015



WO 2014/140611 A3

(54) Title: ACTUATING APPARATUS

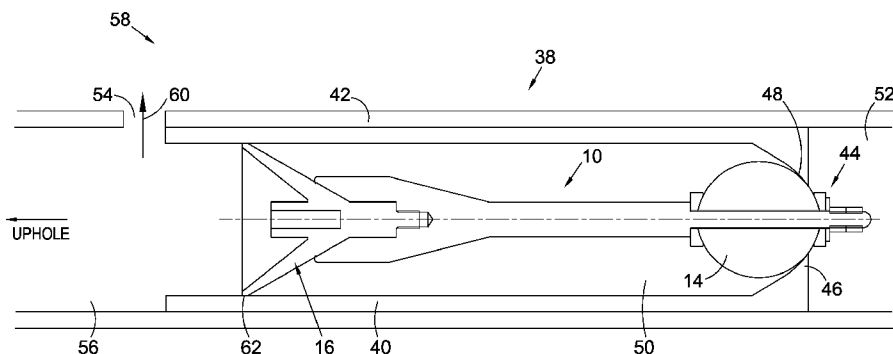


Figure 2

(57) Abstract: A downhole actuating apparatus (10) comprising a body (12), an object (14) provided on the body, and a sealing arrangement (30) provided on the body and axially spaced from the object. In use, the apparatus (10) is deployed downhole until the object (14) engages an obstacle (44). The sealing arrangement is configured to provide protection for the object during deployment of the apparatus and/or while the apparatus is engaged with the obstacle.

INTERNATIONAL SEARCH REPORT

International application No  
PCT/GB2014/050789

A. CLASSIFICATION OF SUBJECT MATTER  
INV. E21B43/26 E21B23/03 E21B34/14 E21B23/08  
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  
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)  
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         | WO 2008/146012 A2 (CHURCHILL DRILLING TOOLS LTD [GB]; CHUCHILL ANDREW PHILLIP [GB]) 4 December 2008 (2008-12-04)<br>the whole document<br>figures 1-6    | 1-54                  |
| X         | WO 2004/011770 A2 (WEATHERFORD LAMB [US])<br>5 February 2004 (2004-02-05)<br>the whole document                                                          | 1,26                  |
| X         | WO 02/14650 A1 (LEE PAUL BERNARD [AE]; ORR WILLIAM MCLEAN [GB] LEE PAUL BERNARD [AE])<br>21 February 2002 (2002-02-21)<br>figure 6<br>the whole document | 1,26                  |
|           | -----<br>-/--                                                                                                                                            |                       |

Further documents are listed in the continuation of Box C.

See patent family annex.

\* Special categories of cited documents :

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"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)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> | <p>"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</p> <p>"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</p> <p>"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</p> <p>"&amp;" document member of the same patent family</p> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                                                |                                                                      |
|--------------------------------------------------------------------------------|----------------------------------------------------------------------|
| Date of the actual completion of the international search<br><br>26 March 2015 | Date of mailing of the international search report<br><br>01/04/2015 |
|--------------------------------------------------------------------------------|----------------------------------------------------------------------|

|                                                                                                                                                                      |                                            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|
| Name and mailing address of the ISA/<br>European Patent Office, P.B. 5818 Patentlaan 2<br>NL - 2280 HV Rijswijk<br>Tel. (+31-70) 340-2040,<br>Fax: (+31-70) 340-3016 | Authorized officer<br><br>van Berlo, André |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|

## INTERNATIONAL SEARCH REPORT

International application No  
PCT/GB2014/050789

| C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT |                                                                                                                                               |                       |
|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| Category*                                            | Citation of document, with indication, where appropriate, of the relevant passages                                                            | Relevant to claim No. |
| X                                                    | US 2011/284240 A1 (CHEN KUO-CHIANG [US] ET AL) 24 November 2011 (2011-11-24)<br>the whole document<br>-----                                   | 1,26                  |
| X                                                    | US 2011/180274 A1 (WANG DAVID WEI [US] ET AL) 28 July 2011 (2011-07-28)<br>the whole document<br>figures 1-3<br>-----                         | 1,26                  |
| X                                                    | WO 2012/045165 A1 (PACKERS PLUS ENERGY SERV INC [CA]; COON ROBERT JOE [US])<br>12 April 2012 (2012-04-12)<br>the whole document<br>-----      | 1,26                  |
| X                                                    | GB 2 323 871 A (WELL-FLOW OIL TOOLS LTD [GB] WELL FLOW OIL TOOLS LTD [GB])<br>7 October 1998 (1998-10-07)<br>figure 17<br>-----               | 1,26                  |
| X                                                    | WO 2004/031532 A1 (BAKER HUGUES INC [US])<br>15 April 2004 (2004-04-15)<br>paragraphs [0036], [0037]; figure 8<br>the whole document<br>----- | 1                     |

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/GB2014/050789

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------------------------|------------------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WO 2008146012                          | A2               | 04-12-2008              | NONE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| WO 2004011770                          | A2               | 05-02-2004              | AU 2003256968 A1 16-02-2004<br>US 2004020641 A1 05-02-2004<br>US 2004231836 A1 25-11-2004<br>WO 2004011770 A2 05-02-2004                                                                                                                                                                                                                                                                                                                                                                                                                   |
| WO 0214650                             | A1               | 21-02-2002              | AT 341697 T 15-10-2006<br>AU 7575901 A 25-02-2002<br>DE 60123630 T2 13-09-2007<br>EP 1307633 A1 07-05-2003<br>US 2004011566 A1 22-01-2004<br>WO 0214650 A1 21-02-2002                                                                                                                                                                                                                                                                                                                                                                      |
| US 2011284240                          | A1               | 24-11-2011              | GB 2486133 A 06-06-2012<br>RU 2012112231 A 27-06-2014<br>US 2011284240 A1 24-11-2011<br>WO 2011146210 A1 24-11-2011                                                                                                                                                                                                                                                                                                                                                                                                                        |
| US 2011180274                          | A1               | 28-07-2011              | NONE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| WO 2012045165                          | A1               | 12-04-2012              | AU 2011313778 A1 02-05-2013<br>CA 2813645 A1 12-04-2012<br>EP 2625381 A1 14-08-2013<br>US 2013206402 A1 15-08-2013<br>WO 2012045165 A1 12-04-2012                                                                                                                                                                                                                                                                                                                                                                                          |
| GB 2323871                             | A                | 07-10-1998              | GB 2323871 A 07-10-1998<br>NO 981096 A 15-09-1998<br>US 6065541 A 23-05-2000                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| WO 2004031532                          | A1               | 15-04-2004              | AU 2003275309 A1 23-04-2004<br>AU 2003277195 A1 23-04-2004<br>CA 2500163 A1 15-04-2004<br>CA 2500704 A1 15-04-2004<br>CN 1703566 A 30-11-2005<br>CN 1708630 A 14-12-2005<br>CN 101096906 A 02-01-2008<br>CN 101158281 A 09-04-2008<br>GB 2408764 A 08-06-2005<br>GB 2409485 A 29-06-2005<br>RU 2336409 C2 20-10-2008<br>RU 2349735 C2 20-03-2009<br>US 2004112599 A1 17-06-2004<br>US 2004112606 A1 17-06-2004<br>US 2006237191 A1 26-10-2006<br>US 2007029092 A1 08-02-2007<br>WO 2004031529 A2 15-04-2004<br>WO 2004031532 A1 15-04-2004 |