

(11) **EP 2 650 468 A3**

(12)

EUROPEAN PATENT APPLICATION

(88) Date of publication A3: 03.09.2014 Bulletin 2014/36

(51) Int Cl.: **E21B 33/129** (2006.01)

(43) Date of publication A2: **16.10.2013 Bulletin 2013/42**

(21) Application number: 13163387.7

(22) Date of filing: 11.04.2013

(84) Designated Contracting States:

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR Designated Extension States:

BA ME

(30) Priority: 11.04.2012 GB 201206381

(71) Applicant: Welltools Limited Inverkeithing, Fife FK11 1NZ (GB)

(72) Inventors:

 Hilliard, Paul Inverkeithing, Fife KY11 1HZ (GB)

 Knight, Jeffrey Paul Inverurie, Aberdeenshire AB51 5BH (GB)

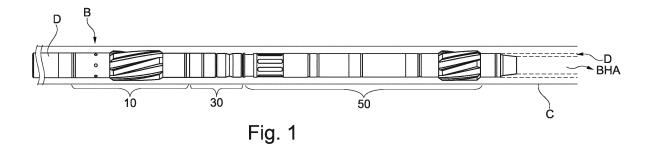
 Hoben, Dominic Michael Edinburgh, Lothian EH3 9RU (GB)

(74) Representative: HGF Limited Belgrave Hall Belgrave Street Leeds LS2 8DD (GB)

(54) A Downhole Plug

(57) A downhole plug for plugging and method of controlling fluids within a borehole in an oil and/or gas well. The downhole plug has a body having a throughbore for the passage of fluids. The plug also has a mechanical anchoring device that can radially expand an anchoring member on an outer surface of the body to lock the body in a fixed axial position within the borehole and an annular sealing device that can radially expand a sealing member

on the outer surface of the body to seal an annulus formed between the outer surface of the body and an inner surface of the borehole. The plug also has a throughbore plugging device that can change configuration between a first open configuration in which the throughbore of the body permits the passage of fluid, and a second closed configuration in which the throughbore resists the passage of fluid.





EUROPEAN SEARCH REPORT

Application Number EP 13 16 3387

| Category | Citation of document with in of relevant pass | ndication, where appropriate, ages | Relevant to claim | CLASSIFICATION OF THE APPLICATION (IPC) | |
|--|--|---|---|---|--|
| Х | US 2010/101807 A1 ([US] ET AL) 29 Apri | GREENLEE DONALD ROY 1 2010 (2010-04-29) | 1-5,9-15 | INV. E21B33/129 | |
| Υ | * page 3, paragraph | 53 - page 4, paragraph | 6-8 | 2213337 123 | |
| Υ | 17 October 2000 (20 | ILEY DAVID A [US] ET AL) 100-10-17) 0 - column 5, line 60; | 6-8 | | |
| Х | | HORTON J D [US] HORTON | 1,12-15 | | |
| γ | | nuary 2008 (2008-01-17) n 17 - paragraph 26 * | 2-11 | | |
| Υ | US 4 862 961 A (NEF 5 September 1989 (1 * column 5 - column | .989-09-05) | 2-11 | | |
| X | AL) 6 February 2003 | NEAL KENNETH G [US] ET (2003-02-06) 19 - paragraph 26; | 1 | TECHNICAL FIELDS SEARCHED (IPC) | |
| A | US 2010/155052 A1 (COPELAND [AU]) 24 J * the whole documer | une 2010 (2010-06-24) | 1,12 | | |
| A | US 2007/227745 A1 (ET AL) 4 October 20 * the whole documer | | 1,12 | | |
| А | US 6 220 348 B1 (SE AL) 24 April 2001 (* the whole documer | | 1,12 | | |
| Α | US 5 029 643 A (WIN AL) 9 July 1991 (19 * the whole documer | | 1,12 | | |
| | The present search report has | · · | | | |
| | Place of search | Date of completion of the search | | Examiner | |
| | Munich | 23 July 2014 | Morrish, Susan | | |
| X : part Y : part docu A : tech | ATEGORY OF CITED DOCUMENTS ioularly relevant if taken alone ioularly relevant if combined with anot unent of the same category motionical backgroundwritten disclosure | E : earlier patent doc after the filing date her D : document cited in L : document cited fo | T: theory or principle underlying the invention E: earlier patent document, but published on, or after the filing date D: document cited in the application L: document cited for other reasons 8: member of the same patent family, corresponding | | |

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 13 16 3387

5

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

23-07-2014

| 10 | |
|----|--|
| 15 | |
| 20 | |
| 25 | |
| 30 | |
| | |

35

40

45

50

55

| | Patent document ed in search report | | Publication date | | Patent family member(s) | | Publication date |
|----|--|----|------------------|--|--|-------------------------------|--|
| US | 2010101807 | A1 | 29-04-2010 | CA US US | 2678819 2010101807 2012080202 | A1 | 27-04-20 29-04-20 05-04-20 |
| US | 6131663 | A | 17-10-2000 | AU AU CA GB NO NO US | 759059 3392199 2274203 2338256 992810 20023193 6131663 | A1 A A A | 03-04-20 23-12-19 10-12-19 15-12-19 13-12-19 13-12-19 17-10-20 |
| US | 2008011479 | A1 | 17-01-2008 | US US | 2008011479 2011226478 | | 17-01-20 22-09-20 |
| US | 4862961 | Α | 05-09-1989 | NONE | = | | |
| US | 2003024712 | A1 | 06-02-2003 | CA GB NO US | 2395723 2378199 20023663 2003024712 | A A | 02-02-20 05-02-20 03-02-20 06-02-20 |
| US | 2010155052 | A1 | 24-06-2010 | AU AU GB GB MY US US WO | 2004287895 2010201064 2424237 2432607 140093 2006272828 2010155052 2005045181 | A1 A A A A1 A1 | 19-05-20 08-04-20 20-09-20 30-05-20 30-11-20 07-12-20 24-06-20 19-05-20 |
| US | 2007227745 | A1 | 04-10-2007 | CA GB GB US | 2582751 2436581 2443992 2007227745 | A A | 29-09-20 03-10-20 21-05-20 04-10-20 |
| US | 6220348 | B1 | 24-04-2001 | CA US US | 2286543 6220348 6244642 | B1 | 20-04-20 24-04-20 12-06-20 |
| US | 5029643 | A | 09-07-1991 | AU AU CA DE DE EP | 639330 7643091 2043756 69108780 69108780 0460902 | A A1 D1 T2 | 22-07-19 05-12-19 05-12-19 18-05-19 24-08-19 11-12-19 |

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 13 16 3387

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

23-07-2014

| Patent document cited in search report | Publication date | Patent family member(s) | | Publication date | | | | |
|---|---|--|--------|--|--|--|--|--|
| | | MX 172734 NO 911757 US 5029643 US 5058684 | A A | 01-10-1994 05-12-1991 09-07-1991 22-10-1991 | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| ORM PO459 | | | | | | | | |
| For more details about this annex : see C | For more details about this annex : see Official Journal of the European Patent Office, No. 12/82 | | | | | | | |