



APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/329,077	06/11/2013	8459346	MOTI-018PIC1	2094

60935 7590 05/22/2013
Edmonds & Nolte, PC
2625 Bay Area Boulevard, Suite 530
Houston, TX 77058

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site <http://pair.uspto.gov> for additional applicants):

W. Lynn Frazier, Corpus Christi, TX;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number		13329077
Filing Date		2011-12-16
First Named Inventor	W. Lynn Frazier	
Art Unit		3672
Examiner Name		
Attorney Docket Number		MOTI-018P1C1

	64	5113940		1992-05-19	Glaser	
	65	5117915		1992-06-02	Mueller, et al.	
	66	5154228		1992-10-13	Gambertoglio, et al.	
	67	5183068		1993-02-02	Prosser	
Change(s) applied to document, /S.P./ 5/11/2013	68	5118182 5,188,182		1993-02-23	Echols, III, et al.	
	69	5207274		1993-05-04	Streich, et al.	
	70	5209310		1993-05-11	Clydesdale	
	71	5224540		1993-07-06	Streich, et al.	
	72	5230390		1993-07-27	Zastressek, et al.	
	73	5234052		1993-08-10	Coone, et al.	
	74	5253705		1993-10-19	Clary, et al.	

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number		13329077
Filing Date		2011-12-16
First Named Inventor	W. Lynn Frazier	
Art Unit		3672
Examiner Name		
Attorney Docket Number		MOTI-018P1C1

	42	4432418		1984-02-21	Mayland	
	43	4436151		1984-03-13	Callihan, et al.	
	44	4437516		1984-03-20	Cockrell	
	45	4457376		1984-07-03	Carmody, et al.	
	46	4493374		1985-01-15	Magee, Jr.	
	47	4532995		1985-08-06	Kaufman	
	48	4554981		1985-11-26	Davies	
	49	4566541		1986-01-28	Moussy, et al.	
	50	4585067		1986-04-29	Blizzard, et al.	
	51	4595052		1986-06-17	Kristiansen	
Change(s) applied to document,	52	4602654		1986-01-29 07/1986	Stehling, et al.	

Change(s) applied to document,



NOTICE OF ALLOWANCE AND FEE(S) DUE

60935 7590 04/26/2013
Edmonds & Nolte, PC
2625 Bay Area Boulevard, Suite 530
Houston, TX 77058

Table with 2 columns: EXAMINER (FULLER, ROBERT EDWARD), ART UNIT (3676), PAPER NUMBER (2094)

DATE MAILED: 04/26/2013

Table with 5 columns: APPLICATION NO. (13/329,077), FILING DATE (12/16/2011), FIRST NAMED INVENTOR (W. Lynn Frazier), ATTORNEY DOCKET NO. (MOTI-018PIC1), CONFIRMATION NO. (2094)

TITLE OF INVENTION: BOTTOM SET DOWNHOLE PLUG

Table with 7 columns: APPLN. TYPE (nonprovisional), ENTITY STATUS (SMALL), ISSUE FEE DUE (\$890), PUBLICATION FEE DUE (\$300), PREV. PAID ISSUE FEE (\$0), TOTAL FEE(S) DUE (\$1190), DATE DUE (07/26/2013)

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

- I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.
If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.
If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".
For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

**Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
 Commissioner for Patents
 P.O. Box 1450
 Alexandria, Virginia 22313-1450
 or Fax (571)-273-2885**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

60935 7590 04/26/2013
Edmonds & Nolte, PC
 2625 Bay Area Boulevard, Suite 530
 Houston, TX 77058

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/329,077	12/16/2011	W. Lynn Frazier	MOTI-018PIC1	2094

TITLE OF INVENTION: BOTTOM SET DOWNHOLE PLUG

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$890	\$300	\$0	\$1190	07/26/2013

EXAMINER	ART UNIT	CLASS-SUBCLASS
FULLER, ROBERT EDWARD	3676	166-135000

<p>1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).</p> <p><input type="checkbox"/> Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.</p> <p><input type="checkbox"/> "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.</p>	<p>2. For printing on the patent front page, list</p> <p>(1) the names of up to 3 registered patent attorneys or agents OR, alternatively, _____ 1</p> <p>(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. _____ 2</p> <p>_____ 3</p>
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3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE _____ (B) RESIDENCE: (CITY and STATE OR COUNTRY) _____

Please check the appropriate assignee category or categories (will not be printed on the patent) : Individual Corporation or other private group entity Government

<p>4a. The following fee(s) are submitted:</p> <p><input type="checkbox"/> Issue Fee</p> <p><input type="checkbox"/> Publication Fee (No small entity discount permitted)</p> <p><input type="checkbox"/> Advance Order - # of Copies _____</p>	<p>4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)</p> <p><input type="checkbox"/> A check is enclosed.</p> <p><input type="checkbox"/> Payment by credit card. Form PTO-2038 is attached.</p> <p><input type="checkbox"/> The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).</p>
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

5. **Change in Entity Status** (from status indicated above)

- Applicant certifying micro entity status. See 37 CFR 1.29
- Applicant asserting small entity status. See 37 CFR 1.27
- Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see form PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.
13/329,077 12/16/2011 W. Lynn Frazier MOTI-018PIC1 2094

60935 7590 04/26/2013
Edmonds & Nolte, PC
2625 Bay Area Boulevard, Suite 530
Houston, TX 77058

EXAMINER

FULLER, ROBERT EDWARD

ART UNIT PAPER NUMBER

3676

DATE MAILED: 04/26/2013

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 0 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 0 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability

Application No. 13/329,077	Applicant(s) FRAZIER, W. LYNN	
Examiner ROBERT E. FULLER	Art Unit 3676	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

- 1. This communication is responsive to the Amendment filed February 21, 2013.
 A declaration(s)/affidavit(s) under 37 CFR 1.130(b) was/were filed on _____.
- 2. An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
- 3. The allowed claim(s) is/are 2,3,6-8,12-15,17,21-24 and 27-50. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.
- 4. Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

- a) All b) Some *c) None of the:
 - 1. Certified copies of the priority documents have been received.
 - 2. Certified copies of the priority documents have been received in Application No. _____.
 - 3. Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Interim copies:

- a) All b) Some c) None of the: Interim copies of the priority documents have been received.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

- 5. CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
- 6. DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- 1. Notice of References Cited (PTO-892)
- 2. Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
- 3. Examiner's Comment Regarding Requirement for Deposit of Biological Material
- 4. Interview Summary (PTO-413),
Paper No./Mail Date 20130419.
- 5. Examiner's Amendment/Comment
- 6. Examiner's Statement of Reasons for Allowance
- 7. Other _____.

Examiner-Initiated Interview Summary	Application No. 13/329,077	Applicant(s) FRAZIER, W. LYNN	
	Examiner ROBERT E. FULLER	Art Unit 3676	

All participants (applicant, applicant's representative, PTO personnel):

- (1) ROBERT E. FULLER. (3)_____.
- (2) Robb Edmonds (Attorney for Applicant). (4)_____.

Date of Interview: 17 April 2013.

Type: Telephonic Video Conference
 Personal [copy given to: applicant applicant's representative]

Exhibit shown or demonstration conducted: Yes No.
If Yes, brief description: _____.

Issues Discussed 101 112 102 103 Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: 12.

Identification of prior art discussed: N/A.

Substance of Interview

(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

Examiner informed applicant that an error had been made in the previous Office Action, mailed January 22, 2013. Examiner asserted that a Double Patenting rejection should have been made against claim 12 based on applications 13/329,096, 12,317,497, and US Patent 8,079,413. Examiner further stated that unless Terminal Disclaimers were filed for each patent/application, then a Non-Final Office Action would need to be issued containing those Double Patenting rejections. In response, applicant filed the Terminal Disclaimers, which have since been accepted and recorded.

Applicant recordation instructions: It is not necessary for applicant to provide a separate record of the substance of interview.

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

Attachment

/SHANE BOMAR/
Supervisory Patent Examiner, Art Unit 3676

EXAMINER'S COMMENT

Election/Restrictions

Claims 12-15, 17, 21-24, and 27-50 are allowable. The restriction requirement between Species I and II, as set forth in the Office action mailed on April 24, 2012, has been reconsidered in view of the allowability of claims to the elected invention pursuant to MPEP § 821.04(a). **The restriction requirement is hereby withdrawn as to any claim that requires all the limitations of an allowable claim.** Claims 2, 3, and 6-8, directed to Species II no longer withdrawn from consideration because the claim(s) requires all the limitations of an allowable claim.

In view of the above noted withdrawal of the restriction requirement, applicant is advised that if any claim presented in a continuation or divisional application is anticipated by, or includes all the limitations of, a claim that is allowable in the present application, such claim may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application.

Once a restriction requirement is withdrawn, the provisions of 35 U.S.C. 121 are no longer applicable. See *In re Ziegler*, 443 F.2d 1211, 1215, 170 USPQ 129, 131-32 (CCPA 1971). See also MPEP § 804.01.

Terminal Disclaimer

The terminal disclaimer filed on April 17, 2013 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of 8,079,413 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Art Unit: 3676

The terminal disclaimer filed on April 17, 2013 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of 12/317,497 has been reviewed and is accepted. The terminal disclaimer has been recorded.

The terminal disclaimer filed on April 17, 2013 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of 13/329,096 has been reviewed and is accepted. The terminal disclaimer has been recorded.

REASONS FOR ALLOWANCE

The following is an examiner's statement of reasons for allowance: None of the references cited on the Information Disclosure statement filed April 17, 2013 were deemed to be more relevant to the claimed invention than what has already been cited on the record by the examiner.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT E. FULLER whose telephone number is (571)272-6300. The examiner can normally be reached on Monday thru Friday from 9:00 AM - 6:30 PM.

Art Unit: 3676

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shane Bomar can be reached on 571-272-7026. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/SHANE BOMAR/
Supervisory Patent Examiner, Art
Unit 3676

04/19/2013

/R.E.F./

Issue Classification



Application/Control No.

13329077

Applicant(s)/Patent Under Reexamination

FRAZIER, W. LYNN

Examiner

ROBERT E FULLER

Art Unit


3676

CPC		
Symbol	Type	Version

CPC Combination Sets				
Symbol	Type	Set	Ranking	Version

US ORIGINAL CLASSIFICATION					INTERNATIONAL CLASSIFICATION											
CLASS		SUBCLASS			CLAIMED				NON-CLAIMED							
166		124			E	2	1	B	33 / 129 (2006.0)							
CROSS REFERENCE(S)					E	2	1	B	23 / 06 (2006.0)							
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)															
166	135															

/ROBERT E FULLER/ Examiner.Art Unit 3676 (Assistant Examiner)	04/19/2013	Total Claims Allowed: 38	
	(Date)		
/SHANE BOMAR/ Supervisory Patent Examiner.Art Unit 3676 (Primary Examiner)	04/22/2013	O.G. Print Claim(s)	O.G. Print Figure
	(Date)	1	3B and 3C

Issue Classification 	Application/Control No. 13329077	Applicant(s)/Patent Under Reexamination FRAZIER, W. LYNN
	Examiner ROBERT E FULLER	Art Unit 3676

<input type="checkbox"/> Claims renumbered in the same order as presented by applicant		<input type="checkbox"/> CPA		<input checked="" type="checkbox"/> T.D.		<input type="checkbox"/> R.1.47									
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
	1	11	17	24	33	36	49								
2	2		18	25	34	38	50								
3	3		19	28	35										
	4		20	29	36										
	5	12	21	30	37										
4	6	13	22	31	38										
5	7	14	23	16	39										
6	8	15	24	17	40										
	9		25	9	41										
	10		26	26	42										
	11	18	27	27	43										
1	12	19	28	32	44										
7	13	20	29	33	45										
8	14	21	30	34	46										
10	15	22	31	35	47										
	16	23	32	37	48										

/ROBERT E FULLER/ Examiner.Art Unit 3676 (Assistant Examiner)	04/19/2013 (Date)	Total Claims Allowed: 38	
/SHANE BOMAR/ Supervisory Patent Examiner.Art Unit 3676 (Primary Examiner)	04/22/2013 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 3B and 3C

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		13329077	
	Filing Date		2011-12-16	
	First Named Inventor	W. Lynn Frazier		
	Art Unit	3676		
	Examiner Name	Fuller, Robert Edward		
	Attorney Docket Number	MOTI-018P1C1		

U.S.PATENTS						Remove
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	4898245		1990-02-06	Braddick	
	2	6082451		2000-07-04	Giroux et al.	
	3	6604763		2003-08-12	Cook et al.	
	4	6708768		2004-03-23	Slup et al.	

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Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20070151722		2007-07-05	Lehr et al.	

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Examiner Initial*	Cite No	Foreign Document Number ³	Country Code ² i	Kind Code ⁴	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T ⁵

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		13329077	
	Filing Date		2011-12-16	
	First Named Inventor	W. Lynn Frazier		
	Art Unit		3676	
	Examiner Name	Fuller, Robert Edward		
	Attorney Docket Number		MOTI-018P1C1	

	1							<input type="checkbox"/>
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	1	Petition for Inter Partes Review for U.S. Patent No. 8,079,413 (Application No. 13/194,871); Case No. 2013-00231; Filed April 2, 2013; Administrative Patent Judge Sally C. Medley	<input type="checkbox"/>

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Examiner Signature	/Robert Fuller/	Date Considered	04/19/2013
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BIB DATA SHEET

CONFIRMATION NO. 2094

SERIAL NUMBER 13/329,077	FILING or 371(c) DATE 12/16/2011 RULE	CLASS 166	GROUP ART UNIT 3676	ATTORNEY DOCKET NO. MOTI-018P1C1	
APPLICANTS W. Lynn Frazier, Corpus Christi, TX; ** CONTINUING DATA ***** This application is a CON of 13/194,871 07/29/2011 PAT 8079413 which is a CIP of 12/317,497 12/23/2008 ** FOREIGN APPLICATIONS ***** ** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** ** SMALL ENTITY ** 12/30/2011					
Foreign Priority claimed <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No 35 USC 119(a-d) conditions met <input type="checkbox"/> Yes <input type="checkbox"/> No Verified and /ROBERT EDWARD FULLER/ Acknowledged Examiner's Signature	<input type="checkbox"/> Met after Allowance Initials	STATE OR COUNTRY TX	SHEETS DRAWINGS 7	TOTAL CLAIMS 20	INDEPENDENT CLAIMS 3
ADDRESS Edmonds & Nolte, PC 2625 Bay Area Boulevard, Suite 530 Houston, TX 77058 UNITED STATES					
TITLE BOTTOM SET DOWNHOLE PLUG					
FILING FEE RECEIVED 1153	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:		<input type="checkbox"/> All Fees <input type="checkbox"/> 1.16 Fees (Filing) <input type="checkbox"/> 1.17 Fees (Processing Ext. of time) <input type="checkbox"/> 1.18 Fees (Issue) <input type="checkbox"/> Other _____ <input type="checkbox"/> Credit		

Search Notes 	Application/Control No. 13329077	Applicant(s)/Patent Under Reexamination FRAZIER, W. LYNN
	Examiner ROBERT E FULLER	Art Unit 3676

CPC- SEARCHED		
Symbol	Date	Examiner


CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
166	123, 124, 135, 138	04/19/2012	REF
Above	Updated	01/10/2013	REF
Above	Updated	04/19/2013	REF

SEARCH NOTES		
Search Notes	Date	Examiner
Inventor name search.	04/19/2012	REF
Backward/forward citations.	04/19/2012	REF
Text search; see EAST search history.	04/19/2012	REF
Text search; see EAST search history.	01/10/2013	REF

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
Text search; see EAST search history.		04/19/2013	REF

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Index of Claims 	Application/Control No. 13329077	Applicant(s)/Patent Under Reexamination FRAZIER, W. LYNN
	Examiner ROBERT E FULLER	Art Unit 3676

✓	Rejected
=	Allowed


-	Cancelled
÷	Restricted

N	Non-Elected
I	Interference

A	Appeal
O	Objected

Claims renumbered in the same order as presented by applicant
 CPA
 T.D.
 R.1.47

CLAIM		DATE							
Final	Original	04/20/2012	01/10/2013	04/19/2013					
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2	2	N	N	=					
3	3	N	N	=					
	4	N	-	-					
	5	N	-	-					
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5	7	N	N	=					
6	8	N	N	=					
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	10	N	-	-					
	11	N	-	-					
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7	13	✓	✓	=					
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	16	✓	✓	-					
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24	33		✓	=					
25	34		✓	=					
28	35		✓	=					
29	36		✓	=					

Index of Claims 	Application/Control No. 13329077	Applicant(s)/Patent Under Reexamination FRAZIER, W. LYNN
	Examiner ROBERT E FULLER	Art Unit 3676

✓	Rejected
=	Allowed

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Claims renumbered in the same order as presented by applicant
 CPA
 T.D.
 R.1.47

CLAIM		DATE							
Final	Original	04/20/2012	01/10/2013	04/19/2013					
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31	38		✓	=					
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26	42			=					
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35	47			=					
37	48			=					
36	49			=					
38	50			=					

EAST Search History**EAST Search History (Prior Art)**

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	5	("20070151722" "4898245" "6082451" "6604763" "6708768").PN.	US-PGPUB; USPAT	OR	ON	2013/04/19 17:50
L3	1123	((166/123) or (166/124) or (166/135) or (166/138)).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2013/04/19 17:55
L4	3	3 and @pd> "20130110"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2013/04/19 17:55

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L2	4	(plug and thread and shearable and insert).clm.	US-PGPUB	OR	ON	2013/04/19 17:53

4/ 19/ 2013 5:56:49 PM

C:\Users\rfuller1\Documents\EAST\Workspaces\13_194,871_13_329,077_13_392,096 - Bottom Set.wsp

PART B - FEE(S) TRANSMITTAL

**Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
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 Alexandria, Virginia 22313-1450
 or Fax (571)-273-2885**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

60935 7590 04/26/2013
Edmonds & Nolte, PC
 2625 Bay Area Boulevard, Suite 530
 Houston, TX 77058

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

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I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

Valerie Johnsen	<small>(Depositor's name)</small>
/Valerie Johnsen/	<small>(Signature)</small>
April 26, 2013	<small>(Date)</small>

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/329,077	12/16/2011	W. Lynn Frazier	MOTI-018PIC1	2094

TITLE OF INVENTION: BOTTOM SET DOWNHOLE PLUG

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$890	\$300	\$0	\$1190	07/26/2013

EXAMINER	ART UNIT	CLASS-SUBCLASS
FULLER, ROBERT EDWARD	3676	166-135000

<p>1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).</p> <p><input type="checkbox"/> Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.</p> <p><input type="checkbox"/> "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.</p>	<p>2. For printing on the patent front page, list</p> <p>1 <u>Edmonds & Nolte, P.C.</u></p> <p>(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,</p> <p>2 _____</p> <p>(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 3 registered patent attorneys or agents. If no name is listed, no name will be printed.</p> <p>3 _____</p>
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3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

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(A) NAME OF ASSIGNEE	(B) RESIDENCE: (CITY and STATE OR COUNTRY)
MAGNUM OIL TOOLS INTERNATIONAL LTD	5655 Bear Lane, Corpus Christi, Texas 78405 USA

Please check the appropriate assignee category or categories (will not be printed on the patent) : Individual Corporation or other private group entity Government

<p>4a. The following fee(s) are submitted:</p> <p><input checked="" type="checkbox"/> Issue Fee</p> <p><input checked="" type="checkbox"/> Publication Fee (No small entity discount permitted)</p> <p><input type="checkbox"/> Advance Order - # of Copies _____</p>	<p>4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)</p> <p><input type="checkbox"/> A check is enclosed.</p> <p><input checked="" type="checkbox"/> Payment by credit card. Form PTO-2038 is attached.</p> <p><input type="checkbox"/> The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).</p>
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Authorized Signature /Robb D. Edmonds/

Date April 26, 2013

Typed or printed name Robb D. Edmonds

Registration No. 46,681

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Electronic Patent Application Fee Transmittal

Application Number:	13329077
Filing Date:	16-Dec-2011
Title of Invention:	BOTTOM SET DOWNHOLE PLUG
First Named Inventor/Applicant Name:	W. Lynn Frazier
Filer:	Robb D. Edmonds/Valerie Johnsen
Attorney Docket Number:	MOTI-018P1C1

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl Issue Fee	2501	1	890	890
Publ. Fee- Early, Voluntary, or Normal	1504	1	300	300

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				1190

Electronic Acknowledgement Receipt

EFS ID:	15628593
Application Number:	13329077
International Application Number:	
Confirmation Number:	2094
Title of Invention:	BOTTOM SET DOWNHOLE PLUG
First Named Inventor/Applicant Name:	W. Lynn Frazier
Customer Number:	60935
Filer:	Robb D. Edmonds/Valerie Johnsen
Filer Authorized By:	Robb D. Edmonds
Attorney Docket Number:	MOTI-018P1C1
Receipt Date:	26-APR-2013
Filing Date:	16-DEC-2011
Time Stamp:	18:08:51
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$1190
RAM confirmation Number	7176
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2	Fee Worksheet (SB06)	fee-info.pdf	32009	no	2
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New International Application Filed with the USPTO as a Receiving Office

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Application Number 	Application/Control No. 13/329,077	Applicant(s)/Patent under Reexamination FRAZIER, W. LYNN

Document Code - DISQ	Internal Document – DO NOT MAIL
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TERMINAL DISCLAIMER	<input checked="" type="checkbox"/> APPROVED	<input type="checkbox"/> DISAPPROVED
Date Filed : 4/17/13	This patent is subject to a Terminal Disclaimer	

Approved/Disapproved by:

ANDRE ROBINSON
 3 TDS WERE APPRVD.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		13329077	
	Filing Date		2011-12-16	
	First Named Inventor	W. Lynn Frazier		
	Art Unit		3676	
	Examiner Name	Fuller, Robert Edward		
	Attorney Docket Number		MOTI-018P1C1	

U.S.PATENTS						Remove
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	4898245		1990-02-06	Braddick	
	2	6082451		2000-07-04	Giroux et al.	
	3	6604763		2003-08-12	Cook et al.	
	4	6708768		2004-03-23	Slup et al.	

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Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20070151722		2007-07-05	Lehr et al.	

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Examiner Initial*	Cite No	Foreign Document Number ³	Country Code ² j	Kind Code ⁴	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T ⁵

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		13329077	
	Filing Date		2011-12-16	
	First Named Inventor	W. Lynn Frazier		
	Art Unit		3676	
	Examiner Name	Fuller, Robert Edward		
	Attorney Docket Number		MOTI-018P1C1	

	1							<input type="checkbox"/>
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	1	Petition for Inter Partes Review for U.S. Patent No. 8,079,413 (Application No. 13/194,871); Case No. 2013-00231; Filed April 2, 2013; Administrative Patent Judge Sally C. Medley	<input type="checkbox"/>

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EXAMINER SIGNATURE

Examiner Signature		Date Considered	
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. ² Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). ³ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁴ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁵ Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	13329077
	Filing Date	2011-12-16
	First Named Inventor	W. Lynn Frazier
	Art Unit	3676
	Examiner Name	Fuller, Robert Edward
	Attorney Docket Number	MOTI-018P1C1

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

- See attached certification statement.
- The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.
- A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Robb D. Edmonds/	Date (YYYY-MM-DD)	2013-04-17
Name/Print	Robb D. Edmonds	Registration Number	46681

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

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Electronic Patent Application Fee Transmittal

Application Number:	13329077
Filing Date:	16-Dec-2011
Title of Invention:	BOTTOM SET DOWNHOLE PLUG
First Named Inventor/Applicant Name:	W. Lynn Frazier
Filer:	Robb D. Edmonds/Valerie Johnsen
Attorney Docket Number:	MOTI-018P1C1

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Submission- Information Disclosure Stmt	2806	1	90	90
Total in USD (\$)				90

Electronic Acknowledgement Receipt

EFS ID:	15547397
Application Number:	13329077
International Application Number:	
Confirmation Number:	2094
Title of Invention:	BOTTOM SET DOWNHOLE PLUG
First Named Inventor/Applicant Name:	W. Lynn Frazier
Customer Number:	60935
Filer:	Robb D. Edmonds/Valerie Johnsen
Filer Authorized By:	Robb D. Edmonds
Attorney Docket Number:	MOTI-018P1C1
Receipt Date:	17-APR-2013
Filing Date:	16-DEC-2011
Time Stamp:	19:32:27
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$90
RAM confirmation Number	6263
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /zip	Pages (if appl.)
			MOTIEx. [2003]	p. 37	

1	Information Disclosure Statement (IDS) Form (SB08)	MOTI_018P1C1_Supplemental_IDS_04172013.pdf	612594 b77ee1501cbb010fc60caf7aced2e4a0d6562d2e	no	4
Warnings:					
Information:					
2	Non Patent Literature	NPL_1_Notice_of_Filing_IPR_04172013.pdf	320855 b2d2f1f99dea688819e136f5ff63c1e4cb333262	no	3
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30264 7fa169c06a34d41d54de56d616e8f13b079008be	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			963713		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

**TERMINAL DISCLAIMER TO OBVIATE A PROVISIONAL DOUBLE PATENTING
REJECTION OVER A PENDING "REFERENCE" APPLICATION**Docket Number (Optional)
MOTI-018P1C1

In re Application of: W. Lynn Frazier

Application No.: 13/329,077

Filed: December 16, 2011

For: Bottom Set Downhole Plug

The owner*, Magnum Oil Tools International, Ltd., of 100 percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of any patent granted on pending **reference** Application Number 13/329,096, filed December 16, 2011, as the term of any patent granted on said **reference** application may be shortened by any terminal disclaimer filed prior to the grant of any patent on the pending **reference** application. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and any patent granted on the **reference** application are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

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Check either box 1 or 2 below, if appropriate.

1. For submissions on behalf of a business/organization (e.g., corporation, partnership, university, government agency, etc.), the undersigned is empowered to act on behalf of the business/organization.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

2. The undersigned is an attorney or agent of record. Reg. No. 46681

/Robb D. Edmonds/
Signature

2013-04-17
Date

Robb D. Edmonds
Typed or printed name

281-480-2700
Telephone Number

- Terminal disclaimer fee under 37 CFR 1.20(d) is included.

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**TERMINAL DISCLAIMER TO OBVIATE A PROVISIONAL DOUBLE PATENTING
REJECTION OVER A PENDING "REFERENCE" APPLICATION**Docket Number (Optional)
MOTI-018P1C1

In re Application of: W. Lynn Frazier

Application No.: 13/329,077

Filed: December 16, 2011

For: Bottom Set Downhole Plug

The owner*, Magnum Oil Tools International, Ltd., of 100 percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of any patent granted on pending **reference** Application Number 12/317,497, filed December 23, 2008, as the term of any patent granted on said **reference** application may be shortened by any terminal disclaimer filed prior to the grant of any patent on the pending **reference** application. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and any patent granted on the **reference** application are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

2. The undersigned is an attorney or agent of record. Reg. No. 46681

/Robb D. Edmonds/
Signature

2013-04-17
Date

Robb D. Edmonds
Typed or printed name

281-480-2700
Telephone Number

- Terminal disclaimer fee under 37 CFR 1.20(d) is included.

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**TERMINAL DISCLAIMER TO OBIVATE A DOUBLE PATENTING
REJECTION OVER A "PRIOR" PATENT**Docket Number (Optional)
MOTI-018P1C1

In re Application of: W. Lynn Frazier

Application No.: 13/329,077

Filed: December 16, 2011

For: Bottom Set Downhole Plug

The owner*, Magnum Oil Tools International, Ltd, of 100 percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of **prior patent** No. 8,079,413 as the term of said **prior patent** is presently shortened by any terminal disclaimer. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the **prior patent** are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

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- expires for failure to pay a maintenance fee;
- is held unenforceable;
- is found invalid by a court of competent jurisdiction;
- is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321;
- has all claims canceled by a reexamination certificate;
- is reissued; or
- is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

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/Robb D. Edmonds/
Signature

2013-04-17
Date

Robb D. Edmonds
Typed or printed name

281-480-2700
Telephone Number

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Filing Date:	16-Dec-2011
Title of Invention:	BOTTOM SET DOWNHOLE PLUG
First Named Inventor/Applicant Name:	W. Lynn Frazier
Filer:	Robb D. Edmonds/Valerie Johnsen
Attorney Docket Number:	MOTI-018P1C1

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Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Statutory or Terminal Disclaimer	1814	3	160	480
Total in USD (\$)				480

Electronic Acknowledgement Receipt

EFS ID:	15547497
Application Number:	13329077
International Application Number:	
Confirmation Number:	2094
Title of Invention:	BOTTOM SET DOWNHOLE PLUG
First Named Inventor/Applicant Name:	W. Lynn Frazier
Customer Number:	60935
Filer:	Robb D. Edmonds/Valerie Johnsen
Filer Authorized By:	Robb D. Edmonds
Attorney Docket Number:	MOTI-018P1C1
Receipt Date:	17-APR-2013
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Payment information:

Submitted with Payment	yes
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Payment was successfully received in RAM	\$480
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Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /zip	Pages (if appl.)
			MOTIEx. [2003].p	47	47

1	Terminal Disclaimer Filed	MOTI_018P1C1_Terminal_Disclaimer_Over_App_No_13329096.pdf	342865 e025b78f235bad4a818d9ecb95cc6f2c519813d	no	2
Warnings:					
Information:					
2	Terminal Disclaimer Filed	MOTI_018P1C1_Terminal_Disclaimer_Over_App_No_12317497.pdf	214774 aa1f005578d627bc36303dc660700df88104c80a	no	2
Warnings:					
Information:					
3	Terminal Disclaimer Filed	MOTI_018P1C1_Terminal_Disclaimer_Over_Pat_No_8079413.pdf	107807 723c41838f425dea8d331bc556113ae7e93e2f10	no	2
Warnings:					
Information:					
4	Fee Worksheet (SB06)	fee-info.pdf	30348 f2e3d1a0e7583084cb8d8c38d5964e094e32066	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			695794		

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

**REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)**

Application Number	13/329,077	Filing Date	2011-12-16	Docket Number (if applicable)	MOTI-018P1C1	Art Unit	3676
First Named Inventor	W. Lynn Frazier			Examiner Name	Fuller, Robert Edward		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____

Other _____

Enclosed

Amendment/Reply

Information Disclosure Statement (IDS)

Affidavit(s)/ Declaration(s)

Other _____

MISCELLANEOUS

Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____
(Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

Other _____

FEES

The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.

The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No _____

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

Patent Practitioner Signature

Applicant Signature

Signature of Registered U.S. Patent Practitioner			
Signature	/Robb D. Edmonds/	Date (YYYY-MM-DD)	2013-02-21
Name	Robb D. Edmonds	Registration Number	46681

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	§		
W. Lynn Frazier	§	Examiner:	Fuller, Robert Edward
	§		
Serial No.: 13/329,077	§	Group Art Unit:	3676
	§		
Filed: December 16, 2011	§	Docket No:	MOTI-018P1C1
	§		
For: <i>Bottom Set Downhole Plug</i>	§	Confirmation No.:	2094
	§	Date:	February 21, 2013

MAIL STOP RCE

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

SUBMISSION AND RESPONSE UNDER 37 CFR § 1.114

In response to the Final Office Action dated January 22, 2013, Applicant respectfully requests reconsideration of the application in light of the following amendments and remarks.

Amendments to the Specification: None.

Amendments to the Drawings: None.

Amendments to the Claims are reflected in the listing of claims

which begins on page 2 of this paper.

Remarks begin on page 9 of this paper.

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (Cancelled)
2. (Withdrawn – Currently Amended) The plug of claim 12, wherein the shearable threads are composite ~~and the predetermined axial force sufficient to deform the shearable threads to release the setting tool is less than an axial force sufficient to break the body.~~
3. (Withdrawn – Previously Presented) The plug of claim 12, wherein the body is adapted to receive an impediment that restricts fluid flow in at least one direction through the body.
4. (Cancelled)
5. (Cancelled)
6. (Withdrawn – Original) The plug of claim 3, wherein the impediment is degradable at a predetermined temperature, pressure, pH, or a combination thereof.
7. (Withdrawn – Currently Amended) The plug of claim 12, further comprising ~~wherein the first end of the body comprises~~ an anti-rotation feature ~~formed thereon~~ disposed proximate the first end of the body.
8. (Withdrawn – Currently Amended) The plug of claim 12, further comprising ~~wherein the second end of the body comprises~~ an anti-rotation feature ~~disposed thereon~~ disposed proximate the second end of the body.

Claims 9-11 (Cancelled).

12. (Currently Amended) A plug for use in a wellbore, comprising:
a body having a first end and a second end, wherein the body is formed from one or more composite materials;
at least one malleable element disposed about the body;
at least one slip disposed about the body;
at least one conical member disposed about the body; and
an insert at least partially disposed in the body proximate the second end of the body, the insert adapted to receive a setting tool that enters the body through the first end thereof, wherein:
the insert comprises one or more shearable threads disposed on an inner surface thereof;
the one or more shearable threads are disposed proximate the second end of the body and are adapted to engage the setting tool; and
the one or more shearable threads are adapted to deform to release the setting tool when exposed to a predetermined axial force that is less than an axial force required to break the body.
13. (Currently Amended) The plug of claim 12, wherein ~~[[the]]~~ an outer surface of the insert has a larger diameter portion and a smaller diameter portion forming a shoulder therebetween, the shoulder adapted to anchor the insert within the body.
14. (Currently Amended) The plug of claim 12, further comprising ~~wherein the first and second ends of the body each comprise~~ at least one anti-rotation feature located proximate the first end of the body, and at least one anti-rotation feature located proximate the second end of the body, wherein ~~formed thereon, and~~ the anti-rotation features proximate ~~[[of]]~~ the first and second ends of the body are complementary and adapted to engage each other, preventing relative rotation therebetween.
15. (Original) The plug of claim 12, wherein the body is adapted to receive a ball that restricts fluid flow in at least one direction through the body.

16. (Cancelled)

17. (Original) The plug of claim 12, wherein the plug is a frac plug.

Claims 18-20 (Cancelled).

21. (Previously Presented) The plug of claim 12, wherein the insert comprises brass.

22. (Previously Presented) The plug of claim 12, wherein the malleable element comprises rubber.

23. (Previously Presented) The plug of claim 12, wherein the malleable element comprises one or more elastomers.

24. (Previously Presented) The plug of claim 12, wherein the body is a mandrel.

25. (Cancelled)

26. (Cancelled)

27. (Currently Amended) A plug for use in a wellbore, comprising:
a body having a first end and a second end, wherein the body is formed from one or more composite materials;
at least one sealing element disposed about the body;
at least one slip disposed about the body;
at least one conical member disposed about the body; and
an insert disposed proximate the second end of the body, wherein:
the insert comprises a shoulder formed on an outer surface thereof, and the shoulder abuts the second end of the body;

the insert comprises one or more shearable threads disposed on an inner surface thereof;

the one or more shearable threads are adapted to engage a setting tool that enters the body through the first end thereof; and

the one or more shearable threads are adapted to deform to release the setting tool when exposed to a predetermined axial force; ~~and wherein the predetermined axial force to deform the shearable threads~~ that is less than an axial force required to break the body.

28. (Previously Presented) The plug of claim 27, wherein the body is adapted to receive an impediment that restricts fluid flow in at least one direction through the body.

29. (Previously Presented) The plug of claim 28, wherein the impediment is a ball.

30. (Previously Presented) The plug of claim 27, wherein the insert is adapted to receive an impediment that restricts fluid flow in at least one direction through the insert.

31. (Previously Presented) The plug of claim 30, wherein the impediment is a ball.

32. (Previously Presented) The plug of claim 27, wherein the insert has a blocked passageway that restricts fluid flow in opposing axial directions therethrough.

33. (Currently Amended) The plug of claim 27, wherein the insert further comprises one or more threads disposed on ~~[[the]]~~ an outer surface thereof ~~that and adjacent to the shoulder,~~ that ~~wherein the threads disposed on the outer surface of the insert~~ are adapted to engage corresponding threads located ~~[[at]]~~ proximate the second end of the body.

34. (Currently Amended) The plug of claim 27, further comprising ~~wherein the first and second ends of the body each comprise~~ at least one anti-rotation feature located proximate the first end of the body, and at least one anti-rotation feature located proximate the second end of the body ~~formed thereon~~, wherein the anti-rotation features proximate ~~[[of]]~~ the first and second

ends of the body are complementary and adapted to engage each other, preventing relative rotation therebetween.

35. (Previously Presented) The plug of claim 27, wherein the sealing element comprises rubber.

36. (Previously Presented) The plug of claim 27, wherein the sealing element comprises one or more elastomers.

37. (Previously Presented) The plug of claim 27, wherein the body is a mandrel.

38. (Previously Presented) The plug of claim 27, wherein the one or more shearable threads are disposed proximate the second end of the body.

39. (New) The plug of claim 12, wherein the insert further comprises one or more threads disposed on an outer surface thereof that are adapted to engage corresponding threads located proximate the second end of the body.

40. (New) The plug of claim 12, wherein the insert has a bore only partially formed therethrough so that there is no fluid flow through the bore.

41. (New) The plug of claim 14, wherein the anti-rotation feature proximate the second end of the body is formed on a separate component disposed on the body.

42. (New) The plug of claim 34, wherein the at least one anti-rotation feature located proximate the first end of the body is formed on the body.

43. (New) The plug of claim 34, wherein the anti-rotation feature proximate the second end of the body is formed on a separate component disposed on the body.

44. (New) A plug for use in a wellbore, comprising:
a body having a first end and a second end, wherein the body is formed from one or more composite materials;
at least one malleable element disposed about the body;
at least one slip disposed about the body;
at least one conical member disposed about the body;
a shoe at least partially disposed about the second end of the body;
a first anti-rotation feature disposed proximate the first end of the body;
a second anti-rotation feature disposed on the shoe, wherein each of the first and second anti-rotation features is configured to engage a corresponding anti-rotation feature on another plug to prevent relative rotation therebetween; and
an insert at least partially disposed in the body proximate the second end thereof, the insert adapted to receive a setting tool that enters the body through the first end thereof, wherein:
the insert comprises one or more shearable threads disposed on an inner surface thereof;
the one or more shearable threads are adapted to engage the setting tool; and
the one or more shearable threads release the setting tool when exposed to a predetermined axial force that is less than an axial force required to break the body.
45. (New) The plug of claim 44, wherein the insert further comprises one or more threads disposed on an outer surface thereof that are adapted to engage corresponding threads located proximate the second end of the body.
46. (New) The plug of claim 44, wherein the insert has a bore only partially formed therethrough so that there is no fluid flow through the bore.
47. (New) The plug of claim 44, wherein the insert has a bore formed therethrough to allow biaxial flow through the insert.
48. (New) The plug of claim 44, wherein the insert is adapted to receive an impediment that restricts fluid flow in at least one direction through the insert.

49. (New) The plug of claim 47, wherein the insert comprises an impediment that restricts fluid flow in at least one direction through the bore.

50. (New) The plug of claim 44, wherein the second anti-rotation feature is an angled surface formed on the shoe.

REMARKS

This reply is in response to the Final Office Action dated January 22, 2013. Claims 2, 3, 6-8, and 12-38 are pending in the application. Claims 2, 3, and 6-8 have been withdrawn from consideration by the examiner for being directed to a non-elected group. Claims 12-38 stand rejected.

Applicant has amended claim 12 to include the subject matter of claim 16 (now cancelled). Applicant has also amended claims 2, 7, 8, 13, 14, 18, 27, 33, and 34 to more clearly recite aspects of the invention, and added new claims 39-50 to recite additional aspects of the invention. Applicant has also cancelled claims 16, 18-20, 25, and 26 without prejudice, reserving the right to pursue the cancelled subject matter in a separate, continuation application.

Entry of the foregoing amendments and reconsideration of the claims is respectfully requested.

Double Patenting

Claims 18-20, 25, and 26 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-5 and 28-36 of copending Application No. 13/329,096.

Applicant has cancelled claims 18-20, 25, and 26 without prejudice, and reserves the right to pursue the cancelled subject matter in a separate, continuation application. As these claims are now cancelled, this rejection is rendered moot.

Claim Rejections – 35 U.S.C. § 103

Claims 12-17, 22-24, and 27-38 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Baker (U.S. Patent No. 2,737,242; hereafter, "*Baker*") in view of Slup et al. (U.S. Patent No. 7,600,572; hereafter, "*Slup*") and McCullough (U.S. Patent No. 3,094,166; hereafter, "*McCullough*"). Applicant respectfully disagrees and traverses the rejection.

The rejection asserts *Slup* discloses a composite bridge plug and concludes it would have been obvious to make *Baker's* plug from composite. The rejection then asserts the combination

of *Baker* and *Slup* discloses all the limitations of base claims 12 and 27, except for an insert having shearable threads. *See* Office Action at page 5. To address that deficiency, the rejection asserts that *McCullough* discloses a packer having shearable threads that release a setting tool, and concludes it would have been obvious to have modified *Baker*, as already modified by *Slup*, to include the shear threads of *McCullough*, "since a modification would have amounted to the simple substitution of known equivalent releasing mechanisms and would have yielded predictable results." *Id.* Applicant disagrees and traverses the rejection for at least the following reasons.

A. The combination of *Baker*, *Slup*, and *McCullough* does not meet all the limitations of any claim.

At best, the combination of *Baker*, *Slup*, and *McCullough* suggests replacing the release mechanism (*i.e.*, the shear stud 43) of *Baker* with the release mechanism (*i.e.*, the release ring 57) of *McCullough*. This would have been a "simple substitution", however, such modification or combination of *Baker*, *Slup*, and *McCullough* fails to arrive at the claimed invention that requires, in part, an insert at least partially disposed in a body proximate the second end of the body, wherein the insert comprises one or more shearable threads disposed on an inner surface thereof that are adapted to deform to release a setting tool when exposed to a predetermined axial force that is less than an axial force required to break the body, as recited in every claim.

Baker, deemed the closest prior art by the rejection, discloses a shear stud 43 that is threadably engaged to a plug (insert) 12 that threadably engages the packer body 10. *See, e.g.*, col. 2, lines 63-71 and Figure 1. The shear stud 43 is threaded to the tension rod 42 of the setting tool C. *Baker's* shear stud 43, not the threads on the plug (insert) 12, is the release mechanism that is designed to break, releasing the setting tool C, leaving the plug (insert) 12 intact in the packer body 10. *Id.*

McCullough discloses a different type of release mechanism. *McCullough's* release mechanism is a release ring 57 that has shearable threads 72 formed on an outer diameter thereof that threadably engage the body/mandrel 70 of the packer assembly 13. *See, e.g.*, col. 2, lines 48-58 and Figure 2. The release ring 57 is threaded to a connector part 55 that threads onto the setting rod 36 via (non-shearable) threads 56. Col. 2, ll. 48-50. As such, the shear threads 72 of the release ring 57 do not connect with the setting rod 36. Instead, the shear threads 72 of the

release ring 57 only connect to the body/mandrel 70 of the packer assembly 13 and are designed to release from the body/mandrel 70 of the packer assembly 13, so the release ring 57 can be removed from the packer assembly 13 with the connector part 55 and the setting rod 36.

Accordingly, the "simple substitution of known equivalent releasing mechanisms... yielding predictable results," as suggested by the rejection, would lead to one of ordinary skill in the art replacing the release mechanism (*i.e.*, the shear stud 43) of *Baker* with the release mechanism (*i.e.*, the release ring 57) of *McCullough*. However, this modification does not arrive at the claimed invention.

B. There is no apparent reason or benefit to replace the release mechanism of *Baker* with the release mechanism of *McCullough*.

The MPEP is clear that if a proposed modification amounts to extra work and greater expense for no apparent reason, there is no *prima facie* obviousness. *See, e.g.*, MPEP § 2143(A)(Example 3) *citing In re Omeprazole Patent Litigation*, 536 F.3d1361 (Fed. Cir. 2008) ("Office personnel should note that in this case the modification of the prior art that had been presented as an argument for obviousness was an extra process step that added an additional component to a known, successfully marketed formulation. The proposed modification thus amounted to extra work and greater expense for no apparent reason.")

As mentioned above, *Baker* discloses a shear stud 43 that is designed to break to release the setting tool C from the plug 12, and *McCullough's* shearable threads 72 are designed to release the release ring 57 from the body/mandrel 70, not the setting rod 36. Nevertheless, there is no apparent reason for one of ordinary skill in the art to replace *Baker's* shear stud 43 with the release ring 57 of *McCullough* because *Baker's* shear stud 43 already provides the desired result of releasing the setting tool C from the plug (insert) 12. There is also no need to add *McCullough's* shear threads 72 to the insert 12 of *Baker* because such modification would only add an additional component, extra work, and greater expense for no apparent reason.

There can be no *prima facie* obviousness since there is no apparent reason and no recognizable benefit to add shear threads to *Baker* or replace *Baker's* release mechanism with *McCullough's* release ring 57, neither of which arrive at the claimed invention anyhow.

C. The proposed modification would require a substantial reconstruction and redesign of *Baker*.

The rejection suggests that the "modification would have amounted to the simple substitution of known equivalent releasing mechanisms and would have yielded predictable results." Such assertion is merely a conclusory statement that is not supported by the prior art, and is technically inaccurate. *Baker* would have to undergo a substantial reconstruction and redesign to arrive at the claimed invention. When a proposed modification requires a substantial reconstruction and redesign of the elements shown in the primary reference, the teachings of the references are not sufficient to render the claims *prima facie* obvious. *See, e.g.*, MPEP 2143.01(VI).

Indeed, to arrive at the claimed invention, *Baker's* plug 12 (not the "equivalent" shear stud 43) would need to be modified to include just *McCullough's* shear threads 72 on the inner surface thereof (not *McCullough's* entire release ring 57). Such modification would render *Baker's* shear stud 43 useless because the shear threads 72 would not be used in conjunction with the shear stud 43, as two shear elements would be redundant, and thus provide no benefit (and no apparent reason to make that modification). After the shear stud 43 is eliminated, the (now shearable) threads on the inner surface of the insert 12 would then have to be re-machined to be shearable at a predetermined axial force that is less than an axial force required to break the body, as now required in every claim. *Baker's* setting tool C then would have to be completely redesigned to engage the new shear threads on the inner diameter of the modified plug (insert) 12. Not to mention, the tolerances and tensile strengths of the relative materials would have to be considered since the body of *Baker* would have to be redesigned and made of composite (as further required in the claims).

Even this over simplification is a prime example as to how *Baker* would have to be substantially reconstructed and redesigned to arrive at the claimed invention. MPEP § 2143.01(VI) expressly says this substantial reconstruction and redesign is not sufficient to render the claims *prima facie* obvious.

D. The proposed modification of *Baker* is based on improper hindsight in view of the Applicant's own specification.

MPEP §2142 states that "impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art." "[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must

be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *See*, MPEP § 2143 *citing In re Kahn*, 441 F.3d 977 at 986 (Fed. Cir. 2006). In other words, the examiner must "explain the reasons one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious." *Id.* If no explanation is provided, then it is inferred that the examiner used hindsight. *Id.*

Indeed, the rejection has explicitly acknowledged that none of *Baker*, *Slup*, and *McCullough* discloses an insert at least partially disposed in a body proximate the second end of the body, wherein the insert comprises one or more shearable threads disposed on an inner surface thereof that are adapted to deform to release a setting tool when exposed to a predetermined axial force that is less than an axial force required to break the body, as required in every claim. *See* Office Action at page 5. At best, the rejection alleges it would have been obvious to have modified *Baker*, as already modified by *Slup*, to include the shear threads 72 of *McCullough*, "since a modification would have amounted to the simple substitution of known equivalent releasing mechanisms and would have yielded predictable results." But for multiple reasons discussed above, the claimed invention cannot be arrived at by a simple substitution of known equivalent releasing mechanisms. Indeed, a complete reconstruction and redesign of the prior art would be required to arrive at the claimed invention.

Accordingly, the rejection can only be based on knowledge gleaned from Applicant's own specification, not the facts gleaned from the prior art. That is nothing more than impermissible hindsight and cannot be used to support a rejection under 35 U.S.C. § 103.

D. Conclusion

For reasons discussed above, a simple substitution of *Baker's* release mechanism with *McCullough's* release mechanism does not arrive at the claimed invention. There is no apparent reason to or benefit from replacing the shear stud 43 of *Baker* with the release ring 57 or shearable threads 72 of *McCullough*. Such simple substitution does not arrive at the claimed invention anyway. To arrive at the claimed invention, in the manner claimed, *Baker* would have to be substantially reconstructed and redesigned in a manner not obvious in view of the prior art alone. Indeed, the rejection's arrival at the claimed invention requires more information than is disclosed in the prior art – it requires information gleaned from Applicant's specification. None

of these circumstances can support a case of *prima facie* obviousness. Accordingly, withdrawal of the rejection and allowance of the claims is respectfully requested.

Claims 18, 19, 25, and 26 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Baker* in view of Guillory et al. (U.S. Patent No. 6,578,638; hereafter, "*Guillory*") and *McCullough*. Applicant has cancelled claims 18, 19, 25, and 26 without prejudice, rendering this rejection moot.

Claims 20 and 21 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Baker* in view of *Slup* and *McCullough* as applied to claim 12 above, and further in view of *Guillory*. Applicant has cancelled claim 20, rendering this rejection moot. With respect to claim 21, *Baker*, *Slup*, and *McCullough* have been discussed and distinguished above with respect to claim 12. *Guillory* fails to cure the deficiencies of *Baker*, *Slup*, and *McCullough*. And since claim 21 includes all of the limitations of claim 12, claim 21 is allowable for at least the same reasons. Withdrawal of the rejection and allowance of the claims is respectfully requested.

CONCLUSION

Having addressed all issues set out in the Office Action, Applicant respectfully submits that the pending claims are now in condition for allowance. Applicant invites the examiner to telephone the undersigned attorney if there are any issues outstanding which have not been addressed to the examiner's satisfaction.

Respectfully submitted,

February 21, 2013

Date

/Robb D. Edmonds/

Robb D. Edmonds
Attorney for Applicant
Registration No. 46,681

EDMONDS & NOLTE, P.C.
2625 Bay Area Boulevard, Suite 530
Houston, Texas 77058
Phone: 281-480-2700
Fax: 281-480-2701

Electronic Patent Application Fee Transmittal

Application Number:	13329077
Filing Date:	16-Dec-2011
Title of Invention:	BOTTOM SET DOWNHOLE PLUG
First Named Inventor/Applicant Name:	W. Lynn Frazier
Filer:	Jared E. Cmaidalka/Valerie Johnsen
Attorney Docket Number:	MOTI-018P1C1

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Claims in excess of 20	2202	6	31	186

Miscellaneous-Filing:

Petition:

Patent-Appeals-and-Interference:

Post-Allowance-and-Post-Issuance:

Extension-of-Time:

MOTI Ex. [2003] p. 66

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Request for continued examination	2801	1	465	465
Total in USD (\$)				651

Electronic Acknowledgement Receipt

EFS ID:	15017881
Application Number:	13329077
International Application Number:	
Confirmation Number:	2094
Title of Invention:	BOTTOM SET DOWNHOLE PLUG
First Named Inventor/Applicant Name:	W. Lynn Frazier
Customer Number:	60935
Filer:	Jared E. Cmaidalka/Valerie Johnsen
Filer Authorized By:	Jared E. Cmaidalka
Attorney Docket Number:	MOTI-018P1C1
Receipt Date:	21-FEB-2013
Filing Date:	16-DEC-2011
Time Stamp:	16:22:06
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$651
RAM confirmation Number	3533
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /zip	Pages (if appl.)
			MOTIEx. [2003].p.68		

1	Request for Continued Examination (RCE)	MOTI_018P1C1_RCE_Transmittal_02212013.pdf	797932 1673d19ed15538c82e639a3a8bfd09053ec3ee5	no	3
Warnings:					
Information:					
2		MOTI018P1C1_Response_to_Final_Office_Action_dated_01222013_filed_02212013.pdf	87456 136985b0bcd2a6a69b553f55fe719a6c94408e5	yes	14
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Amendment After Final		1	1	
	Claims		2	8	
	Applicant Arguments/Remarks Made in an Amendment		9	14	
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	32062 ba8fbc649f57a6b07277b88d1691db8324bfcbc1	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			917450		
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 13/329,077	Filing Date 12/16/2011	<input type="checkbox"/> To be Mailed
-----------------------------------------------------------------------------------	---------------------------------------------------	----------------------------------	---------------------------------------

APPLICATION AS FILED – PART I			OTHER THAN SMALL ENTITY				
	(Column 1)	(Column 2)	SMALL ENTITY <input checked="" type="checkbox"/>	OR			
FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)	OR	RATE (\$)	FEE (\$)
<input type="checkbox"/> BASIC FEE <small>(37 CFR 1.16(a), (b), or (c))</small>	N/A	N/A	N/A		OR	N/A	
<input type="checkbox"/> SEARCH FEE <small>(37 CFR 1.16(k), (j), or (m))</small>	N/A	N/A	N/A		OR	N/A	
<input type="checkbox"/> EXAMINATION FEE <small>(37 CFR 1.16(o), (p), or (q))</small>	N/A	N/A	N/A		OR	N/A	
TOTAL CLAIMS <small>(37 CFR 1.16(j))</small>	minus 20 =	*	X \$ =		OR	X \$ =	
INDEPENDENT CLAIMS <small>(37 CFR 1.16(h))</small>	minus 3 =	*	X \$ =		OR	X \$ =	
<input type="checkbox"/> APPLICATION SIZE FEE <small>(37 CFR 1.16(s))</small>	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				OR		
<input type="checkbox"/> MULTIPLE DEPENDENT CLAIM PRESENT <small>(37 CFR 1.16(j))</small>					OR		
			TOTAL		OR	TOTAL	

* If the difference in column 1 is less than zero, enter "0" in column 2.

APPLICATION AS AMENDED – PART II					OTHER THAN SMALL ENTITY				
	(Column 1)	(Column 2)	(Column 3)		SMALL ENTITY	OR			
AMENDMENT	02/21/2013	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	OR	RATE (\$)	ADDITIONAL FEE (\$)
	Total <small>(37 CFR 1.16(i))</small>	* 38	Minus ** 32	= 6	X \$31 =	186	OR	X \$ =	
	Independent <small>(37 CFR 1.16(h))</small>	* 3	Minus ***3	= 0	X \$125 =	0	OR	X \$ =	
	<input type="checkbox"/> Application Size Fee <small>(37 CFR 1.16(s))</small>						OR		
	<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <small>(37 CFR 1.16(j))</small>						OR		
					TOTAL ADD'L FEE	186	OR	TOTAL ADD'L FEE	

	(Column 1)	(Column 2)	(Column 3)						
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	OR	RATE (\$)	ADDITIONAL FEE (\$)
	Total <small>(37 CFR 1.16(i))</small>	*	Minus **	=	X \$ =		OR	X \$ =	
	Independent <small>(37 CFR 1.16(h))</small>	*	Minus ***	=	X \$ =		OR	X \$ =	
	<input type="checkbox"/> Application Size Fee <small>(37 CFR 1.16(s))</small>						OR		
	<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <small>(37 CFR 1.16(j))</small>						OR		
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
 ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
 *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
 /SHANDA ROSS/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.



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UNITED STATES DEPARTMENT OF COMMERCE
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Address: COMMISSIONER FOR PATENTS
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Alexandria, Virginia 22313-1450
www.uspto.gov

Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO. Includes application details for 13/329,077 and examiner information for FULLER, ROBERT EDWARD.

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docketing@edmondsnolte.com

Applicant-Initiated Interview Summary	Application No. 13/329,077	Applicant(s) FRAZIER, W. LYNN	
	Examiner ROBERT E. FULLER	Art Unit 3676	

All participants (applicant, applicant's representative, PTO personnel):

- (1) ROBERT E. FULLER. (3) Robb Edmonds (Attorney for Applicant).
(2) Shane Bomar. (4) Andy Plummer (Attorney for Applicant).

Date of Interview: 31 January 2013.

Type: Telephonic Video Conference
 Personal [copy given to: applicant applicant's representative]

Exhibit shown or demonstration conducted: Yes No.

If Yes, brief description: Applicant presented physical examples of the insert body.

Issues Discussed 101 112 102 103 Others

(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: 12.

Identification of prior art discussed: Baker (US 2,737,242) and McCullough (US 3,094,166).

Substance of Interview

(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

Applicant presented arguments as to why one of ordinary skill in the art would not combine the teachings of Baker and McCullough. Applicant to formally file such arguments, and include limitations from dependent claims in the independent claims.

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

Attachment

/SHANE BOMAR/
Supervisory Patent Examiner, Art Unit 3676

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record

A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews

Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.

All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:

- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:

- 1) A brief description of the nature of any exhibit shown or any demonstration conducted,
- 2) an identification of the claims discussed,
- 3) an identification of the specific prior art discussed,
- 4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
- 5) a brief identification of the general thrust of the principal arguments presented to the examiner,
(The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
- 6) a general indication of any other pertinent matters discussed, and
- 7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/329,077	12/16/2011	W. Lynn Frazier	MOTI-018P1C1	2094
60935	7590	01/22/2013	EXAMINER	
Edmonds & Nolte, PC 2625 Bay Area Boulevard, Suite 530 Houston, TX 77058			FULLER, ROBERT EDWARD	
			ART UNIT	PAPER NUMBER
			3676	
			NOTIFICATION DATE	DELIVERY MODE
			01/22/2013	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docketing@edmondsnolte.com

Office Action Summary	Application No. 13/329,077	Applicant(s) FRAZIER, W. LYNN	
	Examiner ROBERT E. FULLER	Art Unit 3676	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 24 October 2012.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
- 4) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) Claim(s) 2,3,6-8 and 12-38 is/are pending in the application.
5a) Of the above claim(s) 2,3 and 6-8 is/are withdrawn from consideration.
- 6) Claim(s) _____ is/are allowed.
- 7) Claim(s) 12-38 is/are rejected.
- 8) Claim(s) _____ is/are objected to.
- 9) Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

- 10) The specification is objected to by the Examiner.
- 11) The drawing(s) filed on 24 October 2012 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 3) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 4) Other: _____.

DETAILED ACTION

Applicant's submission, filed October 24, 2012, has been entered and considered. Examiner has set forth new grounds of rejection in response to the amendments to the claims.

Claims 2, 3, 6-8, and 12-38 are pending, and claims 2, 3, and 6-8 are withdrawn.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

Art Unit: 3676

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 18-20, 25, and 26 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 2, 4, 5, and 28-36 of copending Application No. 13/329,096. Although the conflicting claims are not identical, they are not patentably distinct from each other because pending claim 18 is broader than claim 1 in the '096 application, since claim 18 does not recite the shoulder or the location of the inner threads. Therefore, pending claim 18 is fully encompassed by claim 1 of '096 and is obviously directed to the same invention. Pending claim 19 is narrower than claim 28 of the '096 application since claim 28 does not specify what the "means for connecting" is. However, it would have been considered obvious to provide threads as the connection means since they are well known connectors in wellbore packers. Note that claim 30 in '096 does recite that the connecting means are threads.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 12-17, 22-24, and 27-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baker (US 2,737,242) in view of Slup et al. (US 7,600,572, hereinafter *Slup*) and McCullough (US 3,094,166).

With regard to claim 12, Baker discloses a plug for use in a wellbore, comprising:
a body (10) having a first end and a second end;
at least one malleable element (20) disposed about the body;
at least one slip (25) disposed about the body;
at least one conical member (17) disposed about the body; and

Art Unit: 3676

an insert (12) at least partially disposed in the body proximate the second end of the body, the insert adapted to receive a setting tool (C) that enters the body through the first end thereof, wherein:

the insert comprises one or more threads (see Fig. 2) disposed on an inner surface thereof; and

the one or more threads are disposed proximate the second end of the body and are adapted to engage the setting tool (Fig. 2).

Baker fails to disclose the body being formed of one or more composite materials. Baker also discloses a shear stud 43, rather than shearable threads.

Slup discloses a bridge plug (600) having a body (414) made of composite materials (column 19, lines 41-67).

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified the body of Baker to be constructed of composite material as disclosed by Slup, in order to enhance the drillability of the bridge plug (see Background and Summary sections of Slup).

McCullough discloses a packer having shearable threads (72) which release a setting tool (10) upon application of a sufficient axial force.

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified Baker such that the shear stud was replaced by shear threads as shown by McCullough, since such a modification would have amounted to the simple substitution of known equivalent releasing mechanisms and would have yielded predictable results.

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With regard to claim 13, the outer surface of the brass insert has a larger diameter and a smaller diameter forming a shoulder therebetween, the shoulder adapted to anchor the brass insert within the body (see Fig. 2).

With regard to claim 14, Baker fails to disclose complimentary anti-rotation features on the first and second ends of the plug body.

Slup discloses mating profiles 432 and 543 on either end of a plug (see Fig. 22).

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified Baker such that the upper and lower ends were providing with complementary profiles, in order "rotationally lock [a bridge plug] with another abutting plug assembly" (Slup, column 25, lines 26-43).

With regard to claim 15, Baker discloses that the body (10) is capable of receiving a ball to restrict flow through the body (see shoulder proximate numeral 33 on the inner surface of body 10).

With regard to claim 16, Baker and McCullough, in combination, disclose that the predetermined axial force to release the setting tool is less than an axial force required to break the body.

With regard to claim 17, Baker's plug could be used as a frac plug.

With regard to claims 22 and 23, the malleable element (20) comprises rubber, an elastomer.

With regard to claim 24, the body (10) is a mandrel.

With regard to claim 27, Baker discloses a plug for use in a wellbore, comprising: a body (10) having a first end and a second end;

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at least one sealing element (20) disposed about the body;
at least one slip (14) disposed about the body;
at least one conical member (17) disposed about the body; and
an insert (12) disposed proximate the second end of the body, wherein:
the insert comprises a shoulder formed on an outer surface thereof, and the
shoulder abuts the second end of the body (unlabeled, see Fig. 2);
the insert comprises threads disposed on an inner surface thereof (unlabeled,
see Fig. 2); the threads are adapted to engage a setting tool (C) that enters the body
through the first end thereof.

Baker fails to disclose the body being formed of one or more composite materials. Baker also discloses a shear stud 43, rather than shearable threads.

Slup discloses a bridge plug (600) having a body (414) made of composite materials (column 19, lines 41-67).

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified the body of Baker to be constructed of composite material as disclosed by Slup, in order to enhance the drillability of the bridge plug (see Background and Summary sections of Slup).

McCullough discloses a packer having shearable threads (72) which release a setting tool (10) upon application of a sufficient axial force.

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified Baker such that the shear stud was replaced by shear threads as shown by McCullough, since such a modification would

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have amounted to the simple substitution of known equivalent releasing mechanisms and would have yielded predictable results.

With regard to claims 28 and 29, Baker discloses that the body (10) is capable of receiving a ball to restrict flow through the body (see shoulder proximate numeral 33 on the inner surface of body 10).

With regard to claims 30 and 31, in combination, Baker and McCullough disclose the stud element 43 being removed from the threaded portion of the insert due to the shearing of threads. After this point, the insert could receive a ball which would restrict flow into the interior of the insert. Claims 30 and 31 do not positively require the insert to have a flowbore therethrough.

With regard to claim 32, the insert has a blocked passageway (i.e. a solid interior portion) which restricts flow in opposing directions therethrough. Claim 32 does not positively require the insert to have a flowbore therethrough.

With regard to claim 33, Baker discloses one or more threads disposed on the outer surface thereof and adjacent to the shoulder (see Fig. 2), wherein the threads disposed on the outer surface of the insert are adapted to engage corresponding threads located at the second end of the body (see Fig. 2).

With regard to claim 34, Baker fails to disclose complimentary anti-rotation features on the first and second ends of the plug body.

Slup discloses mating profiles 432 and 543 on either end of a plug (see Fig. 22). It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified Baker such that the upper and lower

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ends were providing with complementary profiles, in order "rotationally lock [a bridge plug] with another abutting plug assembly" (Slup, column 25, lines 26-43).

With regard to claims 35 and 36, the sealing element (20) comprises rubber, an elastomer.

With regard to claim 37, the body (10) is a mandrel.

With regard to claim 38, the threads are disposed proximate the second end of the body (Fig. 2).

Claims 18, 19, 25, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baker in view of Guillory et al. (US 6,578,638, hereinafter *Guillory*) and McCullough.

With regard to claim 18, Baker discloses a shearable insert for a plug, comprising:

a body (10);

one or more threads disposed on an outer surface of the body, the one or more threads adapted to couple with one or more threads of the plug (Fig. 2); and

one or more threads disposed on an inner surface of the body (Fig. 2), wherein at least one of the threads disposed on the inner surface of the body is radially opposed to at least one of the threads disposed on the outer surface of the body (Fig. 2), and wherein the threads are adapted to couple with one or more threads of a setting tool (10).

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Baker fails to disclose the body comprising brass. Baker further fails to disclose shearable threads which release the setting tool at a predetermined force. Instead, Baker discloses a shear stud (43).

Guillory discloses a packer which may be totally constructed of brass (column 6, lines 38-55).

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified Baker such that the insert was constructed of brass, as Guillory teaches that such a modification would have amounted to the simple substitution of one known material for another and would have yielded predictable results.

McCullough discloses a packer having shearable threads (72) which release a setting tool (10) upon application of a sufficient axial force.

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified Baker such that the shear stud was replaced by shear threads as shown by McCullough, since such a modification would have amounted to the simple substitution of known equivalent releasing mechanisms and would have yielded predictable results.

With regard to claim 19, Baker discloses that the outer surface of the body has a shoulder formed thereon, the shoulder adapted to anchor the body within the plug (see Fig. 2).

With regard to claims 25 and 26, in combination, Baker and McCullough disclose that the axial force is less than required to break the body or the outer threads.

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Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baker in view of Slup and McCullough as applied to claim 12 above, and further in view of Guillory.

Baker in view of Slup and McCullough fails to disclose the body of the insert being made of brass. Baker does disclose a packer which is capable of being used as a frac plug.

Guillory discloses a packer in which any component may be made of brass (column 6, lines 38-55).

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified Baker in view of Slup and McCullough such that the insert was constructed of brass, as Guillory teaches that such a modification would have amounted to the simple substitution of one known material for another and would have yielded predictable results.

Response to Arguments

Applicant's arguments with respect to claims 12, 18, and 27 have been considered but are moot because the arguments do not apply to the current rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT E. FULLER whose telephone number is (571)272-6300. The examiner can normally be reached on Monday thru Friday from 9:00 AM - 6:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shane Bomar can be reached on 571-272-7026. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/SHANE BOMAR/
Supervisory Patent Examiner, Art
Unit 3676

01/10/2013
/R.E.F./

Notice of References Cited	Application/Control No. 13/329,077	Applicant(s)/Patent Under Reexamination FRAZIER, W. LYNN	
	Examiner ROBERT E. FULLER	Art Unit 3676	Page 1 of 1

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*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A US-6,578,638	06-2003	Guillory et al.	166/387
*	B US-3,094,166	06-1963	MCCULLOUGH IRA J	166/63
	C US-			
	D US-			
	E US-			
	F US-			
	G US-			
	H US-			
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	J US-			
	K US-			
	L US-			
	M US-			

FOREIGN PATENT DOCUMENTS

*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
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	T				

NON-PATENT DOCUMENTS

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*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

APR 26 2012

Doc code: IDS

Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (01-1-0)

Approved for use through 07/31/2012. OMB 0651-0031

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		13329077	
	Filing Date		2011-12-16	
	First Named Inventor	W. Lynn Frazier		
	Art Unit	3672		
	Examiner Name			
	Attorney Docket Number	MOTI-018P1D1		

U.S. PATENTS						
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear
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ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /REF/

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Art Unit	3672	
Examiner Name		
Attorney Docket Number	MOTI-018P1D1	

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EXAMINER SIGNATURE

Examiner Signature	/Robert Fuller/	Date Considered	01/10/2013
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¹ See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. ² Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). ³ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁴ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁵ Applicant is to place a check mark here if English language translation is attached.

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	First Named Inventor	W. Lynn Frazier	
	Art Unit		3676
	Examiner Name	FULLER, ROBERT EDWARD	
	Attorney Docket Number		MOTI-018P1C1

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✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

<input type="checkbox"/> Claims renumbered in the same order as presented by applicant		<input type="checkbox"/> CPA		<input type="checkbox"/> T.D.		<input type="checkbox"/> R.1.47			
CLAIM		DATE							
Final	Original	04/20/2012	01/10/2013						
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	7	N	N						
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	9	N	-						
	10	N	-						
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<i>Index of Claims</i> 	Application/Control No. 13329077	Applicant(s)/Patent Under Reexamination FRAZIER, W. LYNN
	Examiner ROBERT E FULLER	Art Unit 3676

✓	Rejected
=	Allowed

-	Cancelled
÷	Restricted

N	Non-Elected
I	Interference

A	Appeal
O	Objected

Claims renumbered in the same order as presented by applicant
 CPA
 T.D.
 R.1.47

CLAIM		DATE							
Final	Original	04/20/2012	01/10/2013						
	37		✓						
	38		✓						

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L2	11	mcclinton.as.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2013/01/10 15:28
L3	9	("20070187085" "20110240295" "2204648" "6220349" "6491108" "6581681" "6796376" "7789137").PN. OR ("8336616").URPN.	US-PGPUB; USPAT; USOCR	OR	ON	2013/01/10 15:28
L5	2	("8079413").PN.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2013/01/10 16:31
L6	2	("6796376").PN.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2013/01/10 16:32
L7	1120	((166/123) or (166/124) or (166/135) or (166/138)).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2013/01/10 16:55
L8	21	7 and (@pd> "20120419")	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2013/01/10 16:55
L9	15	("20090260816" "4589495" "5095988" "5829523" "5950724" "6520256" "6951246").PN.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2013/01/10 16:56
S133	60	(US-20100263876-\$ or US-20110079383-\$ or US-20080202764-\$ or US-20100276159-\$).did. or (US-5343954-\$ or US-7591318-\$ or US-7373973-\$ or US-6116339-\$ or US-4726425-\$ or US-4660637-\$ or US-4646842-\$ or US-4153109-\$ or US-4690220-\$ or US-4898245-\$ or US-4437516-\$ or US-3924678-\$ or US-3270819-\$ or US-3061013-\$ or US-3054450-\$ or US-2331532-\$ or US-2230447-\$ or US-	US-PGPUB; USPAT; USOCR	OR	ON	2013/01/08 17:42

		2714932-\$ or US-3602305-\$ or US-5224540-\$ or US-4440223-\$ or US-6220349-\$ or US-4059150-\$ or US-4044826-\$ or US-7600572-\$ or US-6581681-\$).did. or (US-5819846-\$ or US-4708202-\$ or US-3082824-\$ or US-7740079-\$ or US-4805699-\$ or US-4648446-\$ or US-4572289-\$ or US-4432418-\$ or US-4018274-\$ or US-3422897-\$ or US-3163225-\$ or US-3055430-\$ or US-3631925-\$ or US-3024845-\$ or US-2737242-\$ or US-2711795-\$ or US-6491116-\$ or US-7168494-\$ or US-7017672-\$ or US-6220348-\$ or US-4583593-\$ or US-RE17217-\$ or US-7350582-\$ or US-4532995-\$ or US-3062296-\$ or US-2593520-\$).did. or (US-3344861-\$ or US-2551240-\$ or US-3160209-\$ or US-2230447-\$).did.				
S134	4	S133 and ((break\$3 breakable shear\$3 shearable) near thread)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2013/01/08 17:43
S135	55	("2906346" "3082824" "3097697" "3142338" "3198254" "3298437" "3306362" "3344861" "3422897" "3422899" "3506067" "3602305" "3687196" "4573537" "4708202").PN. OR ("5819846").URPN.	US-PGPUB; USPAT; USOCR	OR	ON	2013/01/08 17:51
S137	17	(packer plug) and ((setting near (rod tool)) same (thread near2 (break\$3 breakable shear\$3 shearable)))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2013/01/08 17:56
S138	8	("2737242").URPN.	USPAT	OR	ON	2013/01/08 18:08
S139	107	("2178999" "2598340" "2637402" "2703622" "2711795" "2713910" "2737242" "2966216" "2998073" "3000443" "3011555" "3024845" "3036636" "3082824" "3106961" "3131764" "3160209" "3181614" "3298437" "3298440" "3678998" "3695352" "3749167" "4146093" "4388971" "4427063" "4438933" "4440233" "4488595" "4537251" "4545431" "4572290" "4595052" "4600055" "4603743" "4610300" "4611658" "4627491" "4708202").PN. OR ("4784226").URPN.	US-PGPUB; USPAT; USOCR	OR	ON	2013/01/08 18:08
S141	42	(shear\$3 shearable) same (thread with (weaker weakest))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2013/01/09 11:12
S142	2	("7690436").PN.	US-PGPUB;	OR	OFF	2013/01/09 11:17

			USPAT; USOCR; EPO; JPO; DERWENT			
S143	70	(("2160228") or ("2555627") or ("2589506") or ("3298437") or ("3306362") or ("3602305") or ("3623551") or ("3787101") or ("4035024") or ("4151875") or ("4189183") or ("4250960") or ("4381038") or ("4548442") or ("5074063") or ("5082061") or ("5219380") or ("5295735") or ("5318131") or ("5390737") or ("5392540") or ("5484191") or ("5490339") or ("5540279") or ("5655614") or ("5701959") or ("5785135") or ("5791825") or ("5819846") or ("5961185") or ("5984007") or ("5988277") or ("6085446") or ("6105694") or ("6220349") or ("6341823") or ("6367569") or ("6394180") or ("6457267") or ("6543963") or ("6581681") or ("6739398") or ("6779948") or ("6854201") or ("6944977") or ("7124831") or ("7150131") or ("7168494") or ("7353879") or ("7363967") or ("7428922") or ("7690436") or ("7735549") or ("7900696") or ("8079413") or ("8127856") or ("D293798") or ("D350887") or ("D353756") or ("D355428") or ("D377969") or ("D415180") or ("D560109") or ("D597110") or ("D612875") or ("D618715") or ("D629820") or ("D635429") or ("D657807") or ("RE35088")).PN.	US- PGPUB; USPAT	OR	OFF	2013/01/09 11:23
S144	127	(shear\$3 shearable) with thread with stud	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2013/01/09 11:26
S145	62	("2117535" "2578900" "2589506" "3163225" "3385370" "3698411" "3967679").PN. OR ("4151875").URPN.	US- PGPUB; USPAT; USOCR	OR	ON	2013/01/09 11:37
S146	54	("2058688" "2117318" "2204340" "2352744" "2846015" "2847074" "3120269" "3332499" "3385370" "3385372" "3409078" "3730267" "3768562" "3776250" "3948322" "4151875" "4250966" "4338999" "4413682" "4457377" "4712619" "4729432" "5025858" "5224540" "5271468" "5379835" "5390737" "5472053" "5494107" "5540279" "5647434" "5701959" "5890538" "5984029" "6102117" "6167963" "6244342" "6263987" "6397946" "6497291" "6722451").PN. OR	US- PGPUB; USPAT; USOCR	OR	ON	2013/01/09 13:49

		("7234522").URPN.				
S147	30	((shear\$3 shearable) near thread) same ((running setting) adj tool)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2013/01/09 13:50
S148	1	("3094166").URPN.	USPAT	OR	ON	2013/01/09 13:54
S149	2	(packer plug) and ((break\$3 breakable) near thread) same ((running setting) adj tool)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2013/01/09 13:56
S150	6	(packer plug) and ((break\$3 breakable) near thread) and ((running setting) adj tool)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2013/01/09 13:56
S151	19	(packer plug) and (shearable near thread)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2013/01/09 13:57
S152	38	(US-20030000710-\$ or US-20100263876-\$).did. or (US-7350582-\$ or US-7900696-\$ or US-7740079-\$ or US-6769491-\$ or US-7690436-\$ or US-5701959-\$ or US-7789137-\$ or US-7600572-\$ or US-7389823-\$ or US-6708770-\$ or US-5390737-\$ or US-4708202-\$ or US-4436150-\$ or US-4898239-\$ or US-4784226-\$ or US-4898245-\$ or US-6681858-\$ or US-6244642-\$ or US-3602305-\$ or US-3524503-\$ or US-3160209-\$ or US-4493374-\$ or US-3125162-\$ or US-3082824-\$ or US-7017672-\$ or US-7735549-\$).did. or (US-3061013-\$ or US-2737242-\$ or US-2555627-\$ or US-6142231-\$ or US-7428922-\$ or US-6467387-\$ or US-5224540-\$ or US-3266575-\$ or US-2751018-\$ or US-8079413-\$).did.	US-PGPUB; USPAT	OR	ON	2013/01/09 15:57
S153	13	("3160209").URPN.	USPAT	OR	ON	2013/01/09 16:07
S154	41	("2831540" "3057406" "3125162" "3160209" "3186485" "3294171" "3298437" "3306362").PN. OR ("4493374").URPN.	US-PGPUB; USPAT; USOCR	OR	ON	2013/01/09 16:09
S155	20	("2770308" "2979904" "3125162" "3208355" "4493374" "4535842").PN. OR ("5203414").URPN.	US-PGPUB; USPAT; USOCR	OR	ON	2013/01/09 16:49
S156	6	("2737242").PN.	US-PGPUB; USPAT; USOCR;	OR	OFF	2013/01/10 10:35


			EPO; JPO; DERWENT			
S157	64	packer with brass	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2013/01/10 10:56

EAST Search History (Interference)

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1/ 10/ 2013 5:35:33 PM

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Search Notes 	Application/Control No. 13329077	Applicant(s)/Patent Under Reexamination FRAZIER, W. LYNN
	Examiner ROBERT E FULLER	Art Unit 3676

SEARCHED			
Class	Subclass	Date	Examiner
166	123, 124, 135, 138	04/19/2012	REF
Above	Updated	01/10/2013	REF

SEARCH NOTES		
Search Notes	Date	Examiner
Inventor name search.	04/19/2012	REF
Backward/forward citations.	04/19/2012	REF
Text search; see EAST search history.	04/19/2012	REF
Text search; see EAST search history.	01/10/2013	REF

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		13329077
	Filing Date		2011-12-16
	First Named Inventor	W. Lynn Frazier	
	Art Unit		3676
	Examiner Name	FULLER, ROBERT EDWARD	
	Attorney Docket Number		MOTI-018P1C1

U.S.PATENTS						Remove
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	2160228	A	1939-05-30	PUSTMUELLER PAUL S;	
	2	2555627	A	1951-06-05	BAKER AARON A;	
	3	2589506	A	1952-03-18	MORRISETT O. L;	
	4	3298437	A	1967-01-17	CONRAD MARTIN B;	
	5	3306362	A	1967-02-28	URBANOSKY HAROLD J;	
	6	3602305	A	1971-08-31	JAMES W. KISLING;	
	7	3623551	A	1971-11-30	ERVIN RANDERMANN JR;	
	8	3787101	A	1974-01-22	SUGDEN DAU;	

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9	4035024	A	1977-07-12	FINK TREVOR;	
10	4151875	A	1979-05-01	SULLAWAY BOB L;	
11	4189183	A	1980-02-19	BOROWSKI KARL-HEINZ;	
12	4250960	A	1981-02-17	CHAMMAS EDMOND D;	
13	4381038	A	1983-04-26	SUGDEN DAVID B;	
14	4548442	A	1985-10-22	SUGDEN DAVID B et al.	
15	5074063	A	1991-12-24	VANNETTE AVERT W;	
16	5082061	A	1992-01-21	DOLLISON WILLIAM W;	
17	5219380	A	1993-06-15	YOUNG PAUL et al.	
18	5295735	A	1994-03-22	COBBS DAVID C et al.	
19	5318131	A	1994-06-07	BAKER SAMUEL F;	

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	20	5390737	A	1995-02-21	JACOBI RICKY D et al.	
	21	5392540	A	1995-02-28	COOPER MARK et al.	
	22	5484191	A	1996-01-16	SOLLAMI PHILLIP A;	
	23	5490339	A	1996-02-13	ACCETTOLA FRANK J;	
	24	5540279	A	1996-07-30	BRANCH ALTON L et al.	
	25	5655614	A	1997-08-12	AZAR MICHAEL G;	
	26	5701959	A	1997-12-30	HUSHBECK DONALD F et al.	
	27	5785135	B1	2000-05-02	CRAWLEY DOLPH et al.	
	28	5791825	A	1998-08-11	GARDNER BRADLEY M et al.	
	29	5819846	A	1998-10-13	BOLT JR. DONALD B;	
	30	5961185	A	1999-10-05	FRIANT JAMES E et al.	

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	31	5984007	A	1999-11-16	YUAN YUSHENG et al.	
	32	5988277	A	1999-11-23	VICK JR. JAMES D et al.	
	33	6085446	A	2000-07-11	POSCH JUERGEN;	
	34	6105694	A	2000-08-22	SCOTT DANNY EUGENE;	
	35	6220349	B1	2001-04-24	VARGUS GREGORY W et al.	
	36	6341823	B1	2002-01-29	SOLLAMI JIMMIE L;	
	37	6367569	B1	2002-04-09	WALK HOWARD J;	
	38	6394180	B1	2002-05-28	BERSCHIEDT KEVIN T et al.	
	39	6457267	B1	2002-10-01	PORTER ROGER D et al.	
	40	6543963	B2	2003-04-08	BRUSO BRUCE L;	
	41	6581681	B1	2003-06-24	ZIMMERMAN PATRICK J et al.	

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	42	6739398	B1	2004-05-25	YOKLEY JOHN M et al.	
	43	6779948	B2	2004-08-24	BRUSO BRUCE L;	
	44	6854201	B1	2005-02-15	HUNTER WILLIAM D et al.	
	45	6944977	B2	2005-09-20	DENIAU ALAIN et al.	
	46	7124831	B2	2006-10-24	TURLEY ROCKY A et al.	
	47	7150131	B2	2006-12-19	BARKER JAMES E;	
	48	7168494	B2	2007-01-30	STARR PHILLIP M et al.	
	49	7353879	B2	2008-04-08	TODD BRADLEY I et al.	
	50	7363967	B2	2008-04-29	BURRIS WESLEY J.II et al.	
	51	7428922	B2	2008-09-30	FRIPP MICHAEL et al.	
	52	7690436	B2	2010-04-06	TURLEY ROCKY A et al.	

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	53	7735549	B1	2010-06-15	NISH RANDY W et al.	
	54	7900696	B1	2011-03-08	NISH RANDALL W et al.	
	55	8079413	B2	2011-12-20	FRAZIER W. LYNN;	
	56	8127856	B1	2012-03-06	NISH RANDALL W et al.	
	57	D293798		1988-01-01	Johnson	
	58	D350887		1994-09-01	Sjolander et al.	
	59	D353756		1994-12-01	Graves	
	60	D355428		1995-02-01	Hatcher	
	61	D377969		1997-02-01	Grantham	
	62	D415180		1999-10-01	Rosanwo	
	63	D560109	S1	2008-01-22	HUANG HSIANG-PO;	

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	64	D597110	S1	2009-07-28	ANITUA ALDECOA EDUARDO;	
	65	D612875	S1	2010-03-30	BEYNON ANDREW MARK;	
	66	D618715	S1	2010-06-29	CORCORAN KEVIN L;	
	67	D629820	S1	2010-12-28	VAN RYSWYK MATHYS MARION;	
	68	D635429	S1	2011-04-05	HAKKI AYGUN;	
	69	D657807	S1	2012-04-17	FRAZIER W. LYNN;	
	70	RE35088	E	1995-11-14	GILBERT JERRY F;	
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Attorney Docket Number	MOTI-018P1C1

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Electronic Patent Application Fee Transmittal

Application Number:	13329077
Filing Date:	16-Dec-2011
Title of Invention:	BOTTOM SET DOWNHOLE PLUG
First Named Inventor/Applicant Name:	W. Lynn Frazier
Filer:	Jared E. Cmaidalka/valerie johnsen
Attorney Docket Number:	MOTI-018P1C1

Filed as Large Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Submission- Information Disclosure Stmt	1806	1	180	180
Total in USD (\$)				180

Electronic Acknowledgement Receipt

EFS ID:	14264728
Application Number:	13329077
International Application Number:	
Confirmation Number:	2094
Title of Invention:	BOTTOM SET DOWNHOLE PLUG
First Named Inventor/Applicant Name:	W. Lynn Frazier
Customer Number:	60935
Filer:	Jared E. Cmaidalka/valerie johnsen
Filer Authorized By:	Jared E. Cmaidalka
Attorney Docket Number:	MOTI-018P1C1
Receipt Date:	19-NOV-2012
Filing Date:	16-DEC-2011
Time Stamp:	15:27:12
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$180
RAM confirmation Number	2483
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part/.Zip	Pages (if appl.)
			MOTI Ex. [2003] p. 125		

1	Information Disclosure Statement (IDS) Form (SB08)	MOTI_018P1C1_SUPP_IDS1119 2012.pdf	610971 7950c06a54b5be8a7524f953a912f747dff28566	no	12
Warnings:					
Information:					
A U.S. Publication Number Citation is required in the Information Disclosure Statement (IDS) form. You may remove the form to add the required data in order to correct the Informational Message or if you chose not to, the image of the form will be processed and be made available within the Image File Wrapper (IFW) system. However, no data will be extracted from this form. Any additional data such as Foreign Patent Documents or Non Patent Literature will be manually reviewed and keyed into USPTO systems.					
2	Fee Worksheet (SB06)	fee-info.pdf	30443 e8f9ad7b2b3c53bf401d86c30dd2ee3632bea80d	no	2
Warnings:					
Information:					
Total Files Size (in bytes):				641414	
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					



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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/329,077	12/16/2011	W. Lynn Frazier	MOTI-018P1C1

CONFIRMATION NO. 2094

POA ACCEPTANCE LETTER

60935
Edmonds & Nolte, PC
2625 Bay Area Boulevard, Suite 530
Houston, TX 77058



Date Mailed: 11/06/2012

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 10/24/2012.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

/atesfai/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101



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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/329,077	12/16/2011	W. Lynn Frazier	MOTI-018P1C1

CONFIRMATION NO. 2094

POWER OF ATTORNEY NOTICE

45662
G. TURNER MOLLER
711 N. CARANCAHUA, SUITE 720
CORPUS CHRISTI, TX 78401



Date Mailed: 11/06/2012

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 10/24/2012.

- The Power of Attorney to you in this application has been revoked by the applicant. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

/atesfai/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/329,077	12/16/2011	W. Lynn Frazier	MOTI-018P1C1	2094
45662	7590	11/01/2012	EXAMINER	
G. TURNER MOLLER 711 N. CARANCAHUA, SUITE 720 CORPUS CHRISTI, TX 78401			FULLER, ROBERT EDWARD	
			ART UNIT	PAPER NUMBER
			3676	
			MAIL DATE	DELIVERY MODE
			11/01/2012	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Applicant-Initiated Interview Summary	Application No. 13/329,077	Applicant(s) FRAZIER, W. LYNN	
	Examiner ROBERT E. FULLER	Art Unit 3676	

All participants (applicant, applicant's representative, PTO personnel):

- (1) ROBERT E. FULLER. (3) _____.
- (2) Robb Edmonds (Attorney for Applicant). (4) _____.

Date of Interview: 23 October 2012.

Type: Telephonic Video Conference
 Personal [copy given to: applicant applicant's representative]

Exhibit shown or demonstration conducted: Yes No.
If Yes, brief description: _____.

Issues Discussed 101 112 102 103 Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: 12.

Identification of prior art discussed: Bassinger (US 2,230,447), Slup et al. (US 7,600,572), and Cockrell (US 4,437,516).

Substance of Interview

(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

Possible claim amendments were discussed. Applicant's representative proposed amending claim 12 to point out that the insert is prevented from upward movement by a shoulder on the end of the mandrel. Applicant's representative further proposed deleting language related to the insert being screwed into the body proximate the second end of the body. No agreement was reached with respect to the claims.

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

Attachment

/SHANE BOMAR/
Supervisory Patent Examiner, Art Unit 3676

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record

A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews

Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.

All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:

- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:

- 1) A brief description of the nature of any exhibit shown or any demonstration conducted,
- 2) an identification of the claims discussed,
- 3) an identification of the specific prior art discussed,
- 4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
- 5) a brief identification of the general thrust of the principal arguments presented to the examiner,
(The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
- 6) a general indication of any other pertinent matters discussed, and
- 7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

POWER OF ATTORNEY OR REVOCAION OF POWER OF ATTORNEY WITH A NEW POWER OF ATTORNEY AND CHANGE OF CORRESPONDENCE ADDRESS	Application Number	13/329,077
	Filing Date	December 16, 2011
	First Named Inventor	W. Lynn Frazier
	Title	Bottom Set Downhole Plug
	Art Unit	3672
	Examiner Name	Robert Edward Fuller
	Attorney Docket Number	MOTI-018P1C1

I hereby revoke all previous powers of attorney given in the above-identified application.

A Power of Attorney is submitted herewith.

OR

I hereby appoint Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s) to prosecute the application identified above, and to transact all business in the United States Patent and Trademark Office connected therewith:

OR

I hereby appoint Practitioner(s) named below as my/our attorney(s) or agent(s) to prosecute the application identified above, and to transact all business in the United States Patent and Trademark Office connected therewith:

Practitioner(s) Name	Registration Number
G. Turner Moller	22978
Robb D. Edmonds	46681
Andrew J. Plummer	66400

Please recognize or change the correspondence address for the above-identified application to:

The address associated with the above-mentioned Customer Number.

OR

The address associated with Customer Number: 60935

OR

<input type="checkbox"/> Firm or Individual Name			
Address			
City	State	Zip	
Country			
Telephone	Email		


I am the:

Applicant/Inventor.

OR

Assignee of record of the entire interest. See 37 CFR 3.71.
 Statement under 37 CFR 3.73(b) (Form PTO/SB/96) submitted herewith or filed on March 29, 2012.

SIGNATURE of Applicant or Assignee of Record

Signature		Date	October 23, 2012
Name	W. Lynn Frazier	Telephone	361-299-6333
Title and Company	President and CEO, Magnum Oil Tools International, L.L.C.		

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.

*Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt

EFS ID:	14060262
Application Number:	13329077
International Application Number:	
Confirmation Number:	2094
Title of Invention:	BOTTOM SET DOWNHOLE PLUG
First Named Inventor/Applicant Name:	W. Lynn Frazier
Customer Number:	45662
Filer:	Robb D. Edmonds/Denise Barberis
Filer Authorized By:	Robb D. Edmonds
Attorney Docket Number:	MOTI-018P1C1
Receipt Date:	24-OCT-2012
Filing Date:	16-DEC-2011
Time Stamp:	09:56:05
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	MOTI_018P1C1_Executed_POA _filed_10242012.pdf	330305 <small>dddadd99877011cd2fd3d429232f40522f7 0b538</small>	no	2

Warnings:

Information:

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	§		
W. Lynn Frazier	§	Examiner:	Fuller, Robert Edward
	§		
Serial No.: 13/329,077	§	Group Art Unit:	3676
	§		
Filed: December 16, 2011	§	Docket No:	MOTI-018P1C1
	§		
For: <i>Bottom Set Downhole Plug</i>	§	Confirmation No.:	2094
	§	Date:	October 24, 2012

MAIL STOP AMENDMENT
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT AND RESPONSE UNDER 37 CFR § 1.111

In response to the Office Action dated April 24, 2012, Applicant respectfully requests reconsideration of the application in light of the following amendments and remarks.

Amendments to the Specification: None.

Amendments to the Drawings: begin on page 2 of this paper.

Amendments to the Claims: are reflected in the listing of claims which begins on page 3 of this paper.

Remarks: begin on page 8 of this paper.

AMENDMENTS TO THE DRAWINGS

Please replace Drawing Sheets 1/7 – 5/7 with the attached Replacement Sheets 1/7 – 5/7. In the Replacement Sheets, the cross-hatching for the element 250 in Figures 2A-2C, 3A-3D, and 4 has been amended to indicate "rubber."

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (Cancelled)
2. (Withdrawn – Currently Amended) The plug of claim [[1]] 12, wherein the shearable threads are composite and the predetermined axial force sufficient to deform the shearable threads to release the setting tool is less than an axial force sufficient to break the body.
3. (Withdrawn – Currently Amended) The plug of claim [[1]] 12, wherein the body is adapted to receive an impediment that restricts fluid flow in at least one direction through the body.
4. (Cancelled)
5. (Cancelled)
6. (Withdrawn – Original) The plug of claim 3, wherein the impediment is degradable at a predetermined temperature, pressure, pH, or a combination thereof.
7. (Withdrawn – Currently Amended) The plug of claim [[1]] 12, wherein the first end of the body comprises an anti-rotation feature formed thereon.
8. (Withdrawn – Currently Amended) The plug of claim [[1]] 12, wherein the second end of the body comprises an anti-rotation feature disposed thereon.

Claims 9-11 (Cancelled)

12. (Currently Amended) A plug for use in isolating a wellbore, comprising:
a body having a first end and a second end, wherein the body is formed from one or more composite materials;
at least one malleable element disposed about the body;
at least one slip disposed about the body;
at least one conical member disposed about the body; and
an a-brass insert at least partially disposed in serewed into the body proximate the second end of the body, the insert ~~[[and]]~~ adapted to receive a setting tool that enters the body through the first end thereof, wherein:
the insert comprises one or more shearable threads disposed on an inner surface thereof;
the one or more shearable threads are disposed proximate the second end of the body and are adapted to engage the setting tool; and
the one or more shearable threads are adapted to deform to release the setting tool when exposed to a predetermined axial force.
13. (Currently Amended) The plug of claim 12, wherein the outer surface of the ~~brass~~ insert has a larger diameter and a smaller diameter forming a shoulder therebetween, the shoulder adapted to anchor the ~~brass~~ insert within the body.
14. (Currently Amended) The plug of claim 12, wherein the first and second ends of the body each comprise at least one anti-rotation feature ~~features~~ formed thereon, and the anti-rotation features of the first and second ends of the body are complementary and adapted to engage each other ~~when two plugs are located in series~~, preventing relative rotation therebetween.
15. (Original) The plug of claim 12, wherein the body is adapted to receive a ball that restricts fluid flow in at least one direction through the body.

16. (Original) The plug of claim 12, wherein the predetermined axial force to release the setting tool is less than an axial force required to break the body.
17. (Original) The plug of claim 12, wherein the plug is a frac plug.
18. (Currently Amended) A shearable insert for a plug, comprising:
 - a body comprising brass, cast iron, or a combination thereof;
 - one or more threads disposed on an outer surface of the body, the one or more threads adapted to couple with one or more threads of the plug; and
 - one or more shearable threads disposed on an inner surface of the body, wherein at least one of the shearable threads disposed on the inner surface of the body is radially opposed to at least one of the threads disposed on the outer surface of the body, and wherein the shearable threads are adapted to couple with one or more threads of a setting tool and release the setting tool when exposed to a predetermined axial force.
19. (Currently Amended) The insert of claim 18, wherein the outer surface of the body ~~comprises a larger diameter and a smaller diameter forming~~ has a shoulder formed thereon therebetween, the shoulder adapted to anchor the body within the plug.
20. (Original) The insert of claim 18, wherein the body is made of brass, and the plug is a frac plug.
21. (New) The plug of claim 12, wherein the insert comprises brass.
22. (New) The plug of claim 12, wherein the malleable element comprises rubber.
23. (New) The plug of claim 12, wherein the malleable element comprises one or more elastomers.
24. (New) The plug of claim 12, wherein the body is a mandrel.

25. (New) The insert of claim 18, wherein the predetermined axial force is less than an axial force required to break the threads disposed on the outer surface of the body.
26. (New) The insert of claim 18, wherein the predetermined axial force is less than an axial force required to break the body.
27. (New) A plug for use in a wellbore, comprising:
a body having a first end and a second end, wherein the body is formed from one or more composite materials;
at least one sealing element disposed about the body;
at least one slip disposed about the body;
at least one conical member disposed about the body; and
an insert disposed proximate the second end of the body, wherein:
the insert comprises a shoulder formed on an outer surface thereof, and the shoulder abuts the second end of the body;
the insert comprises one or more shearable threads disposed on an inner surface thereof;
the one or more shearable threads are adapted to engage a setting tool that enters the body through the first end thereof;
the one or more shearable threads are adapted to deform to release the setting tool when exposed to a predetermined axial force; and
wherein the predetermined axial force to deform the shearable threads is less than an axial force required to break the body.
28. (New) The plug of claim 27, wherein the body is adapted to receive an impediment that restricts fluid flow in at least one direction through the body.
29. (New) The plug of claim 28, wherein the impediment is a ball.
30. (New) The plug of claim 27, wherein the insert is adapted to receive an impediment that restricts fluid flow in at least one direction through the insert.

31. (New) The plug of claim 30, wherein the impediment is a ball.
32. (New) The plug of claim 27, wherein the insert has a blocked passageway that restricts fluid flow in opposing axial directions therethrough.
33. (New) The plug of claim 27, wherein the insert further comprises one or more threads disposed on the outer surface thereof and adjacent to the shoulder, wherein the threads disposed on the outer surface of the insert are adapted to engage corresponding threads located at the second end of the body.
34. (New) The plug of claim 27, wherein the first and second ends of the body each comprise at least one anti-rotation feature formed thereon, wherein the anti-rotation features of the first and second ends of the body are complementary and adapted to engage each other, preventing relative rotation therebetween.
35. (New) The plug of claim 27, wherein the sealing element comprises rubber.
36. (New) The plug of claim 27, wherein the sealing element comprises one or more elastomers.
37. (New) The plug of claim 27, wherein the body is a mandrel.
38. (New) The plug of claim 27, wherein the one or more shearable threads are disposed proximate the second end of the body.

REMARKS

This reply is in response to the Office Action dated April 24, 2012. Claims 1-20 are pending in the application. Claims 1-11 have been withdrawn by the examiner for being drawn to a non-elected invention. Claims 12-20 are rejected.

Applicant has amended claims 2, 3, 7, 8, 12-14, 18, and 19 to more clearly recite aspects of the invention. Applicant has also added new claims 21-38 to recite additional aspects of the invention.

Applicant has cancelled claims 1, 4, 5, and 9-11 without prejudice. The cancellation of these claims is not an admission of non-patentability. Applicant has simply cancelled these claims to place the application in condition for allowance. Applicant reserves the right to pursue the cancelled subject matter in a separate, divisional application.

No new matter has been added. Entry of the foregoing amendments and reconsideration of the claims is respectfully requested.

Drawings

The drawings are objected to because the cross-hatching for seal element 250 is not proper for rubber. Applicant has amended Figures 2A-2C, 3A-3D, and 4 in Replacement Sheets 1/7 – 5/7, obviating the objection. Withdrawal of the objection is respectfully requested.

Double Patenting

Claims 18-20 are provisionally rejected under 35 U.S.C. § 101 as claiming the same invention as that of claims 1, 2, and 4 of co-pending Application No. 13/329,096. Claims 12-17 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 9-20 of co-pending Application No. 13/329,096.

Applicant respectfully requests that these provisional double patenting rejections be held in abeyance until allowable subject matter has been identified in the present application. Upon

the identification of allowable subject matter, Applicant will, if necessary, address any then-pending double patenting rejections by traversal or an appropriate terminal disclaimer.

Claim Rejections – 35 U.S.C. § 103

Claims 12-20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Bassinger (U.S. Patent No. 2,230,447; hereafter "*Bassinger*") in view of Slup et al. (U.S. Patent No. 7,600,572; hereafter "*Slup*") and Cockrell (U.S. Patent No. 4,437,516; hereafter "*Cockrell*").

Applicant has amended base claim 12, rendering this rejection moot. At the very least, the combination of *Bassinger*, *Slup*, and *Cockrell* does not teach, show, or suggest an insert at least partially disposed in the body and adapted to receive a setting tool that enters the body through the first end thereof, wherein the one or more shearable threads are disposed proximate the second end of the body and are adapted to engage the setting tool, and wherein the one or more shearable threads are adapted to deform to release the setting tool when exposed to a predetermined axial force, as now required in claim 12 and those dependent therefrom.

Bassinger discloses an insert (mandrel 60) that spans the entire length of the body (head 61; shoe 15). See, e.g., Figure 9. The threads 82 disposed on the inner surface of *Bassinger's* insert (mandrel 60) are disposed proximate a first end of the body (head 61; shoe 15), while the insert (mandrel 60) has outer threads that are located proximate a second end of the body (head 61; shoe 15). *Bassinger* does not teach, show, or suggest an insert having one or more shearable threads, much less one or more shearable threads disposed proximate the second end of the body that are adapted to engage a setting tool, and adapted to deform to release the setting tool when exposed to a predetermined axial force. To the contrary, the inner threads on *Bassinger's* insert are located at the first end of the body (head 61), and are not designed to shear or be shearable. Rather, *Bassinger* uses a shear pin 65 to remove the setting tool (tubing 81) from the body (head 61; shoe 15). See, e.g. *Bassinger* at page 3, left column at ll. 46-49; and page 3, right column at ll. 14-31. Indeed *Bassinger's* plug is operated and set with rotational movement, not axial forces. *Bassinger* states, "In operation, the plug is lowered... and the running means rotated to the right, thus engaging the dogs 41 firmly in the inner surfaces of the casing 10." Page 3, right column at ll. 3-6. *Bassinger* further states, "By continued rotation, the shoe 15, at the lower end of the device, will travel upwardly, distorting the packing rings 51 and engaging the slip 50.... Thus, the device is set." Page 3, right column at ll. 7-11. To remove the running means from the

plug, the running means is rotated to shear the pin 65, thereby disengaging the running means from the plug. Page 3, right column at ll. 24-26. Therefore, there is nothing in *Bassinger* that motivates or suggest using shearable threads that are adapted to deform to release the setting tool when exposed to a predetermined axial force, as required in every claim.

Notwithstanding any of the foregoing, the claims as amended are not obvious in view of *Bassinger*, *Slup* and *Cockrell*. When a proposed modification changes the principle of operation and/or requires a substantial reconstruction and redesign of the elements shown in the primary reference (*i.e.*, *Bassinger*), the teachings of the references are not sufficient to render the claims *prima facie* obvious. *See, e.g.*, MPEP 2143.01. Furthermore, the proposed modification cannot render the prior art unsatisfactory for its intended purpose. *See id. citing In re Gordon*, 733 F.2d 900 (Fed. Cir. 1984). If the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *Id.*

As noted above, *Bassinger's* plug operates using rotational forces. The plug is set using rotation; the running means is released using rotation. Indeed, it appears that an axial force will remove the entire insert assembly (mandrel 60) from the surrounding body (head 61) by shearing the threads in the shoe 15 once the shoe 15 shoulders out against the mandrel 60; thus, rendering *Bassinger's* plug inoperable or at the very least unsatisfactory for its intended purpose. There is nothing to prevent axial movement of the entire insert assembly (mandrel 60), and certainly nothing to isolate or concentrate the axial forces only on the upper threads between 65 and 82 versus the lower threads between 65 and shoe 15. To do so, would require a substantial reconstruction and redesign of the elements shown in the primary reference (*i.e.*, *Bassinger*), which alone is not sufficient to render the claims *prima facie* obvious.

Slup and *Cockrell* fail to cure the deficiencies of *Bassinger*. Therefore, the combination of *Bassinger*, *Slup*, and *Cockrell* does not establish a case of *prima facie* obviousness. Withdrawal of the rejection is respectfully requested.

With regard to claims 18-20, Applicant has amended claim 18, rendering the rejection further moot. At the very least, the combination of *Bassinger*, *Slup*, and *Cockrell* does not teach, show, or suggest at least one of the shearable threads on the inner surface of the body being radially opposed to at least one of the threads disposed on the outer surface of the body, as now

required in claim 18 and those dependent therefrom. *Bassinger's* mandrel 60 has one or more inner threads 82 disposed proximate its first end and its outer threads (no number) are disposed proximate its second or opposite end. *See, e.g.,* Figure 9. Simply stated, *Bassinger's* inner and outer threads are not radially opposed to one another.

Slup and *Cockrell* fail to cure the deficiencies of *Bassinger*. Therefore, the combination of *Bassinger*, *Slup*, and *Cockrell* does not teach, show or suggest the claimed invention of claims 18-20. For at least this reason, withdrawal of the rejection and allowance of the claims is respectfully requested.

CONCLUSION

Having addressed all issues set out in the Office Action, Applicant respectfully submits that the pending claims are now in condition for allowance. Applicant invites the examiner to telephone the undersigned attorney if there are any issues outstanding which have not been addressed to the examiner's satisfaction.

Respectfully submitted,

October 24, 2012

Date

/Robb D. Edmonds/

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Attorney for Applicants
Registration No. 46,681

EDMONDS & NOLTE, P.C.
2625 Bay Area Boulevard, Suite 530
Houston, Texas 77058
Phone: 281-480-2700
Fax: 281-480-2701

REPLACEMENT SHEET

1/7

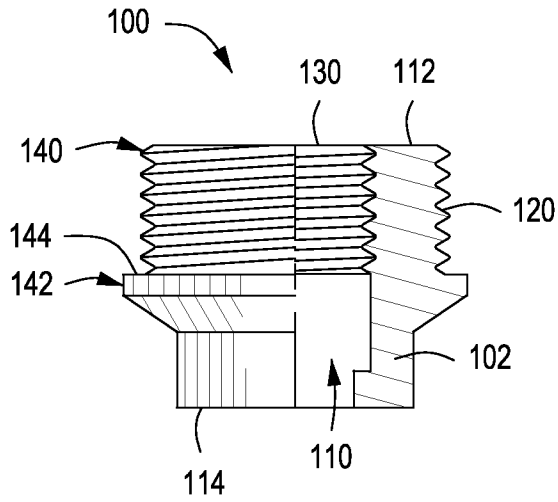


FIG. 1A

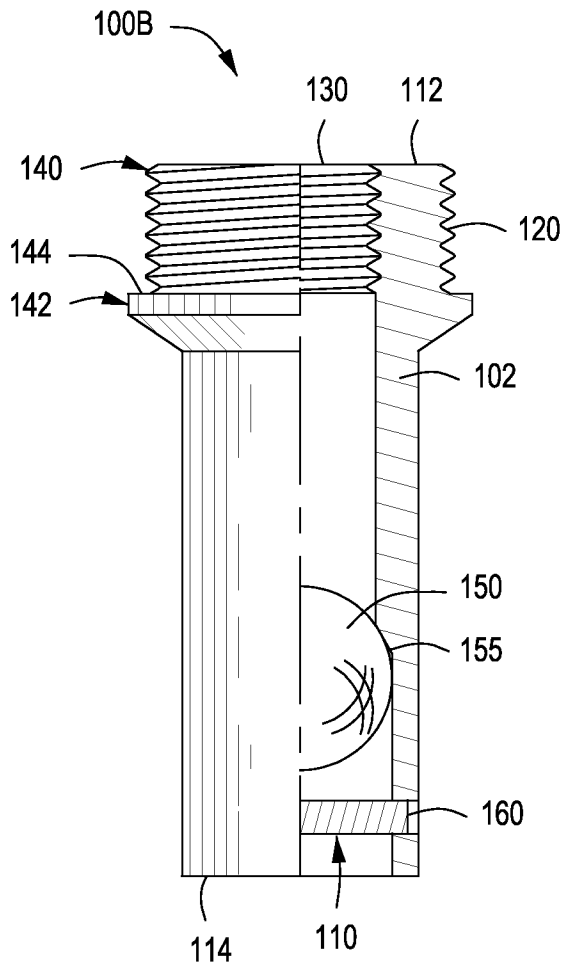


FIG. 1B

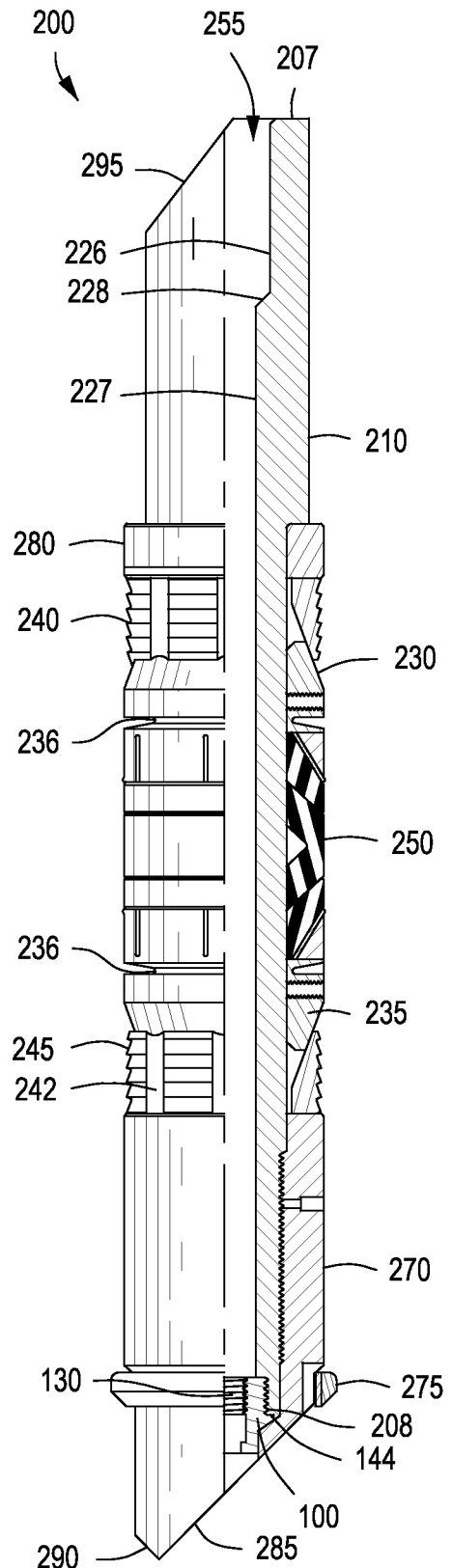


FIG. 2A

REPLACEMENT SHEET

2/7

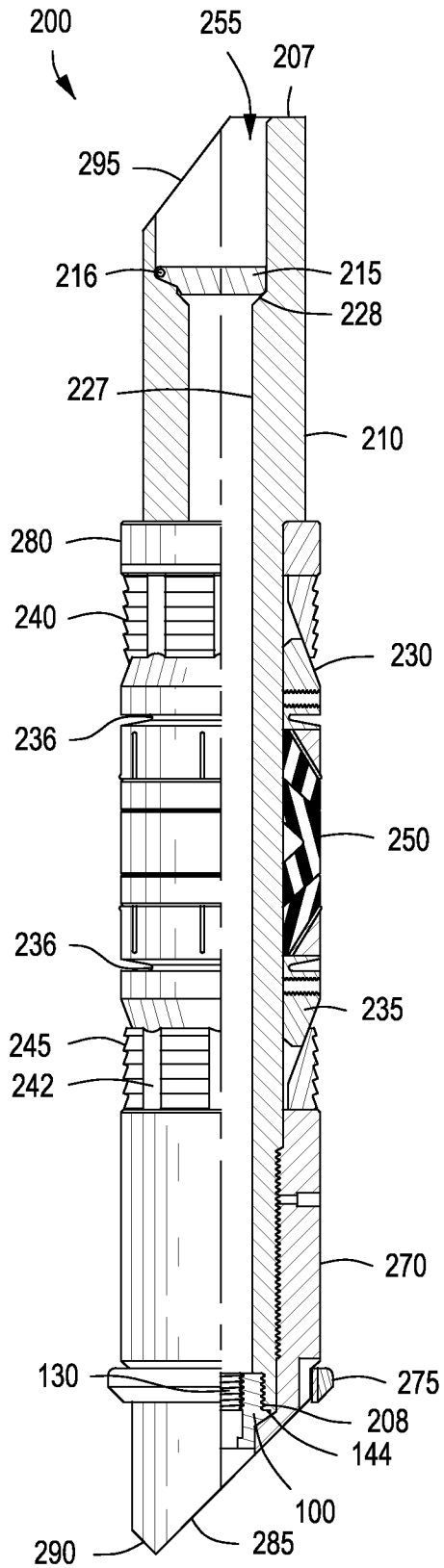


FIG. 2B

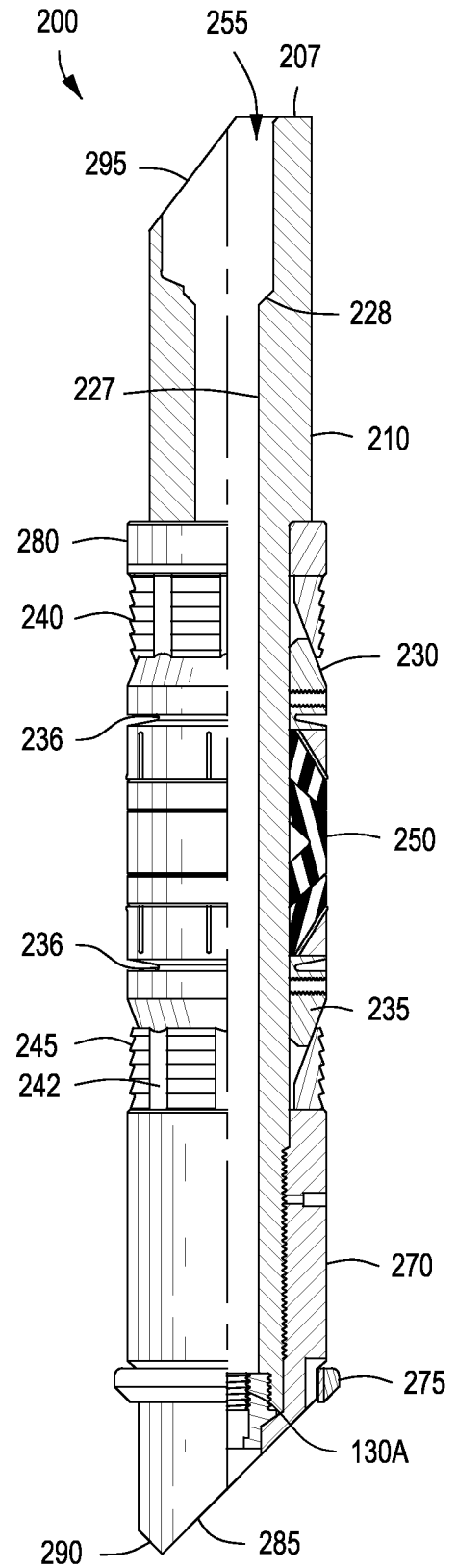


FIG. 2C

REPLACEMENT SHEET

3/7

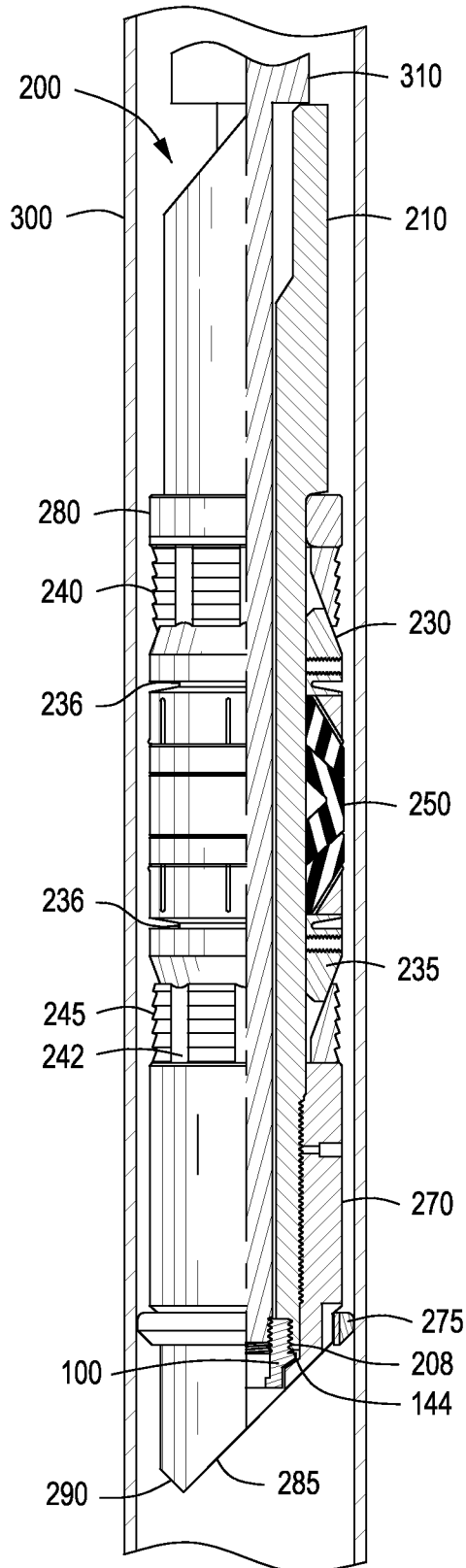


FIG. 3A

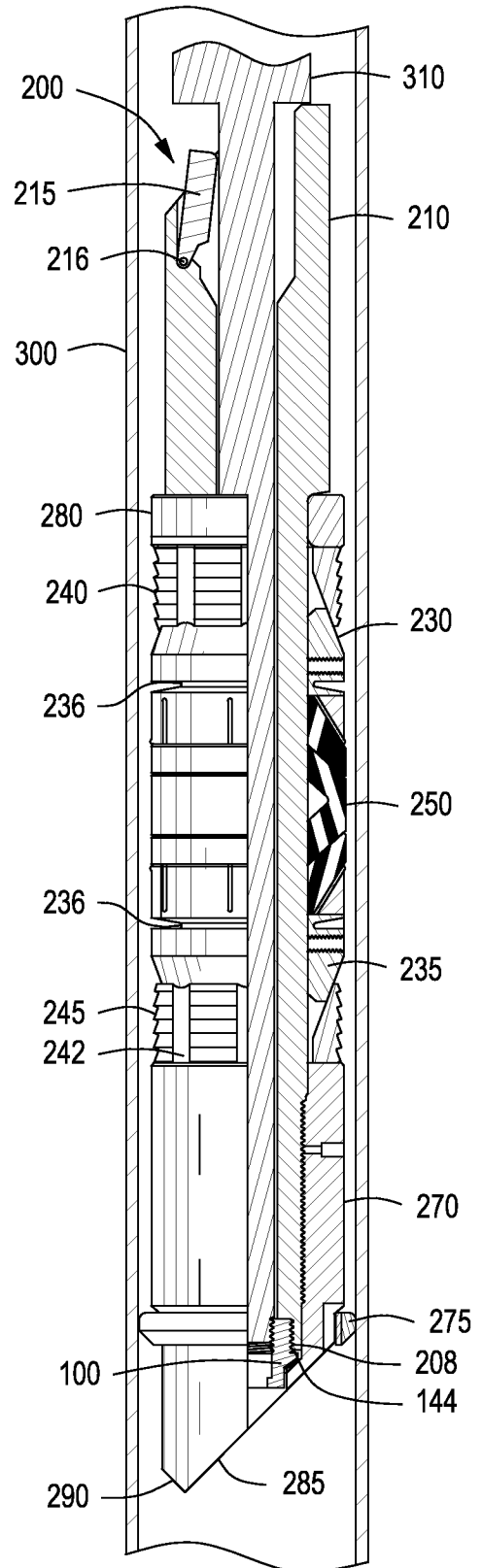


FIG. 3B

REPLACEMENT SHEET

4/7

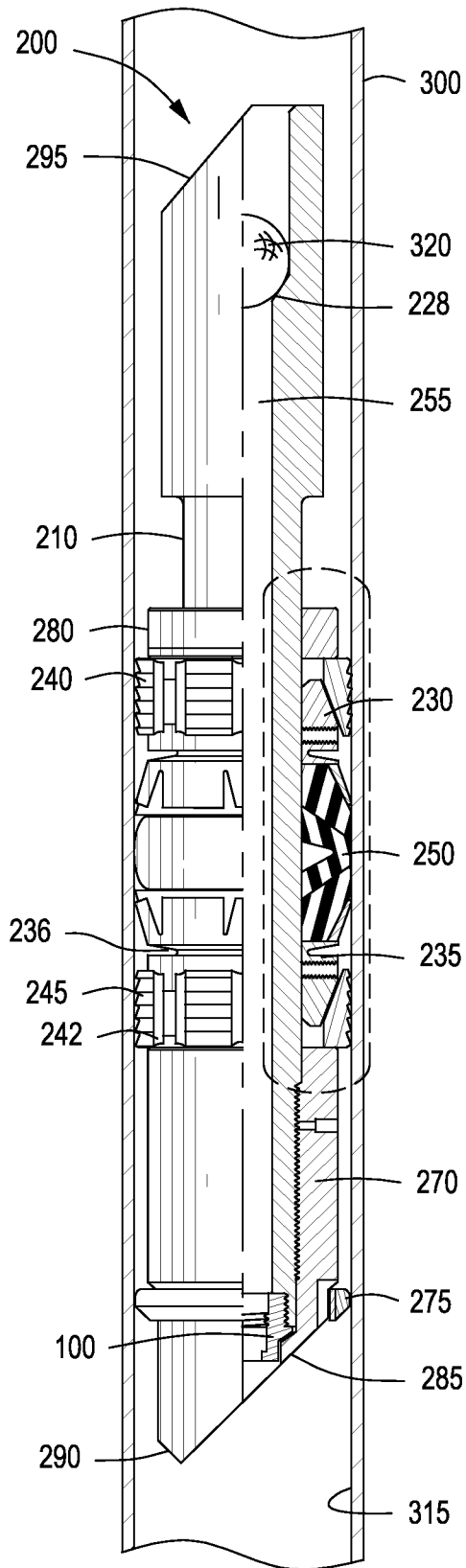


FIG. 3C

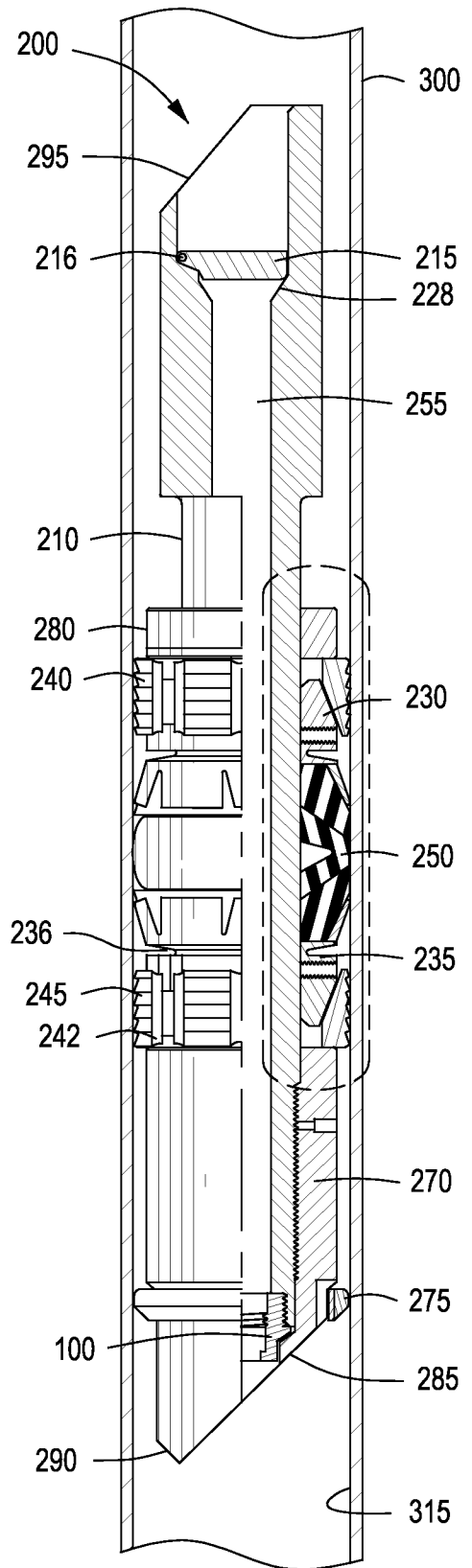


FIG. 3D

REPLACEMENT SHEET

5/7

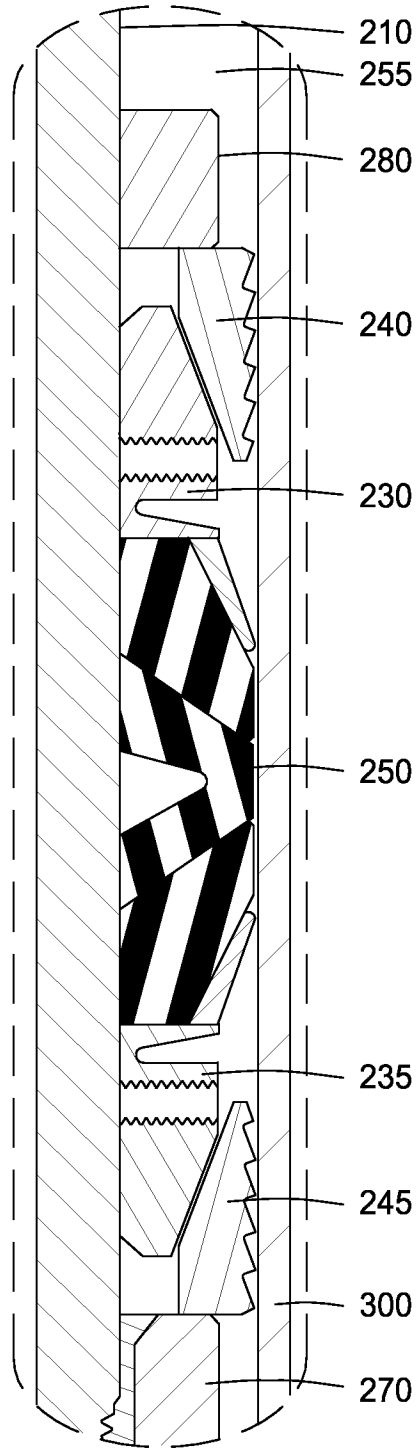


FIG. 4

Electronic Patent Application Fee Transmittal

Application Number:	13329077
Filing Date:	16-Dec-2011
Title of Invention:	BOTTOM SET DOWNHOLE PLUG
First Named Inventor/Applicant Name:	W. Lynn Frazier
Filer:	Robb D. Edmonds/Denise Barberis
Attorney Docket Number:	MOTI-018P1C1

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Claims in excess of 20	2202	12	31	372

Miscellaneous-Filing:

Petition:

Patent-Appeals-and-Interference:

Post-Allowance-and-Post-Issuance:

Extension-of-Time:

MOTI Ex. [2003] p. 152

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension - 3 months with \$0 paid	2253	1	645	645
Miscellaneous:				
Total in USD (\$)				1017

Electronic Acknowledgement Receipt

EFS ID:	14063281
Application Number:	13329077
International Application Number:	
Confirmation Number:	2094
Title of Invention:	BOTTOM SET DOWNHOLE PLUG
First Named Inventor/Applicant Name:	W. Lynn Frazier
Customer Number:	45662
Filer:	Robb D. Edmonds/Denise Barberis
Filer Authorized By:	Robb D. Edmonds
Attorney Docket Number:	MOTI-018P1C1
Receipt Date:	24-OCT-2012
Filing Date:	16-DEC-2011
Time Stamp:	13:49:07
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$1017
RAM confirmation Number	81
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part/.Zip	Pages (if appl.)
			MOTI Ex. [2003] p. 154		

1	Amendment/Req. Reconsideration-After Non-Final Reject	MOTI_018P1C1_Reply_to_NFO A_dated_04242012_filed_1024 2012.pdf	909549 44275b05cb0d59f98db717409480e6590e6 7f794	no	11
Warnings:					
Information:					
2	Drawings-only black and white line drawings	MOTI_018P1C1_Replacement_ Sheets.pdf	318351 c05c5e23641321005ca2ae07018350c980d 8c3ad	no	5
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	32219 882f50e145e53ce019e9adba8fb47041138c ab8f	no	2
Warnings:					
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Total Files Size (in bytes):			1260119		

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National Stage of an International Application under 35 U.S.C. 371

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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 13/329,077	Filing Date 12/16/2011	<input type="checkbox"/> To be Mailed
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APPLICATION AS FILED – PART I			OTHER THAN SMALL ENTITY			
	(Column 1)	(Column 2)	SMALL ENTITY <input checked="" type="checkbox"/>	OR		
FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)	RATE (\$)	FEE (\$)
<input type="checkbox"/> BASIC FEE <small>(37 CFR 1.16(a), (b), or (c))</small>	N/A	N/A	N/A		N/A	
<input type="checkbox"/> SEARCH FEE <small>(37 CFR 1.16(k), (j), or (m))</small>	N/A	N/A	N/A		N/A	
<input type="checkbox"/> EXAMINATION FEE <small>(37 CFR 1.16(o), (p), or (q))</small>	N/A	N/A	N/A		N/A	
TOTAL CLAIMS <small>(37 CFR 1.16(j))</small>	minus 20 =	*	X \$ =	OR	X \$ =	
INDEPENDENT CLAIMS <small>(37 CFR 1.16(h))</small>	minus 3 =	*	X \$ =		X \$ =	
<input type="checkbox"/> APPLICATION SIZE FEE <small>(37 CFR 1.16(s))</small>	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).					
<input type="checkbox"/> MULTIPLE DEPENDENT CLAIM PRESENT <small>(37 CFR 1.16(j))</small>						
			TOTAL		TOTAL	

* If the difference in column 1 is less than zero, enter "0" in column 2.

APPLICATION AS AMENDED – PART II					OTHER THAN SMALL ENTITY			
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AMENDMENT	10/24/2012	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	RATE (\$)	ADDITIONAL FEE (\$)
	Total <small>(37 CFR 1.16(i))</small>	* 32	Minus ** 20	= 12	X \$31 =	372	OR	X \$ =
	Independent <small>(37 CFR 1.16(h))</small>	* 3	Minus ***3	= 0	X \$125 =	0	OR	X \$ =
	<input type="checkbox"/> Application Size Fee <small>(37 CFR 1.16(s))</small>						OR	
	<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <small>(37 CFR 1.16(j))</small>						OR	
					TOTAL ADD'L FEE	372	OR	TOTAL ADD'L FEE

	(Column 1)	(Column 2)	(Column 3)					
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	RATE (\$)	ADDITIONAL FEE (\$)
	Total <small>(37 CFR 1.16(i))</small>	*	Minus **	=	X \$ =		OR	X \$ =
	Independent <small>(37 CFR 1.16(h))</small>	*	Minus ***	=	X \$ =		OR	X \$ =
	<input type="checkbox"/> Application Size Fee <small>(37 CFR 1.16(s))</small>						OR	
	<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <small>(37 CFR 1.16(j))</small>						OR	
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
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 *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/STELLA LITTLE/

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Table with 4 columns: APPLICATION NUMBER (13/329,077), FILING OR 371(C) DATE (12/16/2011), FIRST NAMED APPLICANT (W. Lynn Frazier), ATTY. DOCKET NO./TITLE (MOTI-018P1C1)

CONFIRMATION NO. 2094

PUBLICATION NOTICE

45662
G. TURNER MOLLER
711 N. CARANCAHUA, SUITE 720
CORPUS CHRISTI, TX 78401



Title:BOTTOM SET DOWNHOLE PLUG

Publication No.US-2012-0145378-A1
Publication Date:06/14/2012

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The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

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Filing Date	12/16/2011
First Named Inventor	W. Lynn Frazier
Art Unit	
Examiner Name	
Attorney Docket Number	

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The address associated with Customer Number: 00045662

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Firm or Individual Name G. Turner Moller

Address 711 N. Carancahua, Suite 720

City Corpus Christi

State Texas

Zip 78401-0543

Country USA

Telephone 361/883-7257

Email tmoller@stx.rr.com

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- Applicant/Inventor
- Assignee of record of the entire interest. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96).
- Attorney or agent of record. Registration Number 22978
- Registered practitioner named in the application transmittal letter in an application without an executed oath or declaration. See 37 CFR 1.33(a)(1). Registration Number _____

Signature G. Turner Moller

Typed or Printed Name G. Turner Moller

Date April 24, 2012

Telephone 361/883-7257

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

*Total of 1 forms are submitted.

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APR 26 2012

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of

W. Lynn Frazier

Serial Number 13/329,077

Filed: December 16, 2011

For: BOTTOM SET DOWNHOLE PLUG

Examiner Robert Edward Fuller

Art Unit 3676

CERTIFICATE OF TRANSMISSION

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Alexandria, VA 22313-1450

Dear Sir:

I hereby certify that an Invention Disclosure Statement is being transmitted via facsimile to the Commissioner for Patents at telephone number 571/273-8300 on April 26, 2012.

Respectfully submitted,



G. Turner Moller
Registration No. 22,978

361/883-7257
711 N Carancahua #720
Corpus Christi, Texas 78475

APR 26 2012

Doc code: IDS

Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (01-10)

Approved for use through 07/31/2012. OMB 0651-0031

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	13329077
	Filing Date	2011-12-16
	First Named Inventor	W. Lynn Frazier
	Art Unit	3672
	Examiner Name	
	Attorney Docket Number	MOTI-018P1D1

U.S. PATENTS

Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear
	1	7690436	B2	2010-04-06	Rocky Turley, et al.	

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**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number		13329077
Filing Date		2011-12-16
First Named Inventor	W. Lynn Frazier	
Art Unit	3672	
Examiner Name		
Attorney Docket Number	MOTI-018P1D1	

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APR 26 2012

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Application Number	13329077
Filing Date	2011-12-16
First Named Inventor	W. Lynn Frazier
Art Unit	3672
Examiner Name	
Attorney Docket Number	MOTI-018P1D1

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

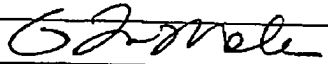
OR

That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

- See attached certification statement.
- The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.
- A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature		Date (YYYY-MM-DD)	2012-04-26
Name/Print	G. Turner Moller	Registration Number	22,978

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

APR 26 2012

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of
W. Lynn Frazier
Serial Number 13/329,077
Filed: December 16, 2011
For: BOTTOM SET DOWNHOLE PLUG
Examiner Robert Edward Fuller
Art Unit 3676

CERTIFICATE OF TRANSMISSION

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

I hereby certify that an Invention Disclosure Statement is being transmitted via facsimile to the Commissioner for Patents at telephone number 571/273-8300 on April 26, 2012.

Respectfully submitted,



G. Turner Moller
Registration No. 22,978

361/883-7257
711 N Carancahua #720
Corpus Christi, Texas 78475

Doc code: IDS

Doc description: Information Disclosure Statement (IDS) Filed

APR 26 2012

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		13329077	
	Filing Date		2011-12-16	
	First Named Inventor	W. Lynn Frazier		
	Art Unit	3672		
	Examiner Name			
	Attorney Docket Number	MOTI-018P1D1		

U.S. PATENTS

Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear
	1	7690436	B2	2010-04-06	Rocky Turley, et al.	

If you wish to add additional U.S. Patent citation information please click the Add button.

U.S. PATENT APPLICATION PUBLICATIONS

Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear
	1					

If you wish to add additional U.S. Published Application citation information please click the Add button.

FOREIGN PATENT DOCUMENTS

Examiner Initial*	Cite No	Foreign Document Number ³	Country Code ²	Kind Code ⁴	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear	T ⁵
	1							<input type="checkbox"/>

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NON-PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T ⁵

APR 26 2012

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number		13329077
Filing Date		2011-12-16
First Named Inventor	W. Lynn Frazier	
Art Unit	3672	
Examiner Name		
Attorney Docket Number	MOTI-018P1D1	

1		<input type="checkbox"/>
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If you wish to add additional non-patent literature document citation information please click the Add button

EXAMINER SIGNATURE

Examiner Signature		Date Considered	
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. ² Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). ³ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁴ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁵ Applicant is to place a check mark here if English language translation is attached.

Apr 26 12 08:46p

Turner Moller

361 265-0770

p.4

INFORMATION DISCLOSURE

Application Number

Filing #

1333007

PAGE 4/4 * RCVD AT 4/26/2012 10:58:37 PM [Eastern Daylight Time] * SVR:W-PTOFAX-003/7 * DNIS:2738300 * CSID:361 265 0770 * DURATION (mm-ss):01-32

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Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.
13/329,077 12/16/2011 W. Lynn Frazier MOTI-018P1C1 2094

7590 04/24/2012
G. Turner Moller
Suite 720
711 N. Carancahua
Corpus Christi, TX 78401

EXAMINER

FULLER, ROBERT EDWARD

Table with 2 columns: ART UNIT, PAPER NUMBER

3676

Table with 2 columns: MAIL DATE, DELIVERY MODE

04/24/2012

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No. 13/329,077	Applicant(s) FRAZIER, W. LYNN	
Examiner ROBERT E. FULLER	Art Unit 3676	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on _____.
- 2a) This action is **FINAL**.
- 2b) This action is non-final.
- 3) An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
- 4) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) Claim(s) 1-20 is/are pending in the application.
5a) Of the above claim(s) 1-11 is/are withdrawn from consideration.
- 6) Claim(s) _____ is/are allowed.
- 7) Claim(s) 12-20 is/are rejected.
- 8) Claim(s) _____ is/are objected to.
- 9) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 10) The specification is objected to by the Examiner.
- 11) The drawing(s) filed on 16 December 2011 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) Notice of Informal Patent Application
- 6) Other: _____.

DETAILED ACTION

Election/Restrictions

This application contains claims directed to the following patentably distinct species:

- Species I: Plug having an insert with shearable threads (Figs. 1, 2A, 2B, and 3).
- Species II: Plug having shearable threads directly on the plug mandrel (Fig. 2C).

The species are independent or distinct because of their mutually exclusive features as related to the configuration of the shearable threads. In addition, these species are not obvious variants of each other based on the current record.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species, or a single grouping of patentably indistinct species, for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, no claims are generic.

There is a search and/or examination burden for the patentably distinct species as set forth above because at least the following reason(s) apply:

The mutually exclusive features of the two species require differing search scopes and different search queries.

Applicant is advised that the reply to this requirement to be complete must include (i) an election of a species or a grouping of patentably indistinct species to be examined even though the requirement may be traversed (37 CFR 1.143) and

Art Unit: 3676

(ii) identification of the claims encompassing the elected species or grouping of patentably indistinct species, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

The election may be made with or without traverse. To preserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the election of species requirement, the election shall be treated as an election without traverse. Traversal must be presented at the time of election in order to be considered timely. Failure to timely traverse the requirement will result in the loss of right to petition under 37 CFR 1.144. If claims are added after the election, applicant must indicate which of these claims are readable on the elected species or grouping of patentably indistinct species.

Should applicant traverse on the ground that the species, or groupings of patentably indistinct species from which election is required, are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing them to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the species unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other species.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which depend from or otherwise require all the limitations of an allowable generic claim as provided by 37 CFR 1.141.

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During a telephone conversation with Turner Moller on April 19, 2012 a provisional election was made with traverse to prosecute the invention of Species I, claims 12-20. Affirmation of this election must be made by applicant in replying to this Office action. **Claims 1-11 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.**

Drawings

The drawings are objected to because the cross-hatching for seal element 250 is not proper for "rubber" per MPEP 608.02 IX. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

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Double Patenting

A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

Claims 18-20 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 1, 2, and 4 of copending Application No.

13/329,096. This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422

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F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 12-17 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 9-20 of copending Application No. 13/329,096. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims in the instant application are narrower than those in the '096 application, since the instant claims are directed to the combination of a plug *and* an insert, and the claims in the '096 application are merely directed to the *subcombination* of an insert. However, the combination claims require the particulars of the subcombination claims, and the limitations related to the plug are simply the typical components of a bridge plug (i.e. a mandrel, slips, and a sealing element).

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This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 12-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bassinger (US 2,230,447) in view of Slup et al. (US 7,600,572, hereinafter *Slup*) and Cockrell (US 4,437,516).

With regard to claims 12 and 18, Bassinger discloses a plug (Fig. 9) for isolating a wellbore, comprising:

- a body (61, 15) having a first end and a second end;
- at least one malleable element (51) disposed about the body;
- at least one slip (50) disposed about the body; and

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an insert (60) screwed into the body proximate the second end of the body and adapted to receive a setting tool (81) that enters the body through the first end thereof, wherein:

the insert comprises one or more shearable threads (proximate numeral 82— note that all threads are “shearable” if exposed to enough axial force) disposed on an inner surface thereof;

the one or more shearable threads are adapted to engage the setting tool (81); and

the one or more shearable threads are adapted to deform to release the setting tool when exposed to a predetermined axial force (since any thread will shear if exposed to enough force).

Bassinger fails to disclose the mandrel body being formed of one or more composite materials, or the insert being formed of brass. Bassinger further fails to disclose a separate conical member. Furthermore, while examiner maintains that any threading is “shearable” if exposed to a large enough force, Bassinger fails to explicitly state that the threads are sheared when releasing the setting tool. Instead, Bassinger teaches that the setting tool is simply unthreaded from the insert.

Slup discloses a bridge plug having components of brass and/or composite materials (column 19, lines 41-67).

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified the insert and mandrel of Bassinger to

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be formed of brass and composite, respectively, since Slup teaches that such materials were well known in the field of drillable bridge plugs.

Bassinger discloses additional embodiments (Figs. 1-3 and 11) which comprise separate conical elements for expanding the slips (see numerals 47 and 90).

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified Bassinger such that the body was provided with separate conical elements, since Bassinger discloses several other embodiments with this feature, and it has been held that constructing a formerly integral structure in various elements involves only routine skill in the art. *Nerwin v. Erlichman*, 168 USPQ 177, 179.

Cockrell discloses a packer in which a setting mandrel can be released by either unthreading or by shearing (see last four lines of Abstract).

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have provided a shearable thread release mechanism, rather than having to unthread the setting tool, since Cockrell discloses the functional equivalence of the two release mechanisms (see Cockrell's Abstract), and therefore replacing one with the other would have been a matter of the simple substitution of equivalent release means.

With regard to claims 13 and 19, Bassinger discloses a larger diameter and a smaller diameter forming a shoulder therebetween (proximate numeral 62 in Fig. 9), the shoulder adapted to anchor the brass insert within the body.

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With regard to claim 14, Bassinger fails to disclose complimentary anti-rotation features on the first and second ends of the plug body.

Slup discloses mating profiles 432 and 543 on either end of a plug (see Fig. 22).

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified Bassinger such that the upper and lower ends were providing with complementary profiles, in order "rotationally lock [a bridge plug] with another abutting plug assembly" (Slup, column 25, lines 26-43).

With regard to claim 15, Bassinger discloses a ball (72) that restricts fluid flow in at least one direction through the body.

With regard to claim 16, Bassinger in combination with Cockrell teaches that the predetermined axial force to release the setting tool is less than an axial force required to break the body.

With regard to claims 17 and 20, Bassinger in combination with Slup discloses a brass body, and Bassinger's plug can be used as a frac plug (see Fig. 9).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT E. FULLER whose telephone number is (571)272-6300. The examiner can normally be reached on Monday thru Friday from 9:00 AM - 6:30 PM.

Art Unit: 3676

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shane Bomar can be reached on 571-272-7026. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/SHANE BOMAR/
Supervisory Patent Examiner, Art
Unit 3676

04/20/2012
/R.E.F./

Notice of References Cited	Application/Control No. 13/329,077	Applicant(s)/Patent Under Reexamination FRAZIER, W. LYNN	
	Examiner ROBERT E. FULLER	Art Unit 3676	Page 1 of 1

U.S. PATENT DOCUMENTS

*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A US-2,331,532	10-1943	ROSS BASSINGER	166/139
*	B US-2,230,447	02-1941	ROSS BASSINGER	166/128
*	C US-7,600,572	10-2009	Slup et al.	166/386
	D US-			
	E US-			
	F US-			
	G US-			
	H US-			
	I US-			
	J US-			
	K US-			
	L US-			
	M US-			


FOREIGN PATENT DOCUMENTS

*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N				
	O				
	P				
	Q				
	R				
	S				
	T				

NON-PATENT DOCUMENTS

*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)				
	U				
	V				
	W				
	X				

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

<i>Index of Claims</i> 	Application/Control No. 13329077	Applicant(s)/Patent Under Reexamination FRAZIER, W. LYNN
	Examiner ROBERT E FULLER	Art Unit 3676

✓	Rejected
=	Allowed

-	Cancelled
÷	Restricted

N	Non-Elected
I	Interference

A	Appeal
O	Objected

Claims renumbered in the same order as presented by applicant
 CPA
 T.D.
 R.1.47

CLAIM		DATE							
Final	Original	04/20/2012							
	1	N							
	2	N							
	3	N							
	4	N							
	5	N							
	6	N							
	7	N							
	8	N							
	9	N							
	10	N							
	11	N							
	12	✓							
	13	✓							
	14	✓							
	15	✓							
	16	✓							
	17	✓							
	18	✓							
	19	✓							
	20	✓							

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		13329077
	Filing Date		2011-12-16
	First Named Inventor	W. Lynn Frazier	
	Art Unit		3672
	Examiner Name		
	Attorney Docket Number		MOTI-018P1C1

U.S.PATENTS						Remove
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	RE17217		1929-02-19	Burch	
	2	2040889		1933-05-23	Whinnen	
	3	2223602		1938-10-04	Cox	
	4	2286126		1940-07-05	Thornhill	
	5	2376605		1945-05-22	Lawrence	
	6	2593520		1945-10-11	Baker, et al.	
	7	2616502		1948-03-15	Lenz	
	8	2640546		1953-06-02	Baker, et al.	

**INFORMATION DISCLOSURE
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Attorney Docket Number		MOTI-018P1C1

9	2713910		1955-07-26	Baker, et al.	
10	2714932		1955-08-09	A.E. Thompson	
11	2737242		1956-03-06	Baker	
12	2756827		1956-07-31	Farrar	
13	2830666		1958-04-15	Rhodes	
14	2833354		1958-05-06	Sailers	
15	3013612		1961-12-19	Angel	
16	3054453		1962-09-18	Bonner	
17	3062296		1962-11-06	Brown	
18	3082824		1963-03-26	Taylor, et al.	
19	3160209		1964-12-08	Bonner	

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	20	3163225		1964-12-29	Perkins	
	21	3273588		1966-09-20	Dollison	
	22	3282342		1966-11-01	Mott	
	23	3291218		1966-12-13	Lebourg	
	24	3298440		1967-01-17	Current	
	25	3308895		1967-03-14	Oxford, et al.	
	26	3356140		1967-12-05	Young	
	27	3393743		1968-07-23	Stanescu	
	28	3429375		1969-02-25	Craig	
	29	3517742		1970-06-30	Williams	
	30	3554280		1971-01-21	Tucker	

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	31	3687202		1972-08-29	Young, et al.	
	32	3818987		1974-06-25	Ellis	
	33	3851706		1974-12-03	Ellis	
	34	3860066		1975-01-14	Pearce, et al.	
	35	3926253		1975-12-16	Duke	
	36	4049015		1977-09-20	Brown	
	37	4134455		1979-01-16	Read	
	38	4185689		1980-01-29	Harris	
	39	4314608		1982-02-09	Richardson	
	40	4391547		1983-07-05	Jackson	
	41	4405017		1983-09-20	Allen, et al.	

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	42	4432418		1984-02-21	Mayland	
	43	4436151		1984-03-13	Callihan, et al.	
	44	4437516		1984-03-20	Cockrell	
	45	4457376		1984-07-03	Carmody, et al.	
	46	4493374		1985-01-15	Magee, Jr.	
	47	4532995		1985-08-06	Kaufman	
	48	4554981		1985-11-26	Davies	
	49	4566541		1986-01-28	Moussy, et al.	
	50	4585067		1986-04-29	Blizzard, et al.	
	51	4595052		1986-06-17	Kristiansen	
	52	4602654		1986-01-29	Stehling, et al.	

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53	4688641		1987-08-25	Knieriemen	
54	4708163		1987-11-24	Deaton	
55	4708202		1987-11-24	Sukup, et al.	
56	4776410		1988-10-11	Perkin, et al.	
57	4784226		1988-11-15	Wyatt	
58	4792000		1988-12-20	Perkin, et al.	
59	4830103		1989-05-16	Blackwell, et al.	
60	4848459		1989-07-18	Blackwell, et al.	
61	4893678		1990-01-16	Stokley, et al.	
62	5020590		1991-06-14	McLeod	
63	5095980		1992-03-17	Watson	

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	64	5113940		1992-05-19	Glaser	
	65	5117915		1992-06-02	Mueller, et al.	
	66	5154228		1992-10-13	Gambertoglio, et al.	
	67	5183068		1993-02-02	Prosser	
	68	5118182		1993-02-23	Echols, III, et al.	
	69	5207274		1993-05-04	Streich, et al.	
	70	5209310		1993-05-11	Clydesdale	
	71	5224540		1993-07-06	Streich, et al.	
	72	5230390		1993-07-27	Zastressek, et al.	
	73	5234052		1993-08-10	Coone, et al.	
	74	5253705		1993-10-19	Clary, et al.	

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	75	5311939		1994-05-17	Pringle, et al.	
	76	5316081		1994-05-31	Baski, et al.	
	77	5343954		1994-09-06	Bohlen, et al.	
	78	5419399		1995-05-30	Smith	
	79	5564502		1996-10-15	Crow, et al.	
	80	5593292		1997-01-14	Ivey, et al.	
	81	5803173		1998-09-08	Fraser, III, et al.	
	82	5810083		1998-09-22	Kilgore	
	83	6012519		2000-01-11	Allen, et al.	
	84	6098716		2000-08-08	Hromas, et al.	
	85	6142226		2000-11-07	Vick	

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	86	6152232		2000-11-28	Webb, et al.	
	87	6167963		2001-01-02	McMahan	
	88	6182752		2001-02-06	Smith, Jr., et al.	
	89	6199636		2001-03-13	Harrison	
	90	6283148		2001-09-04	Spears, et al.	
	91	6491108		2002-12-10	Slup	
	92	6629563		2003-10-07	Doane	
	93	6695049		2004-02-24	Ostocke, et al.	
	94	6708770		2004-03-23	Slup, et al.	
	95	6725935		2004-04-27	Szarka, et al.	
	96	6769491		2004-08-03	Zimmerman, et al.	

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	97	6796376		2004-09-28	Frazier	
	98	6799633		2004-10-05	McGregor	
	99	6834717		2004-12-28	Bland	
	100	6851489		2005-02-08	Hinds	
	101	6902006		2005-06-07	Myerley, et al.	
	102	6918439		2005-07-19	Dallas	
	103	6938696		2005-09-06	Dallas	
	104	7021389		2006-04-04	Bishop, et al.	
	105	7040410		2006-05-09	McGuire, et al.	
	106	7055632		2006-06-06	Dallas	
	107	7069997		2006-07-04	Coyes, et al.	

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	108	7107875		2006-09-19	Haugen, et al.	
	109	7128091		2006-10-31	Istre, Jr.	
	110	7281584		2007-10-16	McGarian, et al.	
	111	7325617		2008-02-05	Murray	
	112	7337847		2008-03-04	McGarian, et al.	
	113	7350582		2008-04-01	McKeachnie, et al.	
	114	7373973		2008-05-20	Smith, et al	
	115	7527104		2009-05-05	Branch, et al.	
	116	7552779		2009-06-30	Murray	
	117	7604058		2009-10-20	McGuire	
	118	7637326		2009-12-29	Bolding, et al.	

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	119	7644767		2010-01-12	Kalb, et al.	
	120	7644774		2010-01-12	Branch, et al.	
	121	7673677		2010-03-09	King, et al.	
	122	7740079		2010-06-22	Clayton, et al.	
	123	7775286		2010-08-17	Duphorne	
	124	7775291		2010-08-17	Jacob	
	125	7784550		2010-08-31	Nutley, et al.	
	126	7798236		2010-09-21	McKeachie, et al.	
	127	7810558		2010-10-12	Shkurti, et al.	
	128	7866396		2011-01-11	Rytlewski	
	129	7878242		2011-02-01	Gray	

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130	7886830		2011-02-15	Bolding, et al.	
131	7909108		2011-03-22	Swor, et al.	
132	7909109		2011-03-22	Angman, et al.	
133	7918278		2011-04-05	Barbee	
134	7921923		2011-04-12	McGuire	
135	7921925		2011-04-12	Maguire, et al.	
136	7926571		2011-04-19	Hofman	
137	8074718		2011-12-13	Roberts	
138	8104539		2012-01-31	Stanojcic, et al.	
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Attorney Docket Number	MOTI-018P1C1

Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear
	1	20030024706		2003-02-06	Allamon	
	2	20030188860		2003-10-09	Zimmerman, et al.	
	3	20070051521		2007-03-08	Fike, et al.	
	4	20070107908		2007-05-17	Vaiday, et al.	
	5	20080110635		2008-05-15	Loretz, et al.	
	6	20090114401		2009-05-07	Purkis	
	7	20090211749		2009-08-27	Nguyen, et al.	
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	9	20100155050		2010-06-24	Frazier	
	10	20100252252		2010-10-07	Harris, et al.	

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11	20100263876		2010-10-21	Frazier	
12	20100276159		2010-11-04	Mailand, et al.	
13	20100288503		2010-11-18	Cuiper, et al.	
14	20110036564		2011-02-17	Williamson	
15	20110061856		2011-03-17	Kellner, et al.	
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	1	914030	GB		1962-12-28	Kigass Limited		<input type="checkbox"/>
	2	2010127457	WO		2010-11-11	Packers Plus Energy Services Inc.		<input type="checkbox"/>

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	1	"Teledyne Merla Oil Tools-Products-Services," Teledyne Merla, 08/1990 (40 Pages)	<input type="checkbox"/>
	2	"78/79 Catalog: Packers-Plugs-Completions Tools," Pengo Industries, Inc., 1978-1979 (12 pages)	<input type="checkbox"/>
	3	"MAP Oil Tools Inc. Catalog," MAP Oil Tools, 04/1999 (46 pages)	<input type="checkbox"/>
	4	"Lovejoy-where the world turns for couplings," Lovejoy, Inc., 12/2000 (30 pages)	<input type="checkbox"/>
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	6	"1975-1976 Packer Catalog," Gearhart-Owen Industries Inc., 1975-1976 (52 Pages)	<input type="checkbox"/>
	7	"Formation Damage Control Utilizing Composite-Bridge Plug Technology for Monobore, Multizone Stimulation Operations," Gary Garfield, SPE, 05/15/2001 (8 pages)	<input type="checkbox"/>
	8	"Composite Bridge Plug Technique for Multizone Commingled Gas Wells," Gary Garfield, SPE, 03/24/2001 (6 pages)	<input type="checkbox"/>
	9	"Composite Research: Composite bridge plugs used in multi-zone wells to avoid costly kill-weight fluids," Gary Garfield, SPE, 03/24/2001 (4 pages)	<input type="checkbox"/>
	10	"It's About Time-Quick Drill Composite Bridge Plug," Baker Oil Tools, 06/2002 (2 pages)	<input type="checkbox"/>

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11	"Baker Hughes-Baker Oil Tools-Workover Systems-QUIK Drill Composite Bridge Plug," Baker Oil Tools, 12/2000 (3 pages)	<input type="checkbox"/>
12	"Baker Hughes 100 Years of Service," Baker Hughes In Depth, Special Centennial Issue, Publication COR-07-13127, Volume 13, Number 2, Baker Hughes Incorporated, 07/2007 (92 pages)	<input type="checkbox"/>
13	"Halliburton Services, Sales & Service Catalog No. 43," Halliburton Co. 1985 (202 pages)	<input type="checkbox"/>
14	"Alpha Oil Tools Catalog," Alpha Oil Tools, 1997 (136 pages)	<input type="checkbox"/>


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	Examiner ROBERT E FULLER	Art Unit 3676

SEARCHED			
Class	Subclass	Date	Examiner
166	123, 124, 135, 138	04/19/2012	REF

SEARCH NOTES		
Search Notes	Date	Examiner
Inventor name search.	04/19/2012	REF
Backward/forward citations.	04/19/2012	REF
Text search; see EAST search history.	04/19/2012	REF

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L3	60	(US-20100263876-\$ or US-20110079383-\$ or US-20080202764-\$ or US-20100276159-\$).did. or (US-5343954-\$ or US-7591318-\$ or US-7373973-\$ or US-6116339-\$ or US-4726425-\$ or US-4660637-\$ or US-4646842-\$ or US-4153109-\$ or US-4690220-\$ or US-4898245-\$ or US-4437516-\$ or US-3924678-\$ or US-3270819-\$ or US-3061013-\$ or US-3054450-\$ or US-2331532-\$ or US-2230447-\$ or US-2714932-\$ or US-3602305-\$ or US-5224540-\$ or US-4440223-\$ or US-6220349-\$ or US-4059150-\$ or US-4044826-\$ or US-7600572-\$ or US-6581681-\$).did. or (US-5819846-\$ or US-4708202-\$ or US-3082824-\$ or US-7740079-\$ or US-4805699-\$ or US-4648446-\$ or US-4572289-\$ or US-4432418-\$ or US-4018274-\$ or US-3422897-\$ or US-3163225-\$ or US-3055430-\$ or US-3631925-\$ or US-3024845-\$ or US-2737242-\$ or US-2711795-\$ or US-6491116-\$ or US-7168494-\$ or US-7017672-\$ or US-6220348-\$ or US-4583593-\$ or US-RE17217-\$ or US-7350582-\$ or US-4532995-\$ or US-3062296-\$ or US-2593520-\$).did. or (US-3344861-\$ or US-2551240-\$ or US-3160209-\$ or US-2230447-\$).did.	US-PGPUB; USPAT; USOCR	OR	ON	2012/04/20 16:49
L4	5	3 and brass and composite	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2012/04/20 16:50
L5	23	(mule adj shoe) same (complement\$3 complementary end?to?end series)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2012/04/20 17:17
L6	1	anti?rotation same (packer plug) same (end?to?end)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2012/04/20 17:22
L7	842	(packer plug) with (end?to?end)	US-PGPUB; USPAT;	OR	ON	2012/04/20 17:22

			USOCR; EPO; JPO; DERWENT			
L8	68062	"166"/\$.ccls.	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2012/04/20 17:22
L9	29	7 and 8	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2012/04/20 17:22
S1	11	(("4437516") or ("5224540") or ("2714932")).PN.	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2011/08/23 09:17
S2	465	(166/135).CCLS.	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2011/08/23 10:57
S3	466	(166/138).CCLS.	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2011/08/23 11:04
S4	429	(plug packer) same (drillable adj material)	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2011/08/23 11:14
S5	77	(plug packer) same (drillable adj material) same composite	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2011/08/23 11:14
S6	6	(plug packer) same ((dropp\$3 drop near3 ball) same (disappear\$3 degradable degrad\$3)	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2011/08/23 11:16
S7	19	(plug packer) same (ball near3 (seat shoulder)) same (disappear\$3 degradable degrad\$3)	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2011/08/23 11:17
S8	14	(bridge adj plug) and (ball near3 (seat shoulder)) same (disappear\$3 degradable degrad\$3)	US- PGPUB; USPAT;	OR	ON	2011/08/23 11:18

			USOCR; EPO; JPO; DERWENT			
S9	45	(bridge adj plug) and (ball with (disappear\$3 degradable degrad\$3))	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2011/08/23 11:18
S10	30	(bridge adj plug) and (ball near3 (disappear\$3 degradable degrad\$3))	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2011/08/23 11:19
S11	18	(plug packer) same (ball near3 (disappear\$3 degradable degrad\$3))	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2011/08/23 11:19
S12	4	(packer) same (ball near3 (disappear\$3 degradable degrad\$3))	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2011/08/23 11:21
S13	4	(packer) same (ball near3 (disappear\$3 degradable degrad\$3 dissolv\$3 dissolvable))	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2011/08/23 11:22
S14	29	(packer plug) and ((drill\$3 adj out) same (anti?rotat\$3))	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2011/08/23 11:23
S15	208	(frac adj plug)	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2011/08/23 11:24
S16	106	(frac adj plug) and ball	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2011/08/23 11:24
S17	5	(frac adj plug).ti. and ball	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2011/08/23 11:25
S18	6	(frac adj (plug packer)).ti. and ball	US- PGPUB; USPAT;	OR	ON	2011/08/23 11:25

			USOCR; EPO; JPO; DERWENT			
S19	25	(frac adj (plug packer)).ti.	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2011/08/23 11:25
S20	1636	(packer plug) and (slip wedge cam) and flapper	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2011/08/23 13:08
S21	240	((packer plug) near set) and (slip) and flapper	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2011/08/23 13:09
S22	197	(packer near set) and (slip wedge) and flapper	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2011/08/23 13:11
S23	25	(packer near set) same (slip wedge) same flapper	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2011/08/23 13:12
S24	64	(packer plug) and ((setting adj tool same (thread with (shear\$3 shearable frangible)))	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2011/08/23 13:24
S25	7	(packer plug) and ((setting adj (tool rod mandrel)) same (thread near2 (shear\$3 shearable frangible)))	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2011/08/23 13:28
S26	12	(packer plug) and ((setting adj (tool rod mandrel)) same (thread near3 (shear\$3 shearable frangible)))	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2011/08/23 13:29
S27	3	(packer plug) and ((setting adj (tool rod mandrel)) with (thread near3 (shear\$3 shearable frangible)))	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2011/08/23 13:30
S28	12	(packer plug) and ((setting adj (tool rod mandrel)) same (thread near3 (shear\$3 shearable frangible)))	US- PGPUB; USPAT;	OR	ON	2011/08/23 13:30

			USOCR; EPO; JPO; DERWENT			
S29	5	("3602305").PN.	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2011/08/23 13:31
S30	169	(166/124).CCLS.	US- PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2011/10/11 15:21
S31	18	("3633670" "4060131" "4153109" "4305465" "4363358" "4391326" "4513822" "4646842" "4655290" "4660637" "4726425" "4862957" "5074361" "5207274").PN. OR ("5343954").URPN.	US- PGPUB; USPAT; USOCR	OR	ON	2011/10/11 15:23
S32	29	("3223170" "3519074" "3631927" "4176715" "4248300" "4281711" "4562889" "4572290").PN. OR ("4690220").URPN.	US- PGPUB; USPAT; USOCR	OR	ON	2011/10/11 15:52
S33	21	("3189095" "3288219" "3659647" "3976133" "4216827").PN. OR ("4437516").URPN.	US- PGPUB; USPAT; USOCR	OR	ON	2011/10/11 16:27
S34	8	("3061013").URPN.	USPAT	OR	ON	2011/10/11 17:11
S35	35	("20050021623" "20060173729" "6662194" "7725405" "4405017" "4848459" "20060178896" "20080117928" "20090307651" "20110078717" "20100101807" "4437516" "20060265266" "20080065633" "20100030743" "7873533" "4314608" "5117915" "20020046074" "20080086366" "20080201156" "20080275717" "6606601" "7043443" "20030144862" "20060212338" "7798236" "4432418" "7325617" "5224540" "2714932" "20080103873" "20090193083" "7593946" "20090114401").PN.	US- PGPUB; USPAT	OR	ON	2011/10/11 18:10
S36	4	("2714932").URPN.	USPAT	OR	ON	2011/10/11 18:17
S37	5	("3602305").PN.	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2011/10/12 11:28
S38	1387	shear\$3 near2 thread	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2011/10/12 11:34

S39	54943	packer	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2011/10/12 11:34
S40	554323	slip	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2011/10/12 11:34
S41	35	S38 and S39 and S40	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2011/10/12 11:34
S42	11	(("4437516") or ("5224540") or ("2714932")).PN.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2011/10/12 11:39
S43	26	(("1147108" "2427330" "2715441" "2756827" "3211233" "4059150" "4311196" "4359090").PN. OR ("4440223").URPN.	US-PGPUB; USPAT; USOCR	OR	ON	2011/10/12 11:53
S44	75	(("1648377" "2043225" "2084611" "2155129" "2205119" "2331185" "2589506" "2778430" "2806536" "3055424" "3529667" "3710862" "3910348" "4067358" "4151875" "4300631" "4393929" "4440223" "4520870" "4708202" "4784226" "4834184" "4858687" "4977958" "5086839" "5131468" "5224540" "5271468" "5390737").PN. OR ("6220349").URPN.	US-PGPUB; USPAT; USOCR	OR	ON	2011/10/12 11:53
S45	29	(("3011558" "3024843" "3180419" "3211227" "3623551" "3722588" "3746093").PN. OR ("4059150").URPN.	US-PGPUB; USPAT; USOCR	OR	ON	2011/10/12 11:56
S46	581	composite and (bridge adj plug)	US-PGPUB; USPAT; USOCR	OR	ON	2011/10/12 12:10
S47	848490	ball	US-PGPUB; USPAT; USOCR	OR	ON	2011/10/12 12:10
S48	335	S46 and S47	US-PGPUB; USPAT; USOCR	OR	ON	2011/10/12 12:10
S49	2	S38 and S48	US-PGPUB; USPAT; USOCR	OR	ON	2011/10/12 12:10
S50	7038	setting adj (tool mandrel)	US-	OR	ON	2011/10/12

			PGPUB; USPAT; USOCR			12:11
S51	155	S48 and S50	US- PGPUB; USPAT; USOCR	OR	ON	2011/10/12 12:11
S52	57	("2751017" "3054450" "3298440" "3507327" "3623551" "3678998" "4146093" "4153109" "4289200" "4345649" "4573537" "4708202" "4784226" "4898239" "5044441" "5332038" "5636689" "5678635" "5775429" "5810082" "5819846").PN. OR ("6581681").URPN.	US- PGPUB; USPAT; USOCR	OR	ON	2011/10/12 13:45
S53	51	("2906346" "3082824" "3097697" "3142338" "3198254" "3298437" "3306362" "3344861" "3422897" "3422899" "3506067" "3602305" "3687196" "4573537" "4708202").PN. OR ("5819846").URPN.	US- PGPUB; USPAT; USOCR	OR	ON	2011/10/12 13:47
S54	73	("2205119" "3433301" "3695352" "3861465" "4151875" "4153109" "4296806" "4441552").PN. OR ("4708202").URPN.	US- PGPUB; USPAT; USOCR	OR	ON	2011/10/12 13:49
S55	1079	((166/123) or (166/124) or (166/135) or (166/138)).CCLS.	US- PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2011/10/12 14:37
S56	169	(166/124).CCLS.	US- PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2011/10/12 14:38
S57	910	S55 not S56	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2011/10/12 14:38
S58	182	(166/193).CCLS.	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2011/10/12 14:53
S59	2393	((166/386) or (166/387)).CCLS.	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2011/10/12 15:31
S60	2303	((166/386) or (166/387)).CCLS.	US- PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2011/10/12 15:32

S61	28	("3244233" "3507327" "3584684" "3722588" "3749166" "4044826" "4078606" "4427063" "4518037" "4526229" "4545431").PN. OR ("4648446").URPN.	US-PGPUB; USPAT; USOCR	OR	ON	2011/10/12 16:22
S62	23	("3279542" "3357489" "3420306" "3467184").PN. OR ("4018274").URPN.	US-PGPUB; USPAT; USOCR	OR	ON	2011/10/12 17:15
S63	3	("3422897").URPN.	USPAT	OR	ON	2011/10/12 17:59
S64	6	("3160209").URPN.	USPAT	OR	ON	2011/10/13 10:34
S66	60765	setting adj (tool mandrel device rod)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2011/10/13 10:52
S67	549457	shear\$3	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2011/10/13 10:52
S68	50665	(plug packer) and (slip)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2011/10/13 10:53
S69	1301036	ball	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2011/10/13 10:53
S70	473	S66 and S67 and S68 and S69	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2011/10/13 10:53
S71	81	S70 and drillable	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2011/10/13 10:53
S72	21	("3364997" "3385366" "3416608").PN. OR ("3631925").URPN.	US-PGPUB; USPAT; USOCR	OR	ON	2011/10/13 10:57
S73	46	(US-20100263876-\$ or US-20110079383-\$).did. or (US-5343954-\$ or US-7591318-\$ or US-7373973-\$ or US-6116339-\$ or US-4726425-\$ or US-4660637-\$ or US-4646842-\$ or US-4153109-\$ or US-4690220-\$ or US-4898245-\$ or US-4437516-\$ or	US-PGPUB; USPAT; USOCR	OR	ON	2011/10/13 11:56

		US-3924678-\$ or US-3270819-\$ or US-3061013-\$ or US-3054450-\$ or US-2331532-\$ or US-2230447-\$ or US-2714932-\$ or US-3602305-\$ or US-5224540-\$ or US-4440223-\$ or US-6220349-\$ or US-4059150-\$ or US-4044826-\$ or US-7600572-\$ or US-6581681-\$).did. or (US-5819846-\$ or US-4708202-\$ or US-3082824-\$ or US-7740079-\$ or US-4805699-\$ or US-4648446-\$ or US-4572289-\$ or US-4432418-\$ or US-4018274-\$ or US-3422897-\$ or US-3163225-\$ or US-3160209-\$ or US-3055430-\$ or US-3631925-\$ or US-3024845-\$ or US-2737242-\$).did. or (US-3344861-\$ or US-2551240-\$).did.				
S74	1388	shear\$3 near2 thread	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2011/10/13 11:56
S75	4	S73 and S74	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2011/10/13 11:56
S76	26	("1147108" "2427330" "2715441" "2756827" "3211233" "4059150" "4311196" "4359090").PN. OR ("4440223").URPN.	US- PGPUB; USPAT; USOCR	OR	ON	2011/10/13 11:57
S77	420	(166/123).CCLS.	US- PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2011/10/13 13:46
S79	169	(166/124).CCLS.	US- PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2011/10/13 13:47
S80	1079	((166/123) or (166/124) or (166/135) or (166/138)).CCLS.	US- PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2011/10/13 13:47
S81	169	(166/124).CCLS.	US- PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2011/10/13 13:47
S82	910	S80 not S81	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2011/10/13 13:47
S83	182	(166/193).CCLS.	US- PGPUB;	OR	OFF	2011/10/13 13:47

			USPAT; USOCR; EPO; JPO; DERWENT			
S84	0	S77 not (S79 S82 S83)	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2011/10/13 13:47
S85	5	("3160209").PN.	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2011/10/17 14:45
S91	286	(166/124).CCLS.	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2011/10/24 16:12
S92	271	(frac\$3 fracturing) adj plug	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2011/11/28 12:51
S93	13	"2,714,932"	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2011/11/28 12:53
S94	4	("2714932").URPN.	USPAT	OR	ON	2011/11/28 12:55
S95	31	("4583593" "4664188" "4834184" "5224540" "5271468" "5390737" "5526884" "5540279" "5701959" "5839515" "5984007" "6220360" "6325148").PN. OR ("6491116").URPN.	US- PGPUB; USPAT; USOCR	OR	ON	2011/11/28 12:57
S96	2	("20080202764").PN.	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2011/11/28 12:58
S97	4	("2714932").URPN.	USPAT	OR	ON	2011/11/28 13:00
S101	19595	threaded adj plug	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2011/11/28 13:01
S102	55349	packer	US- PGPUB; USPAT; USOCR;	OR	ON	2011/11/28 13:01

			EPO; JPO; DERWENT			
S103	310	S101 and S102	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2011/11/28 13:01
S104	3	("3270819").URPN.	USPAT	OR	ON	2011/11/28 13:28
S105	53	("2906346" "3082824" "3097697" "3142338" "3198254" "3298437" "3306362" "3344861" "3422897" "3422899" "3506067" "3602305" "3687196" "4573537" "4708202").PN. OR ("5819846").URPN.	US- PGPUB; USPAT; USOCR	OR	ON	2012/04/19 14:36
S106	3	("3422897").URPN.	USPAT	OR	ON	2012/04/19 14:49
S107	373	((shear\$3 shearable) near3 (thread\$3 threadably)) same (plug packer)	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2012/04/19 15:08
S108	68062	"166"/\$.ccls.	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2012/04/19 15:08
S109	212	S107 and S108	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2012/04/19 15:08
S110	0	(plug same ((shear\$3 shearable) near thread)) same (left?hand\$3)	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2012/04/19 15:51
S111	0	(plug and ((shear\$3 shearable) near thread)) same (left?hand\$3)	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2012/04/19 15:56
S112	556	plug and ((thread\$3 with (set setting)) same left?hand\$3)	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2012/04/19 15:59
S113	126	S112 and S108	US- PGPUB; USPAT; USOCR; EPO; JPO;	OR	ON	2012/04/19 15:59

S114	287	(166/124).CCLS.	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2012/04/19 16:07
S115	72	S114 and (left?hand\$3)	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2012/04/19 16:07
S116	64	S114 and (left?hand\$3 near2 thread\$3)	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2012/04/19 16:09
S117	4	((("20100276159") or ("0017217")).PN.	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2012/04/19 17:16
S118	4	((("20100276159") or ("re17217")).PN.	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2012/04/19 17:16
S119	155	(("20030024706" "20030188860" "20070051521" "20070107908" "20080110635" "20090114401" "20090211749" "20100132960" "20100155050" "20100252252" "20100263876" "20100276159" "20100288503" "20110036564" "20110061856" "20110103915" "2040889" "2223602" "2286126" "2376605" "2593520" "2616502" "2640546" "2713910" "2714932" "2737242" "2756827" "2830666" "2833354" "3013612" "3054453" "3062296" "3082824" "3160209" "3163225" "3273588" "3282342" "3291218" "3298440" "3308895" "3356140" "3393743" "3429375" "3517742" "3554280" "3687202" "3818987" "3851706" "3860066" "3926253" "4049015" "4134455" "4185689" "4314608" "4391547" "4405017" "4432418" "4436151" "4437516" "4457376" "4493374" "4532995" "4554981" "4566541" "4585067" "4595052" "4602654" "4688641" "4708163" "4708202" "4776410" "4784226" "4792000" "4830103" "4848459" "4893678" "5020590" "5095980" "5113940" "5117915" "5118182" "5154228" "5183068" "5207274" "5209310"	US- PGPUB; USPAT	OR	ON	2012/04/19 17:17

		"5224540" "5230390" "5234052" "5253705" "5311939" "5316081" "5343954" "5419399" "5564502" "5593292" "5803173" "5810083" "6012519" "6098716" "6142226" "6152232" "6167963" "6182752" "6199636" "6283148" "6491108" "6629563" "6695049" "6708770" "6725935" "6769491" "6796376" "6799633" "6834717" "6851489" "6902006" "6918439" "6938696" "7021389" "7040410" "7055632" "7069997" "7107875" "7128091" "7281584" "7325617" "7337847" "7350582" "7373973" "7527104" "7552779" "7604058" "7637326" "7644767" "7644774" "7673677" "7740079" "7775286" "7775291" "7784550" "7798236" "7810558" "7866396" "7878242" "7886830" "7909108" "7909109" "7918278" "7921923" "7921925" "7926571" "8074718" "8104539" "8113276" "RE17217").FN.				
S120	287	(166/124).CCLS.	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2012/04/19 19:15
S121	5	S120 and ((shear\$3 shearable) near2 thread\$3)	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2012/04/19 19:15
S122	60	(US-20100263876-\$ or US- 20110079383-\$ or US-20080202764-\$ or US-20100276159-\$).did. or (US- 5343954-\$ or US-7591318-\$ or US- 7373973-\$ or US-6116339-\$ or US- 4726425-\$ or US-4660637-\$ or US- 4646842-\$ or US-4153109-\$ or US- 4690220-\$ or US-4898245-\$ or US- 4437516-\$ or US-3924678-\$ or US- 3270819-\$ or US-3061013-\$ or US- 3054450-\$ or US-2331532-\$ or US- 2230447-\$ or US-2714932-\$ or US- 3602305-\$ or US-5224540-\$ or US- 4440223-\$ or US-6220349-\$ or US- 4059150-\$ or US-4044826-\$ or US- 7600572-\$ or US-6581681-\$).did. or (US-5819846-\$ or US-4708202-\$ or US-3082824-\$ or US-7740079-\$ or US-4805699-\$ or US-4648446-\$ or US-4572289-\$ or US-4432418-\$ or US-4018274-\$ or US-3422897-\$ or US-3163225-\$ or US-3055430-\$ or US-3631925-\$ or US-3024845-\$ or US-2737242-\$ or US-2711795-\$ or US-6491116-\$ or US-7168494-\$ or US-7017672-\$ or US-6220348-\$ or US-4583593-\$ or US-RE17217-\$ or	US- PGPUB; USPAT; USOCR	OR	ON	2012/04/19 19:19

		US-7350582-\$ or US-4532995-\$ or US-3062296-\$ or US-2593520-\$).did. or (US-3344861-\$ or US-2551240-\$ or US-3160209-\$ or US-2230447-\$).did.				
S123	6	S122 and brass and iron	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2012/04/19 19:19
S124	2	("20050253383").PN.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2012/04/20 10:54
S125	1371	((166/123) or (166/124) or (166/135) or (166/138) or (166/378)).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2012/04/20 14:11

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S87	0	(plug and insert and (passage passageway) and (threaded threadedly threadable) and (shear\$3 shearable) and (setting adj tool)).clm.	US-PGPUB	OR	ON	2011/10/24 13:50
S88	0	(plug and insert and (passage passageway) and (thread threadedly threadedly threadable) and (shear\$3 shearable) and (setting adj tool)).clm.	US-PGPUB	OR	ON	2011/10/24 13:51
S89	1	(plug and insert and (passage passageway) and (thread threadedly threadedly threadable) and (shear\$3 shearable)).clm.	US-PGPUB	OR	ON	2011/10/24 13:51
S90	6	(plug and insert and (passage passageway) and (shear\$3 shearable)).clm.	US-PGPUB	OR	ON	2011/10/24 13:51

4/ 20/ 2012 5:45:13 PM

C:\Users\rfuller1\Documents\EAST\Workspaces\13_194,871_13_329,077_13_392,096 - Bottom Set.wsp

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**Courtesy Reminder for
Application Serial No: 13/329,077**

Attorney Docket No: MOTI-018P1C1

Customer Number:

Date of Electronic Notification: 04/09/2012

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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/329,077	12/16/2011	W. Lynn Frazier	MOTI-018P1C1

CONFIRMATION NO. 2094

POA ACCEPTANCE LETTER



G. Turner Moller
Suite 720
711 N. Carancahua
Corpus Christi, TX 78401

Date Mailed: 04/10/2012

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 03/29/2012.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

/byemanc/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101



UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/329,077	12/16/2011	W. Lynn Frazier	MOTI-018P1C1

CONFIRMATION NO. 2094

MISCELLANEOUS NOTICE

60935
Edmonds & Nolte, PC
2625 Bay Area Boulevard, Suite 530
Houston, TX 77058



Date Mailed: 04/09/2012

A communication which cannot be delivered in electronic form has been mailed to the applicant.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
 United States Patent and Trademark Office
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 Alexandria, Virginia 22313-1450
 www.uspto.gov

APPLICATION NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/329,077	12/16/2011	W. Lynn Frazier	MOTI-018PIC1

CONFIRMATION NO. 2094

60935
 Edmonds & Nolte, PC
 2625 Bay Area Boulevard, Suite 530
 Houston, TX 77058



Cc: G. Turner Moller
 Suite 720
 711 N. Carancahua
 Corpus Christi, TX 78401

Date Mailed: 04/06/2012

DENIAL OF REQUEST FOR POWER OF ATTORNEY

The request for Power of Attorney filed **03/29/2012** is acknowledged. However, the request cannot be granted at this time for the reason stated below.

- The Power of Attorney you provided did not comply with the new Power of Attorney rules that became effective on June 25, 2004. See 37 CFR 1.32.
- The revocation is not signed by the applicant, the assignee of the entire interest, or one particular principal attorney having the authority to revoke.
- The Power of Attorney is from an assignee and the Certificate required by 37 CFR 3.73(b) has not been received.
- The person signing for the assignee has omitted their empowerment to sign on behalf of the assignee.
- The inventor(s) is without authority to appoint attorneys since the assignee has intervened as provided by 37 CFR 3.71.
- The signature(s) of _____, a co-inventor in this application, has been omitted. The Power of Attorney will be entered upon receipt of confirmation signed by said co-inventor(s).
- The person(s) appointed in the Power of Attorney is not registered to practice before the U.S. Patent and Trademark Office.

Questions relating to this Notice should be directed to the Application Assistance Unit.

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

POWER OF ATTORNEY OR REVOCATION OF POWER OF ATTORNEY WITH A NEW POWER OF ATTORNEY AND CHANGE OF CORRESPONDENCE ADDRESS	Application Number	13/329,077
	Filing Date	December 16, 2011
	First Named Inventor	W. Lynn Frazier
	Title	Bottom Set Downhole Plug
	Art Unit	3672
	Examiner Name	Robert Edward Fuller
	Attorney Docket Number	

I hereby revoke all previous powers of attorney given in the above-identified application.

A Power of Attorney is submitted herewith.

OR

I hereby appoint Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s) to prosecute the application identified above, and to transact all business in the United States Patent and Trademark Office connected therewith:

OR

I hereby appoint Practitioner(s) named below as my/our attorney(s) or agent(s) to prosecute the application identified above, and to transact all business in the United States Patent and Trademark Office connected therewith:

Practitioner(s) Name	Registration Number
G. Turner Moller	22978

Please recognize or change the correspondence address for the above-identified application to:

The address associated with the above-mentioned Customer Number.

OR

The address associated with Customer Number:

OR

<input checked="" type="checkbox"/> Firm or Individual Name	G. Turner Moller		
Address	711 N. Carancahua, Suite 720		
City	Corpus Christi	State	TX
Country	US	Zip	78401
Telephone	361-883-7257	Email	


I am the:

Applicant/Inventor.

OR

Assignee of record of the entire interest. See 37 CFR 3.71.
Statement under 37 CFR 3.73(b) (Form PTO/SB/96) submitted herewith or filed on _____

SIGNATURE of Applicant or Assignee of Record

Signature		Date	March 29, 2012
Name	W. Lynn Frazier	Telephone	361-299-6333
Title and Company	President and CEO, Magnum Oil Tools International, L.L.C.		

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.

*Total of 2 forms are submitted.

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(b)

Applicant/Patent Owner: Magnum Oil Tools International, L.L.C.

Application No./Patent No.: 13/329,077 Filed/Issue Date: December 16, 2011

Titled: Bottom Set Downhole Plug

Magnum Oil Tools International, L.L.C., a Texas Limited Liability Company
(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that it is:

- 1. the assignee of the entire right, title, and interest in;
- 2. an assignee of less than the entire right, title, and interest in (The extent (by percentage) of its ownership interest is _____ %); or
- 3. the assignee of an undivided interest in the entirety of (a complete assignment from one of the joint inventors was made)

the patent application/patent identified above, by virtue of either:

A. An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy therefore is attached.

OR

B. A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

2. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

3. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

Additional documents in the chain of title are listed on a supplemental sheet(s).

As required by 37 CFR 3.73(b)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

W. Lynn Frazier
Signature

March 29, 2012
Date

W. Lynn Frazier
Printed or Typed Name

President and CEO
Title

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1480, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9198 and select option 2.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
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9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt

EFS ID:	12428421
Application Number:	13329077
International Application Number:	
Confirmation Number:	2094
Title of Invention:	BOTTOM SET DOWNHOLE PLUG
First Named Inventor/Applicant Name:	W. Lynn Frazier
Customer Number:	60935
Filer:	Jared E. Cmaidalka/Denise Barberis
Filer Authorized By:	Jared E. Cmaidalka
Attorney Docket Number:	MOTI-018P1C1
Receipt Date:	29-MAR-2012
Filing Date:	16-DEC-2011
Time Stamp:	17:58:29
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
------------------------	----

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	MOTI_018P1C1_Transmittal_P OA_and_373b.pdf	263328 <small>e5fe8dbf4b069be92ab876605c0f25268d8544f5</small>	no	2

Warnings:

Information:

2		MOTI_018P1C1_POA_37cfr373 b.pdf	294485 e3109cf2aeb6dd6e02a62d3b57658512fff05299	yes	4
Multipart Description/PDF files in .zip description					
Document Description		Start	End		
Power of Attorney		1	2		
Assignee showing of ownership per 37 CFR 3.73(b).		3	4		
Warnings:					
Information:					
Total Files Size (in bytes):			557813		
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

TRANSMITTAL FORM <small>(to be used for all correspondence after initial filing)</small>	Application Number	13/329,077	
	Filing Date	December 16, 2011	
	First Named Inventor	W. Lynn Frazier	
	Art Unit	3672	
	Examiner Name	Robert Edward Fuller	
Total Number of Pages in This Submission	6	Attorney Docket Number	

ENCLOSURES (Check all that apply)				
<input type="checkbox"/> Fee Transmittal Form <input type="checkbox"/> Fee Attached <input type="checkbox"/> Amendment/Reply <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input type="checkbox"/> Information Disclosure Statement <input type="checkbox"/> Certified Copy of Priority Document(s) <input type="checkbox"/> Reply to Missing Parts/ Incomplete Application <input type="checkbox"/> Reply to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert to a Provisional Application <input checked="" type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s) _____ <input type="checkbox"/> Landscape Table on CD	<input type="checkbox"/> After Allowance Communication to TC <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input checked="" type="checkbox"/> Other Enclosure(s) (please identify below): Statement Under 37 CFR 3.73(b)		
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 100px;">Remarks</td> <td></td> </tr> </table>			Remarks	
Remarks				

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT			
Firm Name	Edmonds & Nolte, P.C.		
Signature	/Robb D. Edmonds/		
Printed name	Robb D. Edmonds		
Date	March 29, 2012	Reg. No.	46,681

CERTIFICATE OF TRANSMISSION/MAILING			
I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below:			
Signature	/Denise A. Barberis/		
Typed or printed name	Denise A. Barberis	Date	03/29/2012 via EFS

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
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6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		13329077
	Filing Date		2011-12-16
	First Named Inventor	W. Lynn Frazier	
	Art Unit		3672
	Examiner Name		
	Attorney Docket Number		MOTI-018P1C1

U.S.PATENTS						Remove
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	RE17217		1929-02-19	Burch	
	2	2040889		1933-05-23	Whinnen	
	3	2223602		1938-10-04	Cox	
	4	2286126		1940-07-05	Thornhill	
	5	2376605		1945-05-22	Lawrence	
	6	2593520		1945-10-11	Baker, et al.	
	7	2616502		1948-03-15	Lenz	
	8	2640546		1953-06-02	Baker, et al.	

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number		13329077
Filing Date		2011-12-16
First Named Inventor	W. Lynn Frazier	
Art Unit		3672
Examiner Name		
Attorney Docket Number		MOTI-018P1C1

	9	2713910		1955-07-26	Baker, et al.	
	10	2714932		1955-08-09	A.E. Thompson	
	11	2737242		1956-03-06	Baker	
	12	2756827		1956-07-31	Farrar	
	13	2830666		1958-04-15	Rhodes	
	14	2833354		1958-05-06	Sailers	
	15	3013612		1961-12-19	Angel	
	16	3054453		1962-09-18	Bonner	
	17	3062296		1962-11-06	Brown	
	18	3082824		1963-03-26	Taylor, et al.	
	19	3160209		1964-12-08	Bonner	

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number		13329077
Filing Date		2011-12-16
First Named Inventor	W. Lynn Frazier	
Art Unit		3672
Examiner Name		
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Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear
	1	20030024706		2003-02-06	Allamon	
	2	20030188860		2003-10-09	Zimmerman, et al.	
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Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

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That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

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Signature	/Robb D. Edmonds/	Date (YYYY-MM-DD)	2012-03-16
Name/Print	Robb D. Edmonds	Registration Number	46,681

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PATENT SPECIFICATION

DRAWINGS ATTACHED

Inventor: CHARLES TERRY WARDMAN

914.030



Date of filing Complete Specification Jan. 9, 1959.

Application Date Oct. 9, 1957.

No. 31519/57.

Complete Specification Published Dec. 28, 1962.

Index at acceptance:—Classes 7(5), B2F5C2B; and 7(3), B2G(1A2:1G), B2J(1B7:15R2:15B1).

International Classification:—F02d. F02f.

COMPLETE SPECIFICATION

Improvements in or relating to Fuel Atomisers for Internal Combustion Engines

We, KIGASS LIMITED, a British Company, of 31, Regent Grove, Leamington Spa, Warwickshire, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention has reference to atomisers of the kind adapted to be fitted in the induction manifolds of internal combustion engines so that atomised liquid fuel may be directed into the said manifolds to facilitate the starting of the engines from cold.

Whilst the atomisers are eminently satisfactory insofar as their intended useful purpose is concerned, the fitting of same gives rise to the disadvantage that, since the interior of the manifold of an internal combustion engine is at less than atmospheric pressure when the engine is running, and particularly when the engine is running at low speed with the fuel control throttle nearly closed, there is a tendency for the liquid fuel to be drawn through any atomiser fitted to the manifold, into the interior of the said manifold. To obviate this disadvantage, it has been proposed to provide some form of cut-off valve in the fuel supply system to the atomiser: thus, for example, it has been proposed to instal a non-return valve in the priming pump whereby the liquid fuel is adapted to be withdrawn from a tank or other source of supply and then fed to the atomiser under pressure, or alternatively, and when the said pump is of the manually-reciprocable plunger type, to make provision for screwing down the plunger in the pump cylinder after the engine has started, so as positively to close the fuel discharge outlet of the said pump. Again, such proposals have had eminently satisfactory results in that they have enabled the

above-mentioned disadvantage to be overcome; on the other hand, the necessity to provide such means external to the atomisers for preventing liquid fuel being drawn through the atomisers by the creation of low pressure conditions, has increased initial installation costs and/or has complicated the construction and increased the costs of manufacturing, the priming pumps.

The principal object of the present invention is to provide an improved atomiser which enables the above-mentioned disadvantages to be overcome in a simple and economical manner and, at the same time, disposes of the necessity of installing a special valve in the priming pump or elsewhere in the supply pipe between a source of liquid fuel supply and an atomiser.

In accordance with the present invention, an atomiser of the kind referred to comprises an axially bored and substantially cylindrical body of which one end has a concentric fuel-atmosing discharge orifice and is threaded externally so that it is adapted to be screw connected into a tapped hole in a wall of the induction manifold of an internal combustion engine whereas, at the opposite end of the body, the bore is tapped so that a fuel supply pipe is adapted to be screw-connected therein and, between the said body ends, an axially bored seat of a non-return ball valve is secured within the body bore, the ball of the valve being urged on to the periphery of the seat bore by a partially compressed spring of which the opposite ends impinge respectively upon the ball of the valve and upon means secured within the body bore adjacent to the discharge orifice for imparting a swirling movement to liquid fuel pumped into the tapped end of the body bore and, after raising the ball from the valve seat against the action

of the spring, flowing through the said seat, swirling means and discharge orifice.

In order that the invention may be more readily understood and carried into practice, reference will now be made to the accompanying drawing in which Figures 1—3 are, respectively, sectional elevations of three alternative atomiser constructions.

The atomiser shown in Figure 1 comprises a body 1 which is substantially cylindrical in external configuration, is formed externally thereof and at a predetermined position along its length, with a hexagonal or equivalent shoulder 2, and is screw threaded from the shoulder to the fuel discharge end 3 so that, by engaging the shoulder with a spanner or equivalent tool, the said end may be screw connected into a tapped hole in the wall of the induction manifold of an internal combustion engine into which atomised liquid fuel is to be sprayed.

To enable the opposite end 4 of the body to be screw connected to the threaded end of a supply pipe (not shown) through which the liquid fuel is adapted to be fed under pressure from a pump, the body has a blind axial bore 5 which opens to the said inlet end and is tapped from the vicinity of the said end to, or to the vicinity of, the shoulder 2.

At the discharge end 3 of the body, the bore 5 tapers inwardly to the periphery of an atomising discharge orifice 6 formed in and concentrically of the said end.

A cylindrical valve seat 7 which is a pressure fit within the untapped portion of the said body bore, extends from the base of the tapered end of the said bore into overlapping relationship with the tapped bore portion; the seat has an axial bore comprising three contiguous portions 8, 9 and 10 which are of successively greater diameters from the supply to the discharge end of the body. An inverted cup 11 is accommodated and makes a pressure fit within the largest portion 10 of the seat bore, the external surface of the crown of the cup being located flush with the rim of the seat end adjacent the orifice 6, and the external periphery of the said cup having formed therein, a spiral duct 12 which extends from the crown to the mouth of the cup.

One end coil of a partially compressed coil spring 13 impinges upon the internal surface of the crown of the cup, whereas the opposite end coil of the said spring impinges upon a ball 14 which is accommodated freely within the intermediate portion 9 of the seat bore and is urged by the spring into closing abutment with the periphery of the adjacent and flared end 15 of the smallest diameter portion 8 of the said bore.

Hence, when liquid fuel is fed to the atomiser from the pump through the supply pipe connected into the inlet end of the

atomiser body, the ball is forced away from the flared bore-portion end 15 against the action of the spring, whereupon the liquid flows to and along the spiral groove 12 so that a swirling movement is imparted thereto, and is then discharged from the atomiser through the orifice 6. Immediately the pump ceases to feed the liquid, the spring returns the ball onto the said flared bore-portion end so that, even if the external pressure at the discharge orifice is reduced below atmospheric pressure, the seated ball prevents further liquid from being drawn from the supply pipe, to and through the said orifice.

Alternatively and if so desired, the bore of the body 1 may consist of three contiguous portions 16, 17 and 18 (see Figures 2 and 3) which are of successively smaller diameters from the inlet end 4 to the discharge end 3, and the seat may consist of a plug 19 having an axial bore 20 of which the end adjacent the said discharging end of the body is flared outwardly at 21, the said plug being accommodated within the intermediate body bore portion 17 and the flared end of the plug bore being closed (except when liquid fuel is being pumped through the supply pipe) by the spring-loaded ball 14.

As shown in Figure 2, the plug may be a pressure fit within the body bore portion 17 and a portion of the plug bore adjacent the liquid inlet end of the body may be tapped so that, if and when desired, the plug may be withdrawn from the body by engaging a threaded extractor with the said tapped plug bore portion. Alternatively and as shown in Figure 3, the intermediate portion 17 of the body bore may be tapped, the plug may be threaded and screw-engaged with the said tapped bore portion, and the end of the plug adjacent the liquid inlet end of the body may have a diametrical slot 22 adapted to be engaged by the blade of a screwdriver to enable the plug to be assembled in and dismantled from the body.

Instead of forming the body with a blind axial bore and an atomising discharge orifice and providing a peripherally-grooved cup in the said bore, as shown in Figure 1, the body bore may open both to the liquid inlet and discharge ends of the body and a separate assembly adapted to impart a swirling movement to, and then to atomise the fuel, may be mounted within the discharge end of the bore. For example, as shown in Figures 2 and 3, an assembly comprising a disc 23 which is formed with a central fuel-atomising discharge orifice 24 and spans the mouth of a swirl chamber 25 in another and centrally dished disc 26 having one or more inlet ducts 27 which open tangentially or substantially tangentially into the said chamber and establish communication between the swirl chamber and the body bore, may be

mounted within the liquid discharge end of the body.

The said separate assembly may be fixed permanently (see Figure 2) in and across the discharge end of the body bore, by seating the periphery of the dished disc 26 upon an internal annular shoulder 28 in the bore and peening the rim of the body on to the external marginal zone of the outer surface of the orifice disc 23. Alternatively, and as shown in Figure 3, the peripheries of the orifice and dished discs may be trapped between an internal peripheral shoulder 30 in the discharge end of the bore and one end of a lining sleeve 20 which is trapped between the dished disc and the plug 19, so that, after the plug has been removed from the body, the said assembly may also be removed for servicing or replacement.

WHAT WE CLAIM IS:—

1. An atomiser of the kind referred to, comprising an axially bored and substantially cylindrical body of which one end has a concentric fuel-atomising discharge nozzle and is threaded externally so that it is adapted to be screw connected into a tapped hole in a wall of the induction manifold of an internal combustion engine whereas, at the opposite end of the body, the bore is tapped so that a fuel supply pipe is adapted to be screw-connected therein, and between the said ends, an axially bored seat of a non-return ball valve is secured within the body bore, the ball of the valve being urged on to the periphery of the seat bore

by a partially compressed coil spring of which the opposite ends impinge respectively upon the ball of the valve and upon means for imparting a swirling movement to liquid fuel pumped into the tapped end of the body bore and, after raising the ball from the valve seat, flowing through the said seat, swirling means and discharge orifice.

2. An atomiser as claimed in Claim 1, wherein the seat of the ball valve is removable from the body bore.

3. An atomiser as claimed in Claim 2, wherein the swirling means is also removable from the body bore subsequently to the removal of the valve seat.

4. An atomiser as claimed in Claim 1, wherein the valve seat is a pressure fit within the body bore.

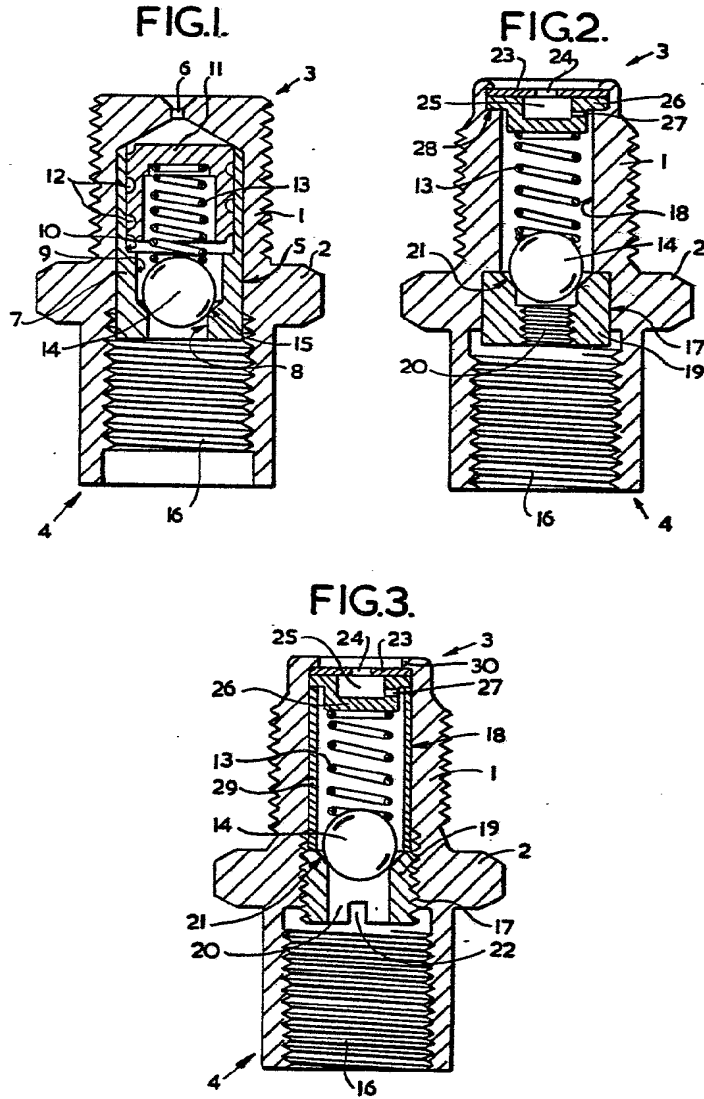
5. An atomiser as claimed in Claim 2 wherein the valve seat is screw threaded and makes screw engagement with a tapped portion of the body bore.

6. An atomiser as claimed in Claim 4, wherein the valve seat bore is tapped so that it is engageable by a threaded extractor whereby the said seat may be removed from the body.

7. An atomiser substantially as herein described with reference to Figure 1 or Figure 2 or Figure 3 of the accompanying drawing.

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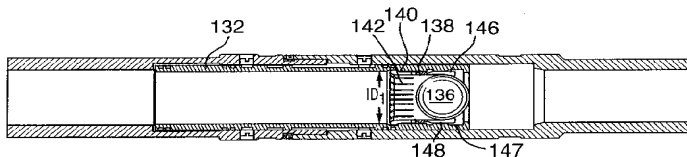
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FIG. 2A



(57) Abstract: A tubing string assembly is disclosed for fluid treatment of a wellbore. The tubing string can be used for staged wellbore fluid treatment where a selected segment of the wellbore is treated, while other segments are sealed off. The tubing string can also be used where a ported tubing string is required to be run-in in a pressure tight condition and later is needed to be in an open-port condition. A sliding sleeve in a tubular has a driver selected to be acted upon by an inner bore conveyed actuating device, the driver drives the generation of a ball stop on the sleeve.



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Sliding Sleeve Sub and Method and Apparatus for Wellbore Fluid Treatment

Priority Application

This application claims priority to US provisional application serial number 61/176,334, filed May 7, 2009.

Field of the Invention

The invention relates to a method and apparatus for wellbore fluid treatment and, in particular, to a method and apparatus for selective communication to a wellbore for fluid treatment.

Background of the Invention

Recently, as described in US Patents 6,907,936 and 7,108,067 to Packers Plus Energy Services Inc., the assignee of the present application, wellbore treatment apparatus have been developed that include a wellbore treatment string for staged well treatment. The wellbore treatment string is useful to create a plurality of isolated zones within a well and includes an openable port system that allows selected access to each such isolated zone. The treatment string includes a tubular string carrying a plurality of packers that can be set in the hole to create isolated zones therebetween about the annulus of the tubing string. Between at least various of the packers, openable ports through the tubing string

are positioned. The ports are selectively openable and include a sleeve thereover with a sealable seat formed in the inner diameter of the sleeve. By launching a ball, the ball can seal against the seat and pressure can be increased behind the ball to drive the sleeve through the tubing string, such driving acting to open the port in one zone. The seat in each sleeve can be formed to accept a ball of a selected diameter but to allow balls of lower diameters to pass.

Unfortunately, limitations with respect to the inner diameter of wellbore tubulars, due to the inner diameter of the well itself, such wellbore treatment system may tend to be limited in the number of zones that may be accessed. For example, if the well diameter dictates that the largest sleeve in a well can at most accept a 3¾" ball, then the well treatment string will generally be limited to approximately 11 sleeves and therefore can treat in only 11 stages.

Summary of the Invention

In one embodiment, there is provided a sliding sleeve sub for installation in a wellbore tubular string, the sliding sleeve sub comprising: a tubular including an inner bore defined by an inner wall; and a sleeve installed in the tubular inner bore and axially slidable therein at least from a first position to a second position, the sleeve including an inner diameter, an outer diameter facing the tubular inner wall, a driver for the sleeve selected to be acted upon by an inner bore conveyed actuating device passing adjacent thereto to drive the generation on the sleeve of a ball stop, the ball stop being formed to retain and hold an inner bore conveyed ball passing along the inner bore and position the inner bore conveyed ball to form a seal against fluid flow therepast.

In one embodiment, there is provided a sliding sleeve sub for installation in a wellbore tubular string, the sliding sleeve sub comprising: a tubular including an inner bore defined by an inner wall; and a sleeve installed in the tubular inner bore and axially slidable therein at least from a first position to a second position, the sleeve including an inner diameter, an outer diameter facing the tubular inner wall, a driver for the sleeve

selected to be acted upon by an inner bore conveyed actuating device passing adjacent thereto to drive the generation of a ball stop on the sleeve, the driver being selected to be acted upon to remain in a passive condition until being actuated to move into an active, ball stop-generating position.

In one embodiment, there is provided a wellbore tubing string apparatus, the apparatus comprising: a tubing string having a long axis and an inner bore; a first sleeve in the tubing string inner bore, the first sleeve being moveable along the inner bore from a first position to a second position; and an actuating device moveable through the inner bore for actuating the first sleeve, as it passes thereby, to form a ball stop on the first sleeve.

In one embodiment, there is provided a wellbore tubing string apparatus, the apparatus comprising: a tubing string having a long axis and an inner bore; a first sleeve in the tubing string inner bore, the first sleeve being moveable along the inner bore from a first position to a second position; a second sleeve, the second sleeve offset from the first sleeve along the long axis of the tubing string, the second sleeve being moveable along the inner bore from a third position to a fourth position; and a sleeve shifting ball for both (i) actuating the first sleeve, as it passes thereby, to form a ball stop on the first sleeve and (ii) for landing in and creating a seal against the second sleeve to permit the second sleeve to be driven by fluid pressure from the third position to the fourth position.

In one embodiment, there is provided a wellbore fluid treatment apparatus, the apparatus comprising a tubing string having a long axis, a first port opened through the wall of the tubing string, a second port opened through the wall of the tubing string, the second port offset from the first port along the long axis of the tubing string, a first packer operable to seal about the tubing string and mounted on the tubing string to act in a position offset from the first port along the long axis of the tubing string, a second packer operable to seal about the tubing string and mounted on the tubing string to act in a position between the first port and the second port along the long axis of the tubing string; a third packer operable to seal about the tubing string and mounted on the tubing string to act in a position offset from the second port along the long axis of the tubing string and on a side

of the second port opposite the second packer; a first sleeve positioned relative to the first port, the first sleeve being moveable relative to the first port between a closed port position and a position permitting fluid flow through the first port from the tubing string inner bore; a second sleeve positioned relative to the second port, the second sleeve being moveable relative to the second port between a closed port position and a position permitting fluid flow through the second port from the tubing string inner bore; and a sleeve shifting device for both (i) actuating the first sleeve, as it passes thereby, to form a ball stop on the first sleeve and (ii) for landing in and creating a seal against the second sleeve to permit the second sleeve to be driven from the closed port position to the position permitting fluid flow.

In view of the foregoing there is provided a method for fluid treatment of a borehole, the method comprising: providing a wellbore tubing string apparatus according to one of the various embodiments of the invention; running the tubing string into a wellbore and to a desired position in the wellbore; conveying an actuating device to actuate the first sleeve and generate thereon a ball stop; conveying a sleeve shifting ball to land on the ball stop and create a fluid seal between the sleeve and the sleeve shifting ball; and increasing fluid pressure in the tubing string above the sleeve shifting ball to move the first sleeve to open a port through which borehole treatment fluid can be introduced to the borehole.

It is to be understood that other aspects of the present invention will become readily apparent to those skilled in the art from the following detailed description, wherein various embodiments of the invention are shown and described by way of illustration. As will be realized, the invention is capable for other and different embodiments and its several details are capable of modification in various other respects, all without departing from the spirit and scope of the present invention. Accordingly the drawings and detailed description are to be regarded as illustrative in nature and not as restrictive.

Brief Description of the Drawings

A further, detailed, description of the invention, briefly described above, will follow by reference to the following drawings of specific embodiments of the invention. These drawings depict only typical embodiments of the invention and are therefore not to be considered limiting of its scope. In the drawings:

Figure 1A is a sectional view through a wellbore having positioned therein a prior art fluid treatment assembly;

Figure 1B is an enlarged view of a portion of the wellbore of Figure 1a with the fluid treatment assembly also shown in section;

Figures 2A to 2D are sequential sectional views through a sleeve valve sub according to an aspect of the present invention;

Figures 2E and 2F are a sectional views through a sleeve valve sub according to an aspect of the present invention;

Figure 3 is a sectional view through another sleeve according to an aspect of the invention;

Figures 3A to 3D are sequential sectional views through another sleeve valve sub according to an aspect of the present invention;

Figure 3E is a plan view of a J keyway slot useful in the invention;

Figure 3F is an isometric view of a sleeve useful in the invention;

Figure 4 is a sectional view through a sleeve valve sub according to an aspect of the present invention;

Figures 5A to 5D are sequential sectional views through another sleeve valve sub according to an aspect of the present invention;

Figure 5 is a sectional view through another sleeve according to an aspect of the invention;

Figure 6A is a sectional view through another sleeve according to an aspect of the invention;

Figure 6B is an isometric view of a split ring assembly useful in the present invention;

Figure 6C is an isometric view of a spring biased detent pin useful in the present invention;

Figure 6D is a sectional view through another sleeve according to an aspect of the invention;

Figure 6E is a sectional view through another sleeve according to an aspect of the invention;

Figure 7 is a sectional view through a wellbore having positioned therein a fluid treatment assembly and showing a method according to the present invention; and

Figures 8A to 8F are a series of schematic sectional views through a wellbore having positioned therein a fluid treatment assembly showing a method according to the present invention.

Detailed Description of Various Embodiments

The description that follows and the embodiments described therein, are provided by way of illustration of an example, or examples, of particular embodiments of the principles of various aspects of the present invention. These examples are provided for the purposes of explanation, and not of limitation, of those principles and of the invention in its various aspects. In the description, similar parts are marked throughout the specification and the drawings with the same respective reference numerals. The drawings are not necessarily

to scale and in some instances proportions may have been exaggerated in order more clearly to depict certain features.

A wellbore sliding sleeve has been invented that is modified by the passage therethrough of a device that configures the sleeve to be driven by a sleeve shifting device while it was not previously configured, such that during the subsequent passage of a sleeve shifting device, the sleeve may be actuated by the sleeve shifting device. The sliding sleeve sub may be employed in a wellbore tubular string. In addition, a method and apparatus has been invented which provides for selective communication to a wellbore for fluid treatment using such a wellbore sliding sleeve. In one aspect of the invention the method and apparatus provide for staged injection of treatment fluids wherein fluid is injected into selected intervals of the wellbore, while other intervals are closed. In another aspect, the method and apparatus provide for the running in of a fluid treatment string, the fluid treatment string having ports substantially closed against the passage of fluid therethrough, but which are each openable by operation of a sliding sleeve when desired to permit fluid flow into the wellbore. The apparatus and methods of the present invention can be used in various borehole conditions including open holes, cased holes, vertical holes, horizontal holes, straight holes or deviated holes.

Referring to Figures 1a and 1b, an example prior art wellbore fluid treatment assembly is shown, which includes sliding sleeves. While other string configurations are available using sliding sleeves in staged arrangements, in the assembly illustrated the sleeves are used to control flow through the string and the string can be used to effect fluid treatment of a formation 10 through a wellbore 12. The wellbore assembly includes a tubing string 14 having a lower end 14a and an upper end extending to surface (not shown). Tubing string 14 includes a plurality of spaced apart ported intervals 16a to 16e each including a plurality of ports 17 opened through the tubing string wall to permit access between the tubing string inner bore 18 and the wellbore. Any number of ports can be used in each interval. Ports can be grouped in one area of an interval or can be spaced apart along the length of the interval.

A packer 20a is mounted between the upper-most ported interval 16a and the surface and further packers 20b to 20e are mounted between each pair of adjacent ported intervals. In the illustrated embodiment, a packer 20f is also mounted below the lower most ported interval 16e and lower end 14a of the tubing string. The packers are disposed about the tubing string and selected to seal the annulus between the tubing string and the wellbore wall, when the assembly is disposed in the wellbore. The packers divide the wellbore into isolated segments wherein fluid can be applied to one segment of the well, but is prevented from passing through the annulus into adjacent segments. As will be appreciated the packers can be spaced in any way relative to the ported intervals to achieve a desired interval length or number of ported intervals per segment. In addition, packer 20f need not be present in some applications.

The packers may take various forms. Those shown are of the solid body-type with at least one extrudable packing element, for example, formed of rubber. Solid body packers including multiple, spaced apart packing elements 21a, 21b on a single packer are particularly useful especially, for example, in open hole (unlined wellbore) operations. In another embodiment, a plurality of packers is positioned in side by side relation on the tubing string, rather than using one packer between each ported interval.

Sliding sleeves 22c to 22e are disposed in the tubing string to control the opening of the ports. In this embodiment, a sliding sleeve is mounted over each ported interval to close them against fluid flow therethrough, but can be moved away from their positions covering the ports to open the ports and allow fluid flow therethrough. In particular, the sliding sleeves are disposed to control the opening of the ported intervals through the tubing string and are each moveable from a closed port position, wherein the sleeve covers its associated ported interval (as shown by sleeves 22c and 22d) to a position away from the ports wherein fluid flow of, for example, stimulation fluid is permitted through ports 17 of the ported interval (as shown by sleeve 22e). In other embodiments, the ports can be closed by other means such as caps or second sleeves and can be opened by the

action of the sliding sleeves 22c to 22e to break open or remove the caps or move the second sleeves.

The assembly is run in and positioned downhole with the sliding sleeves each in their closed port position. The sleeves are moved to their open position when the tubing string is ready for use in fluid treatment of the wellbore. The sleeves for each isolated interval between adjacent packers may be opened individually to permit fluid flow to one wellbore segment at a time, in a staged, concentrated treatment process.

In one embodiment, the sliding sleeves are each moveable remotely from their closed port position to their position permitting through-port fluid flow, for example, without having to run in a line or string for manipulation thereof. In one embodiment, the sliding sleeves are each actuated by a device, such as a ball 24e (as shown), which includes a ball, a dart or other plugging device, which can be conveyed by gravity or fluid flow through the tubing string. The device engages against the sleeve. For example, in this case ball 24e engages against sleeve 22e, and, when pressure is applied through the tubing string inner bore 18 from surface, ball 24e stops in the sleeve and creates a pressure differential above and below the sleeve which drives the sleeve toward the lower pressure side.

In the illustrated embodiment, the inner surface of each sleeve which is open to the inner bore of the tubing string defines a seat 26e onto which an associated plug such as a ball 24e, when launched from surface, can land and seal thereagainst. When the ball seals against the sleeve seat and pressure is applied or increased from surface and a pressure differential is set up which causes the sliding sleeve on which the ball has landed to slide to a port-open position. When the ports of the ported interval 16e are opened, fluid can flow therethrough to the annulus between the tubing string and the wellbore and thereafter into contact with formation 10.

Each of the plurality of sliding sleeves has a different diameter seat and therefore each accept different sized balls. In particular, the lower-most sliding sleeve 22e has the

smallest diameter D1 seat and accepts the smallest sized ball 24e and each sleeve that is progressively closer to surface has a larger seat. For example, as shown in Figure 1b, the sleeve 22c includes a seat 26c having a diameter D3, sleeve 22d includes a seat 26d having a diameter D2, which is less than D3 and sleeve 22e includes a seat 26e having a diameter D1, which is less than D2. This provides that the lowest sleeve can be actuated to open first by first launching the smallest ball 24e, which can pass through all of the seats of the sleeves closer to surface but which will land in and seal against seat 26e of sleeve 22e. Likewise, penultimate sleeve 22d can be actuated to move away from ported interval 16d by launching a ball 24d which is sized to pass through all of the seats closer to surface, including seat 26c, but which will land in and seal against seat 26d.

Lower end 14a of the tubing string can be open, closed or fitted in various ways, depending on the operational characteristics of the tubing string that are desired. In the illustrated embodiment, end 14a includes a pump out plug assembly 28. Pump out plug assembly acts to close off end 14a during run in of the tubing string, to maintain the inner bore of the tubing string relatively clear. However, by application of fluid pressure, for example at a pressure of about 3000 psi, the plug can be blown out to permit actuation of the lower most sleeve 22e by generation of a pressure differential. As will be appreciated, an opening adjacent end 14a is only needed where pressure, as opposed to gravity, is needed to convey the first ball to land in the lower-most sleeve. Alternately, the lower most sleeve can be hydraulically actuated, including a fluid actuated piston secured by shear pins, so that the sleeve can be opened remotely without the need to land a ball or plug therein.

In other embodiments, not shown, end 14a can be left open or can be closed for example by installation of a welded or threaded plug.

Centralizer 29 and/or other standard tubing string attachments can be used, as desired.

In use, the wellbore fluid treatment apparatus, as described with respect to Figures 1A and 1B, can be used in the fluid treatment of a wellbore. For selectively treating

formation 10 through wellbore 12, the above-described assembly is run into the borehole and the packers are set to seal the annulus at each location creating a plurality of isolated annulus zones. Fluids can then be pumped down the tubing string and into a selected zone of the annulus, such as by increasing the pressure to pump out plug assembly 28.

Alternately, a plurality of open ports or an open end can be provided or lower most sleeve can be hydraulically openable. Once that selected zone is treated, as desired, ball 24e or another sealing plug is launched from surface and conveyed by gravity or fluid pressure to seal against seat 26e of the lower most sliding sleeve 22e, this seals off the tubing string below sleeve 22e and opens ported interval 16e to allow the next annulus zone, the zone between packer 20e and 20f to be treated with fluid. The treating fluids will be diverted through the ports of interval 16e exposed by moving the sliding sleeve and be directed to a specific area of the formation. Ball 24e is sized to pass through all of the seats, including seats 26c, 26d closer to surface without sealing thereagainst. When the fluid treatment through ports 16e is complete, a ball 24d is launched, which is sized to pass through all of the seats, including seat 26c closer to surface, and to seat in and move sleeve 22d. This opens ported interval 16d and permits fluid treatment of the annulus between packers 20d and 20e. This process of launching progressively larger balls or plugs is repeated until all of the zones are treated. The balls can be launched without stopping the flow of treating fluids. After treatment, fluids can be shut in or flowed back immediately. Once fluid pressure is reduced from surface, any balls seated in sleeve 2 seats 26c - e can be unseated by pressure from below to permit fluid flow upwardly therethrough.

The apparatus is particularly useful for stimulation of a formation, using stimulation fluids, such as for example, acid, gelled acid, gelled water, gelled oil, CO₂, nitrogen and/or proppant laden fluids. The apparatus may also be useful to open the tubing string to production fluids.

While the illustrated tubing string includes five ported intervals controlled by sleeves, it is to be understood that the number of ported intervals in these prior art assemblies can be

varied. In a fluid treatment assembly useful for staged fluid treatment, for example, at least two openable ports from the tubing string inner bore to the wellbore must be provided such as at least two ported intervals or an openable end and one ported interval. As the staged sleeve systems become more developed, there is a desire to use greater numbers of sleeves. It has been found, however, that size limitations do tend to limit the number of sleeves that can be installed in any tubular string. For example, in one example ID tubular, using sleeves with a ¼" seat size graduation, balls from 1¼" to 3¼" are reasonable and each size ball can only be used once. This limits the number of sleeves in any tubular for this tubular size to eleven and has a lower region of the tubing string being reduced in ID to form a seat capable of catching a 1¼" ball.

A sleeve according to the present invention may be useful to allow an increased number of sleeves in any tubular string, while maintaining a substantially open inner diameter along a considerable length of the tubing string. For example, using sleeves according to the present invention more than one sleeve can be provided with a similar diameter ball stop. The sleeves however, may be installed in a condition where the ball stop, which may further act as a valve seat, is not exposed but the sleeve can be configurable downhole to have a valve seat formed thereon which is sized to catch and retain sealing devices. Referring to Figures 2A to 2D, a sleeve system is shown including a sliding sleeve 132 that is actuatable to be reconfigured from a form not including a sleeve shifting ball stop (Figure 2A) to a form defining a sleeve shifting ball stop 126, which in the illustrated embodiment also acts as a ball seat providing the sealing area against which the ball can act (Figure 2B). In the condition of Figure 2A, prior to a ball stop being formed, a ball, which is to be understood to include sleeve shifting devices such as balls, darts, plugs, etc., may pass therethrough. However, after being actuated to form a ball stop 126, the ball that previously passed through would be caught in the ball stop and create a fluid seal in the sleeve such that a pressure differential can be established thereabout.

The sleeve may be actuated to reconfigure by various means such as by moving an actuator device 136 through the inner bore of the sleeve. The sleeve system may include a mechanical driver driven by the actuator device engaging on the mechanical driver and acting upon it to drive the formation of a valve seat. In another embodiment, the sleeve system may include a non-mechanical driver such as a sensor that is actuated by means other than physical engagement to drive the formation of a valve seat. A sensor may respond to an actuator device such as one emitting radio signals, magnetic forces, etc. Such an actuator device signals the sensor to form a ball stop on the sleeve, as it communicates with the sensor the sleeve. The actuator device may be operated from surface or may be passes through the tubing string to communicate with the sensor.

In one embodiment, for example such as that shown in Figures 2, sleeve 132 may be installed in a tubing section 150 and positioned to be moveable between a position (Figures 2A – 2D) covering and therefore blocking flow through ports 116 through the section wall and a position away from ports such that they are open for fluid flow therethrough (Figure 2D).

Sleeve 132 may include a mechanical driver such as including a collet 138 slidably mounted on sleeve 132 and operating relative to a section 140 of tapering inner diameter of the sleeve. As such collet 138, including fingers 142 can be originally mounted in the sleeve with the fingers having an inner diameter between them of ID_1 . However, the relative position of the fingers can be reconfigured by moving the collet along a tapering portion of tapered section 140 to drive collet fingers 142 together and radially inwardly to define an opening through the collet fingers having a second inner diameter ID_2 smaller than the original inner diameter ID_1 . When constricted, fingers 142 together form seat 126 defining the inner diameter ID_2 .

In such an embodiment, a ball or other sealing device can be used as an actuator to drive the collet, along tapered section 140. For example, the mechanical driver can include a catcher to catch an actuator temporarily to drive movement of the collet. In the illustrated embodiment, actuator ball 136 can be passed through the sleeve and is sized to land in a

catcher 146 (Figure 2A) connected to the collet in order to engage, at least temporarily in the catcher and move the collet. Catcher 146 can include a valve seat sized to catch ball 136 or other sealing device to allow the collet to be moved axially along by, for example, increasing pressure behind the ball while the ball is held in the catcher. Catcher 146 in the illustrated embodiment includes a plurality of collet fingers that are biased and retained inwardly to create the valve seat. The catcher can also act against a tapered or stepped portion such that while the catcher, and in particular the fingers thereof, are initially held against radial expansion by being located in a smaller diameter region 148 in the sleeve (Figure 2A), catcher 146 can expand once the ball moves the catcher fingers over a larger diameter section 147 (Figures 2B and 2C). When in the position where catcher fingers can expand to release the ball (arrow A), the collet fingers have been driven onto tapered section 140 to form seat 126. Collet 138 can be locked in this position so that it cannot advance further nor return to the run in position. For example, collet 138 can include a lock protrusion 149a that lands in a recess 149b in sleeve 132. As such, any force applied to collet 138 can be transmitted to sleeve 132.

Collet 138 can be mounted in sleeve 132 such that when driven into the second configuration, the collet 138 cannot move further such that in this way any further forces against collet are transferred to sleeve 132. For example, collet 138 can include a lock protrusion 159a that lands in a recess 159b in sleeve 132. As such, any force applied to collet 138 can be transmitted to sleeve 132.

After the collet is moved to constrict fingers 142 to form an opening of ID_2 , a second ball 154 or plug having a diameter greater than ID_2 can be launched from surface and can land and seal against seat 126 formed at the constricted opening between collet fingers 142. The collet can then be driven along with the sleeve by increasing fluid pressure behind the ball to drive the ball to act against the seat. It will be appreciated that prior to the formation of the opening of ID_2 , that same ball would have passed through the sleeve without catching on fingers 142.

The relative ease of movement between collet 138 and sliding sleeve 132 can be selected such that the collet moves preferentially over the movement of the sliding sleeve. For example, shear screws 149 or frictional selections can be used between the sleeve and the tubular 150 in which the sleeve is positioned to ensure that movement of the sleeve is restricted until certain selected pressures are reached.

Movement of sleeve 132 exposes ports 116 such that fluid can be forced out of the tubular above ball 154.

Of course, other types of ball stops and catchers can be employed as desired. For example, in another embodiment as shown in Figures 2E and 2F, another form of catcher is employed in the driver. The catcher in this illustrated embodiment includes a shear out actuation ring 146a secured to collet 138a. The shear out actuation ring is secured to the collet with an interlock suitable to catch an actuator ball 136a (Figure 2E) and move the collet in response to a pressure differential about the ball, but when the collet shoulders against return 147a on sleeve 132a, the interlock will be overcome and actuation ring 146a will be sheared from the collet and expand into a recess 148a to let ball 136a pass and open the bore through the sleeve.

When shear out actuation ring 146a is sheared from the collet and expanded into recess 148a, the collet fingers 126a have been driven onto tapered section 140a to form the sleeve shifting seat into which a sleeve shifting ball 154a can land and seal (Figure 2F). Collet 138a being shouldered against return 147a, directs any force applied thereagainst by ball 154a and fluid pressure to sleeve 132a, which can slide to expose ports 116a.

In one embodiment, the driver may include a device to only drive the formation of a valve seat after a plurality of actuations. For example, in one embodiment, the driver may include a walking J-type controller that is advanced through a plurality of stages prior to actually finally driving configuration of the valve seat. As shown in Figure 3, for example, a sleeve 232 may include a walking J keyway 240 in which the driver 238 is installed by a key 241. Actuators, such as a plurality of balls may be passed by the driver

to each advance it one position through the various positions in keyway 240 before finally allowing the driver to move into a position to form a valve seat. For example, after passing out of the final stage of the keyway, the driver can be allowed to move along a frustoconical interval 250 to constrict into a valve seat that retains a plug of a selected size to create a back pressure to push the sleeve through the tubing string and expose ports 216. In one embodiment, for example as shown, the driver may include a radially compressible and resilient C ring 251 that can be compressed when being forced axially along a tapering diameter of frustoconical surface 250 to form a valve seat, which is ring 251 compressed to reduce its inner diameter. It is noted in this illustrated embodiment that the same structure as a catcher of the driver and as the eventual valve seat, depending on the stage of operation.

In another embodiment, as shown in Figures 3A to 3F, the driver can be secured or formed integral with the sleeve valve 232a such that movement of the sleeve causes formation of the ball stop, which here is embodied as a single valve seat 226. In particular in this illustrated embodiment, sleeve valve 232a includes a walking J keyway 240a on its outer surface in which rides a key 241a that is secured to the sub housing 251a. Actuators, such as a plurality of balls 236 may be passed by the driver to each advance it one position from a first, run in position 1 through the various positions 2, 3 in keyway 240a (Figures 3B and 3C), as assisted by spring 240c, before finally allowing the driver to move into a position 4 to form a valve seat 226 (Figure 3D). For example, when passing into the final position 4 in the keyway, the sleeve is driven to move a compressible seat 226 along a frustoconical interval 250 that compresses the valve seat such that it has a reduced diameter and can retain a sleeve shifting plug 254 of a selected size when it is introduced to the sleeve. When landed in and sealed against seat 226, plug 254 creates a back pressure to push the sleeve through the tubing string and expose ports 216a.

In one embodiment, for example as shown, the driver may include a first deformable ball seat 251 that holds a ball 236 temporarily and for enough time to move the sleeve against

the bias in spring 240c such that the sleeve moves over key 241a from position 2 (Figure 3B) to position 3 (Figure 3C). However, the seat 251 deforms elastically when a certain pressure differential is reached to allow the ball to pass and spring 240c can act again on the sleeve to bias it to the next position 2, until finally it moves into position 4. The number of ball driven positions 3 in keyway slot 240a determine the number of cycles that sleeve moves through before moving into final position 4, when valve seat 226 is formed.

In embodiments where cycling is of interest, indexing keyways may be employed or, alternately, timers or staged locks, such as latches, stepped regions, c-rings, etc., may be used to allow the sleeve to cycle through a number of passive positions before arriving at an active position, wherein a seat forms. Of course, the indexing keyway such as that shown in Figure 3A provides a reliable yet simple solution where the sleeve must pass through a larger number (more than two or three) cycles before arriving at the active state.

The drivers for the seat can be actuated by actuating devices, passing the sleeve either on the way down through the tubular, toward bottom hole, or when the actuating device is being reversed out of the well. Figure 4 shows another possible embodiment that includes a driver that is actuated by an actuating device passing up hole therepast, as when the actuating device is being reversed out of the well. As shown, for example, a sliding sleeve 332 may include a driver that is mechanically driven and includes a plurality of dogs 354 that are initially positioned to allow passage of an actuating device as it passes downhole through the inner diameter 362 of a sub in which the sleeve is installed. However, the dogs are configured such that same device operates to drive the dogs to a second position, forming a valve seat of a selected size when that actuating device is reversed out of the tubular string and moves upwardly past the sleeve. For example, the dogs may be pivotally connected by pins 356 to the sleeve and may be normally capable of pivoting to allow a ball to pass in one direction but may be driven to pivot to, and remain in, a second position when that ball passes upwardly therepast, the

second position forming a valve seat for retaining a second ball when it is launched from surface. The second ball sized to land in and seal against the formed valve seat such that a pressure differential can be established above and below the second ball to drive the sleeve along its recess 366 in the sub 360 until it lands against wall 364 and in this position exposes ports 316 previously covered by the sleeve.

In another embodiment, rather than being mechanically driven to reconfigure, such as those embodiments described hereinbefore, the driver may be non-mechanically driven as by electric or magnetic signaling to drive formation of a ball stop, such as a valve seat. For example, a device emitting a magnetic force may be dropped or conveyed through the tubing string to actuate the drivers to configure a ball stop on the sleeve or sleeves of interest.

In some embodiments, such as is shown in Figure 3A – 3D, movement of the sleeve valve drives formation of the ball stop. In other embodiments, such as in Figures 2 and 4, the movement of components to form the ball stop may be separate from movement of the sliding sleeve such that the sleeve seals do not have to unseat during formation of the ball stop. Another such embodiment is shown in Figures 5, which shows a multi-acting hydraulic drive system.

The illustrated multi-acting hydraulic drive system of Figures 5A to 5D utilizes a driver that allows a staged formation of a collet ball seat 426 to drive movement of a sleeve 432 to open ports 416. The multi-acting hydraulic drive system is run in initially in the unshifted position (Figure 5A) with the fracturing port openings 416 in the outer housing 450 of the tubing string segment isolated from the inner bore of the tubing string segment by a wall section of sleeve 432. O-rings 433 are positioned to seal the interface between sleeve 432 and housing 450 on each side of the openings. The inner sleeve is held within the outer housing by shear pins 449 that thread through the external housing and engage a slot 449a machined into the outer surface of the sleeve. The range of travel of the inner sleeve along housing 450 is restricted by torque pins 451.

A driver formed as a second sleeve 438 is held within and pinned to the inner sleeve by shearable pins 459. The second sleeve carries a collet ball seat 426 that is initially has a larger diameter IDL and, downstream thereof, a yieldable ball seat 446 that is a smaller diameter IDS. This configuration allows selection of a ball 436 that can be introduced and pass through the collet ball seat, but land in and be stopped by the yieldable ball seat. When landed (Figure 5B), the ball isolates the upstream tubing pressure from the downstream tubing pressure across seat 446 and if the upstream pressure is increased by surface pumping, the pressure differential across the yieldable seat develops a force that exceeds the resistive shear force of the pins 459 holding the second sleeve within inner sleeve 432. As the second sleeve moves, collet ball seat 426 then travels a short distance within the inner sleeve and moves into an area of reduced diameter 440 resulting in a decrease in diameter to IDS1, which is less than IDL, across the collet ball seat. With a further increase in pressure, the differential force developed will be sufficient to push ball 436 through the yieldable ball seat and the ball will travel (arrows B, Figure 5C) down to seat in and actuate a sliding sleeve-valve (not shown) below. The yieldable seat can be formed as a constriction in the material of the secondary sleeve and be formed to be yieldable, as by plastic deformation at a particular pressure rating. In one embodiment, the yieldable seat is a constriction in the sleeve material with a hollow backside such that the material of the sleeve protrudes inwardly at the point of the constriction and is v-shaped in section, but the material thinning caused by hollowing out the back side causes the seat to be relatively more yieldable than the sleeve material would otherwise be.

Movement of the secondary sleeve is stopped by a return 458 on the inner sleeve forming a stop wall. The stop wall causes any further downward force on sleeve 438 to be transmitted to inner sleeve 432.

When it is desired to open ports 416 of the multi-acting hydraulic drive system, a ball 454 is pumped down to the now formed collet ball seat 426 (Figure 5D). Ball 454 is selected to be larger than IDS1 such that it seals off the upstream pressure from the downstream pressure. Ball 454 may be the same size as ball 436. Increasing the upstream pressure P

creates a pressure differential across ball 454 and seat 426 that acts on the inner sleeve and results in a force that is resisted by the shear pins 449 holding the inner sleeve in place. When this force on the inner sleeve exceeds the resistive force of the shear pins 449, the pins shear off and the inner sleeve slides down, as permitted by torque pins 451. Port openings 416 are then open allowing the frac string fluid to exit the tubing string and communicate with the annulus. The inner sleeve may be prevented from closing again by a C-ring arrangement.

Since the string may include balls, such as ball 436 large enough to be stopped by seat 426, there may be a concern that employing such a multi-acting system may cause the tubing string inner bore to be blocked when the lower balls return uphole with productions. As such, a ball stopper 460 may be attached below sleeve 432 that is operable to stop balls from flowing back through the multi-acting hydraulic drive system. A ball stopper may be operated in various ways. A ball stopper should not prevent balls from proceeding down the tubing string but stop balls from flowing back. The present ball stopper 460 is operated by movement of sleeve 432. When the sleeve is moved to open ports 416, it is useful to activate the ball stopper, as it is known that no further balls will be introduced therepast.

In the illustrated embodiment, ball stopper 460 is compressed to close a set of fingers 462 to protrude into the inner bore and prevent balls of at least a size to lodge in seats 426 and 446 from moving therepast. The fingers are fixed at a first end 462a such that they cannot move along housing 450 and are free to move at an opposite end 462b adjacent to sleeve 432. The fingers are further biased, as by selected folding at a mid point 462c, to collapse inwardly when the inner sleeve moves against the free ends thereof. As best seen in Figure 5E, the fingers 462 at least at their free ends can be connected by a ring 463 that urges the fingers to act as a unitary member and prevents the fingers from individually catching on structures, such as balls moving down therepast. Fingers 462 of the ball stopper prevent the original first leg balls from flowing back therepast, while allowing fluid flow. The ball stopper will generally be compressed into position before

any back flow in the well. As such, then ball stopper tends to act first to prevent the balls below from reaching the seats of the secondary sleeve.

If there is concern that the ball stopper or fracs of the multi-acting hydraulic drive system of Figures 5A will restrict production, the string housing 450 can be configured such that ports 416 also allow production from the lower stages to be produced through the upper sliding sleeve-valved fracturing port and into the annulus to bypass any flow constrictions such as balls that are trapped by the ball stopper.

In one embodiment, a ball seat guard 464 can be provided to protect the collet seat 426. For example, as shown, ball seat guard 464 can be positioned on the uphole side of collet seat 426 and include a flange 466 that extends over at least a portion of the upper surface of the collet seat. The guard can be formed frustoconically, tapering downwardly, to substantially follow the frustoconical curvature of the collet seat. Depending on the position of the guard, it may be formed as a part of the inner sleeve or another component, as desired. The guard may serve to protect the collet fingers from erosive forces and from accumulating debris therein. In one embodiment, the collet fingers may be urged up below the guard to force the fingers apart to some degree. After the collet moves to form the active seat (Figure 5B), it may be separated from guard 464. In this position, guard tends to funnel fluids and ball 454 toward the center of collet seat 426 such that the figures of the collet continue to be protected to some degree.

As an example, a multi-acting hydraulic drive system as shown in Figures 5A to 5D, when run in may drift at 2.62" (IDS = 2.62") and IDL is greater than that, for example about 2.75". A 2.75" ball 436 can pass seat 426, but land in yieldable seat 446 to shift collet seat 426 over the tapered area to create a new seat of diameter IDS2, which may be for example 2.62".

After ball 436 lands and shifts the second sleeve to form seat of diameter IDS2, seat 426 will yield and the ball will continue downhole. The second sleeve may shift to form the new seat at a pressure, for example, of 10 MPa, while the seat yields at 17 MPa. In this

process, the multi-acting hydraulic drive system sleeve 432 does not move, the seals remain seated and unaffected and port openings 416 do not open. That ball 436 can thereafter land in a lower 2.62" seat below the repeater port and open the sleeve actuated by the seat to frac at that stage.

When it is desired to frac through openings 416, a second ball 454 is pumped down that is sized to land in and seal against seat 426. Such a ball may be, for example, 2.75", the same size as ball 436. Ball 454 will shift the sleeve 432 to open openings 416 and then fluids can be passed through openings 416. Sleeve may shift at a pressure greater than that used to yield seat 446, for example, 24 MPa. Ball stopper 450 has fingers sized to prevent passage of any balls, such as ball 436 which might block seats 426 or 446.

The multi-acting hydraulic drive system of Figure 5A can be modified in several ways. For example, in one embodiment, as shown in Figure 5E, the yieldable seat can be modified. For example, as shown in Figure 5E, the yieldable seat can be formed as a sub sleeve 468, the yielding effect being restricted by a rear support 470 in the run in position. The multi-acting hydraulic drive system shift sleeve contains a collet ball seat 426a that is initially in a passive condition with a larger diameter IDLa and a further downstream the yieldable ball seat with sub sleeve 468 that is a smaller diameter IDSa. This configuration allows a ball 436a to pass through the collet ball seat and land in the yieldable ball seat and isolate the upstream tubing pressure from the downstream tubing pressure. The upstream pressure is increased by surface pumping and the pressure differential across the yieldable seat develops a force that exceeds the resistive shear force of pins 459a holding the second sleeve 438a within the inner sleeve 432a. As the second sleeve moves, collet ball seat 426a is moved with the sleeve a short distance along a tapering region 440a of the inner sleeve 432 resulting in the fingers of the collet to be compressed and a resulting decrease in diameter across the fingers forming the collet seat 426a. With further pressure differential the force developed will be sufficient to shear further pins 472 holding the sub sleeve to move the yieldable seat off the rear support 470 and the material of the sub sleeve can then expand and yield to allow the ball 436a to

pass. The yieldable seat can be formed as a constriction in the material of the sub sleeve and be formed to be yieldable, as by plastic deformation at a particular pressure rating. In one embodiment, the yieldable seat is a thin sleeve material. In another embodiment, the yieldable seat is a plurality of collet fingers with inwardly turned tips forming the constriction.

As noted previously, the ball stops and sealing areas of the driver and shifting sleeve can be formed in various ways. In some embodiments, the ball stops and sealing areas are combined as seats. In another embodiment, as shown in Figures 6, the ball stop can be provided separately, but positioned adjacent.

With reference to Figure 6A, for example, a seat effect to drive a sleeve may be formed by a ball stop 580 and an adjacent sealing area 582. The ball stop creates a region of constricted diameter along an inner bore 583 that can retain and hold a ball 584 in a position in the inner diameter, for example of a sleeve 586. The sealing area is positioned adjacent the ball stop and formed to create a seal with the ball when it is retained on the ball stop such that pressure differential can be established across the sealing area when a ball is positioned therein.

The sealing area may be non-deformable or deformable. Because the sealing area is more susceptible to damage that creates failure, however, sealing area may be made non-deformable if it is not desired to introduce breaks or yieldability in the surface thereof. The ball stop may be non-deformable or deformable as desired, such that it can be used in the driver or in a formable seat. Deformable options may include expandable split rings (Figures 6B and 6E) including a number of ring segments 588 arranged in an annular arrangement, annularly installed ball bearing type detent pins 590 (Figure 6C), a collet 592 (Figure 6D) etc.

This arrangement of ball stop and adjacent sealing area may be employed, for example, in a sleeve configured to allow shifting to move through several passive stages and then move to active stage to be operable to actually shift the sleeve. For example, as shown in

Figure 6D, a sleeve valve 532 is shown mounted in and positioned to cover ports 516a through a tubular housing 550. Sleeve 532 carries a collet 592 positioned adjacent a sealing area 582a. Collet 592 rides in a keyway that permits the collet, as driven by force applied by sealing of balls 536, to move between ball stop positions and expanded, yieldable positions. The movement through keyway is driven by spring 540. The keyway leads the collet to a final active stage, where it becomes locked in position on sleeve 532 adjacent to sealing surface 582a. In the active position, the collet holds a final ball against sealing area 582a to create a pressure differential to move sleeve 532 away from ports 516.

Figure 6E shows a ball stop formed of split ring segments 588 positioned adjacent a sealing area 582b. The split ring forms a yieldable seat in a driver sleeve 589. In this illustrated embodiment, the split ring is secured in a gland 591 of the driver sleeve with edges 588a retained behind returns 591a of gland. Gland 591 is open such that ring segments ride along a portion of a sliding sleeve valve 532b between a supporting area 594 and a recess 595. When positioned over the supporting area, the segments 588 protrude into the inner bore to hold a ball 536b against the sealing area. Segments 588 cannot retract, as they are held at their backside by supporting area 594. As such, a pressure differential can be built up across the ball and sealing area 582b to create a hydraulic force to move sleeve 589 down against a stop wall 596. Movement of sleeve 589 moves segments over recess where they are able to expand and release ball 536b. The backside of segments are rounded to permit ease of movement along supporting area 594. Movement of sleeve 589 also draws a collet 526 attached thereto over a constricting surface 540 to form a ball seat. Thereafter, a ball can be dropped to land and seal in collet 526 to shift sleeve 532b.

Knowing the diameter of the ball to be used in the ball stop, the ball stop can be sized to stop the ball from moving therepast and the sealing area can have an inner diameter selected to fit closely against the ball. As such, the ball stop holds the ball in the sealing section. Once the ball stop prevents the ball from moving through the tool, the ball will

be positioned adjacent the sealing area and the resulting seal can allow pressure to be built up behind the ball and apply force, depending on the intended use of the ball stop, to move the driver on which it is installed or to cause the sliding sleeve valve to shift from the closed to the open position. As such, the ball stop itself needs only retain the ball, but not actually create a seal with the ball. This allows greater flexibility with the formation of the stop without also having to consider its sealing properties both initially and after use downhole.

Other mechanical devices can be used to move valves to an active position and then a ball can be pumped down the tubing or casing to shift the sleeve to the open position.

It will be appreciated that although components may be shown as single parts, they are typically formed of a plurality of connected parts to facilitate manufacture. Components described herein are intended for downhole use and may be formed of materials and by processes to withstand the rigors of such downhole use.

The sleeves may be installed in a tubular for connection into a tubular string, such as in the form of a sub. With reference to Figure 4 for example, sleeve 332 may be installed in a sub. The sub includes a tubular body 360 including an inner bore defined by an inner wall 362 and sleeve 332 is installed in the tubular inner bore and is axially slidable therein at least from a first position to a second position. As will be appreciated, the second position is generally defined by a shoulder 364 on the tubular inner wall against which the sleeve may be stopped. Generally, the sliding sleeve is mounted in a recessed area 366 formed in the inner bore of the tubular body such that the sleeve can move in the recess until it stops against shoulder 364 formed by the lower stepped edge of that recess. The tubular upper and lower ends 368a, 368b may be formed, such as by forming as threaded boxes and/or pins, to accept connection into a wellbore tubular string.

In use, one or more of the reconfigurable sleeves may be positioned in a tubing string. Because of their usefulness to increase the possible numbers of sleeves in any tubing string, the reconfigurable sleeves may often be installed above one or more sleeves

having a set valve seat. For example, with reference to Figure 7, a wellbore tubing string apparatus may include a tubing string 614 having a long axis and an inner bore 618, a first sleeve 632 in the tubing string inner bore, the first sleeve being moveable along the inner bore from a first position to a second position; a second sleeve 622a in the tubing string inner bore, the second sleeve offset from the first sleeve along the long axis of the tubing string, the second sleeve being moveable along the inner bore from a third position to a fourth position; and a third sleeve 622b offset from the second sleeve and moveable along the tubular string from a fifth position to a sixth position. The first sleeve may be reconfigurable, such as by one of the embodiments noted in Figures 2 to 5 above or otherwise, having a driver 638 therein to form a valve seat (not yet formed) upon actuation thereof. The second and third sleeves may be reconfigurable or, as shown, standard sleeves, with set valve seats 626a, 626b therein. An actuator device, such as ball 636 may be provided for actuating the first sleeve, as it passes thereby, to form a valve seat on the first sleeve. The actuator device may be a device, as shown, for acting with driver 638 to actuate the formation of a valve seat on the first sleeve and also serves the purpose of landing in and creating a seal against the second sleeve seat 626a to permit the second sleeve to be driven by fluid pressure from the third position to the fourth position. Alternately, the actuator device may have the primary purpose of acting on driver 638 without also acting to seal a lower sleeve.

In the illustrated embodiment, for example, the sleeve furthest downhole, sleeve 622b, includes a valve seat with a diameter D1 and the sleeve thereabove has a valve seat with a diameter D2. Diameter D1 is smaller than D2 and so sleeve 622b requires the smaller ball 623 to seal thereagainst, which can easily pass through the seat of sleeve 622a. This provides that the lowest sleeve 622b can be actuated to open first by launching ball 623 which can pass without effect through all of the sleeves 622a, 632 thereabove but will land in and seal against seat 626b. Second sleeve 622a can likewise be actuated to move along tubing string 612 by ball 636 which is sized to pass through all of the sleeves thereabove to land and seal in seat 626a, so that pressure can be built up thereabove. However, in the illustrated embodiment, although ball 636 can pass through the sleeves

thereabove, it may actuate those sleeves, for example sleeve 632, to generate valve seats thereon. For example, driver 638 on sleeve 632 includes a catcher portion 646 with a diameter D2 that is formed to catch and retain ball 636 such that pressure can be increased to move the driver along sleeve 632 to open the catcher but create a valve seat in another area, for example portion 642 of the driver. Catcher 646, being opened, releases ball 636 so it can continue to seat 626a.

Of course, where the first sleeve, with the configurable valve seat, is positioned above other sleeves with valve seats formable or fixed thereon, the formation of the valve seat on the first seat should be timed or selected to avoid interference with access to the valve seats therebelow. As such, for example, the inner diameter of any valve seat formed on the first sleeve should be sized to allow passage thereby of actuation devices or plugging balls for the valves therebelow. Alternately, and likely more practical, the timing of the actuation of the first sleeve to form a valve seat is delayed until access to all larger diameter valve seats therebelow is no longer necessary, for example all such larger diameter valve seats have been actuated or plugged.

In one embodiment as shown, the wellbore tubing string apparatus may be useful for wellbore fluid treatment and may include ports 617 over or past which sleeves 622a, 622b, 632 act.

In an embodiment where sleeves 622a, 622b, 632 are positioned to control the condition of ports 617, note that, as shown, in the closed port position, the sleeves can be positioned over their ports to close the ports against fluid flow therethrough. In another embodiment, the ports for one or both sleeves may have mounted thereon a cap extending into the tubing string inner bore and in the position permitting fluid flow, their sleeve has engaged against and opened the cap. The cap can be opened, for example, by action of the sleeve shearing the cap from its position over the port. Each sleeve may control the condition of one or more ports, grouped together or spaced axially apart along a path of travel for that sleeve along the tubing string. In yet another embodiment, the ports may have mounted thereover a sliding sleeve and in the position permitting fluid flow, the first

sleeve has engaged and moved the sliding sleeve away from the first port. For example, secondary sliding sleeves can include, for example, a groove and the main sleeves (622a, 632) may include a locking dog biased outwardly therefrom and selected to lock into the groove on the sub sleeve. These and other options for fluid treatment tubulars are more fully described in applicants US Patents noted hereinbefore.

The tubing string apparatus may also include outer annular packers 620 to permit isolation of wellbore segments. The packers can be of any desired type to seal between the wellbore and the tubing string. In one embodiment, at least one of the first, second and third packer is a solid body packer including multiple packing elements. In such a packer, it is desirable that the multiple packing elements are spaced apart. Again the details and operation of the packers are discussed in greater detail in applicants earlier US Patents.

In use, a wellbore tubing string apparatus, such as that shown in Figure 7 including reconfigurable sleeves, for example according to one of the various embodiments described herein or otherwise may be run into a wellbore and installed as desired. Thereafter the sleeves may be shifted to allow fluid treatment or production through the string. Generally, the lower most sleeves are shifted first since access to them may be complicated by the process of shifting the sleeves thereabove. In one embodiment, for example, the sleeve shifting device, such as a plugging ball may be conveyed to seal against the seat of a sleeve and fluid pressure may be increased to act against the plugging ball and its seat to move the sleeve. At some point, any configurable sleeves are actuated to form their valve seats. As will be appreciated from the foregoing description, an actuating device for such purpose may take various forms. In one embodiment, as shown in Figure 7, the actuating device is a device launched to also plug a lower sleeve or the actuating device may act apart from the plugging ball for lower sleeves. For example, the actuating device may include a magnetic rod, etc. that actuates a valve seat to be formed on a reconfigurable sleeve as it passes thereby. In another embodiment, a plugging ball for a lower sleeve may actuate the formation of a valve seat on the first

sleeve as it passes thereby and after which may land and seal against the valve seat of sleeve with a set valve seat. As another alternate method, a device from below a configurable sleeve can actuate the sleeve as it passes upwardly through the well. For example, in one embodiment, a plugging ball, when it is reversed by reverse flow of fluids, can move past the first sleeve and actuate the first sleeve to form a valve seat thereon.

The method can be useful for fluid treatment in a well, wherein the sleeves operate to open or close fluid ports through the tubular. The fluid treatment may be a process for borehole stimulation using stimulation fluids such as one or more of acid, gelled acid, gelled water, gelled oil, CO₂, nitrogen and any of these fluids containing proppants, such as for example, sand or bauxite. The method can be conducted in an open hole or in a cased hole. In a cased hole, the casing may have to be perforated prior to running the tubing string into the wellbore, in order to provide access to the formation. In an open hole, the packers may be of the type known as solid body packers including a solid, extrudable packing element and, in some embodiments, solid body packers include a plurality of extrudable packing elements. The methods may therefore, include setting packers about the tubular string and introducing fluids through the tubular string.

Figures 8A to 8F show a method and system to allow several sliding sleeve valves to be run in a well, and to be selectively activated. The system and method employs a tool such as, for example, that shown in Figures 3 that will shift through several "passive" shifting cycles (positions 2-3). Once the valves pass through all the passive cycles, they can each move to an "active" state (position 4, Fig. 3D). Once it shifts to the active state, the valve can be shifted from closed to open position, and thereby allow fluid placement through the open parts from the tubing to the annulus.

Figure 8A shows a tubing string 714 in a wellbore 712. A plurality of packers 720 a-f can be expanded about the tubing string to segment the wellbore into a plurality of zones where the wellbore wall is the exposed formation along the length between packers. The string may be considered to have a plurality of intervals 1-5 between each adjacent pair

of packers. Each interval includes at least one port and a sliding sleeve valve thereover (within the string), which together are designated 716 a-e. Sliding sleeve valve 716a includes a ball stop, called a seat that permits a ball-driver movement of the sleeve. Sliding sleeve valves 716b to 716e includes seats formable therein when actuated to do so, such as for example a seat 226 that is compressible to a ball retaining diameter, as shown in Figures 3A-D.

Initially, as shown in Figure 8A, all ports are in the closed position, wherein they are closed by their respective sliding sleeve valves.

As shown in Figure 8B a ball 736 may be pumped onto a seat in the sleeve 716a to open its port in Interval 1. When the ball passes through the sleeves 716c-e in Intervals 5, 4, and 3, they make a passive shift. When the ball passes through Interval 2, it generates a ball stop on that sleeve 716b such that it can be shifted to the open position when desired.

Next, as shown in Figure 8C, a ball 736a is pumped onto the activated seat in sleeve 716b to open the port in Interval 2. When it passes through the sleeves in Intervals 5, and 4, they make a passive shift. When the ball passes through Interval 3, it moves sleeve 716c from passive to active so that it can be shifted to the open position when desired.

Thereafter, as shown in Figure 8D, a ball 736b is pumped onto the activated seat in sleeve 716c to open the port in Interval 3. When it passes through the sleeve 716e in Interval 5, that sleeve makes a passive shift. When the ball passes through Interval 4, it moves sleeve 716d from passive to active so that it can be shifted to the open position when desired.

Thereafter, as shown in Figure 8E, a ball 736c is pumped onto the activated seat of sleeve 716d to open the port in Interval 4. When ball 736c passes through Interval 5, it moves sleeve 716e from passive to active so that it can be shifted to the open position when desired.

Thereafter, as shown in Figure 8F, a ball 736d is pumped onto the activated seat of sleeve 716e to open the port in Interval 5 completing opening of all ports. Note that more than five ports can be run in a string.

When the ports are each opened, the formation accessed therethrough can be stimulated as by fracturing. It is noted, therefore, that the formation can be treated in a focused, staged manner. It is also noted that balls 736 - 736d may all be the same size. The intervals need not be directly adjacent as shown but can be spaced.

This system and tool of Figures 8 provides a substantially unrestricted internal diameter along the string and allows a single sized ball or plug to function numerous valves. By eliminating reduction in internal diameter to seat balls, the system may improve the ability to pump at high rates without causing abrasion to port tools. The system may be activated using an indexing j-slot system as noted. The system may be activated using a series of collet, c-rings or deformable seats. The system can be used in combination with solid ball seats. The system allows for installations of fluid placement liners of very long length forming large numbers of separately accessible wellbore zones.

The previous description of the disclosed embodiments is provided to enable any person skilled in the art to make or use the present invention. Various modifications to those embodiments will be readily apparent to those skilled in the art, and the generic principles defined herein may be applied to other embodiments without departing from the spirit or scope of the invention. Thus, the present invention is not intended to be limited to the embodiments shown herein, but is to be accorded the full scope consistent with the claims, wherein reference to an element in the singular, such as by use of the article "a" or "an" is not intended to mean "one and only one" unless specifically so stated, but rather "one or more". All structural and functional equivalents to the elements of the various embodiments described throughout the disclosure that are known or later come to be known to those of ordinary skill in the art are intended to be encompassed by the elements of the claims. Moreover, nothing disclosed herein is intended to be dedicated to the public regardless of whether such disclosure is explicitly recited in the claims. No claim element is to be construed under the provisions of 35 USC 112, sixth paragraph, unless the element is expressly recited using the phrase "means for" or "step for".

Claims:

1. A sliding sleeve sub for installation in a wellbore tubular string, the sliding sleeve sub comprising: a tubular including an inner bore defined by an inner wall; and a sleeve installed in the tubular inner bore and axially slidable therein at least from a first position to a second position, the sleeve including an inner diameter, an outer diameter facing the tubular inner wall, a driver for the sleeve selected to be acted upon by an inner bore conveyed actuating device passing adjacent thereto to drive the generation on the sleeve of a ball stop, the ball stop being formed to retain and hold an inner bore conveyed device passing along the inner bore and position the inner bore conveyed device to form a seal against fluid flow therepast, the driver being driveable to create the ball stop apart from axial sliding of the sleeve.
2. The sliding sleeve sub of claim 1 wherein the driver is a moveable second sleeve installed within the sleeve.
3. The sliding sleeve sub of claim 2 wherein the moveable second sleeve includes a yieldable seat and a collet constrictable to form the ball stop.
4. The sliding sleeve sub of claim 1 further comprising a ball stopper below the ball stop, the ball stopper formed to retain a ball from flowing back and blocking against the ball stop.
5. The sliding sleeve sub of claim 1 wherein the driver is configured to be driven through a plurality of passive cycles prior to creating the ball stop.
6. A sliding sleeve sub for installation in a wellbore tubular string, the sliding sleeve sub comprising: a tubular including an inner bore defined by an inner wall; and a sleeve installed in the tubular inner bore and axially slidable therein at least from a first position to a second position, the sleeve including an inner diameter, an outer diameter facing the tubular inner wall, a driver for the sleeve selected to be acted upon by an inner bore conveyed actuating device passing adjacent thereto to drive the generation of a ball stop

on the sleeve, the driver being selected to be acted upon to remain in a passive condition until being actuated to move into an active, ball stop generating position.

7. The sliding sleeve sub of claim 6 wherein the driver employs a walking J type key/keyway assembly to guide the driver through at least one passive condition and into the active, ball stop generating position.

8. A wellbore tubing string apparatus, the apparatus comprising: a tubing string having a long axis and an inner bore; a first sleeve in the tubing string inner bore, the first sleeve being moveable along the inner bore from a first position to a second position; and an actuating device moveable through the inner bore for actuating the first sleeve, as it passes thereby, to form a ball stop on the first sleeve without moving the first sleeve out of its first position.

9. The sliding sleeve sub of claim 8 wherein the actuating device acts on a moveable second sleeve installed within the sleeve.

10. The sliding sleeve sub of claim 9 wherein the moveable second sleeve includes a yieldable seat and a collet constrictable to form the ball stop.

11. A wellbore tubing string apparatus, the apparatus comprising: a tubing string having a long axis and an inner bore; a first sleeve in the tubing string inner bore, the first sleeve being moveable along the inner bore from a first position to a second position; a second sleeve offset from the first sleeve along the long axis of the tubing string, the second sleeve being moveable along the inner bore from a third position to a fourth position; and a sleeve shifting device for both (i) actuating the first sleeve, as it passes thereby, to form a ball stop on the first sleeve and (ii) for landing in and creating a seal against the second sleeve to permit the second sleeve to be driven by fluid pressure from the third position to the fourth position.

12. The wellbore tubing string apparatus of claim 11 wherein the sleeve shifting device is a ball.

13. The wellbore tubing string apparatus of claim 11 further comprising a ball stopper below the ball stop, the ball stopper formed to retain the sleeve shifting device from flowing back and blocking against the ball stop.

14. A wellbore fluid treatment apparatus, the apparatus comprising a tubing string having a long axis, a first port opened through the wall of the tubing string, a second port opened through the wall of the tubing string, the second port offset from the first port along the long axis of the tubing string, a first packer operable to seal about the tubing string and mounted on the tubing string to act in a position offset from the first port along the long axis of the tubing string, a second packer operable to seal about the tubing string and mounted on the tubing string to act in a position between the first port and the second port along the long axis of the tubing string; a third packer operable to seal about the tubing string and mounted on the tubing string to act in a position offset from the second port along the long axis of the tubing string and on a side of the second port opposite the second packer; a first sleeve positioned relative to the first port, the first sleeve being moveable relative to the first port between a closed port position and a position permitting fluid flow through the first port from the tubing string inner bore; a second sleeve positioned relative to the second port, the second sleeve being moveable relative to the second port between a closed port position and a position permitting fluid flow through the second port from the tubing string inner bore; and a sleeve shifting device for both (i) actuating the first sleeve, as it passes thereby, to form a ball stop on the first sleeve and (ii) for landing in and creating a seal against the second sleeve to permit the second sleeve to be driven from the closed port position to the position permitting fluid flow.

15. The wellbore fluid treatment apparatus of claim 14 wherein the sleeve shifting device is a ball.

16. The wellbore tubing string apparatus of claim 14 further comprising a ball stopper below the ball stop, the ball stopper formed to retain the sleeve shifting device from flowing back and blocking against the ball stop.

17. A method for fluid treatment of a borehole, the method comprising:
- a. running a wellbore tubing string apparatus into a wellbore, the wellbore tubing string apparatus including: a tubing string having a tubular wall, a long axis, ports through the wall and an inner bore within the wall; a first sleeve in the tubing string inner bore, the first sleeve being moveable along the inner bore from a first position covering the ports to a second position exposing the ports for fluid flow therethrough; and an actuating device moveable through the inner bore for actuating the first sleeve, as it passes thereby, to form a ball stop on the first sleeve;
 - b. conveying an actuating device to actuate the first sleeve and generate thereon a ball stop;
 - c. conveying a sleeve shifting device to land on the ball stop;
 - d. increasing fluid pressure in the tubing string above the ball stop to move the first sleeve to its second position; and
 - e. forcing fluid through the ports to fracture a formation accessed through the wellbore.
18. The method of claim 17 further comprising repeating the steps c to e on a second sleeve in the tubing string inner bore.
19. A method for fluid treatment of a borehole, the method comprising:
- a. running a wellbore tubing string apparatus into a wellbore, the wellbore tubing string apparatus comprising: a tubing string having a long axis and an inner bore; a first sleeve in the tubing string inner bore, the first sleeve being moveable along the inner bore from a first position to a second position; a second sleeve offset from the first sleeve along the long axis of the tubing string, the second sleeve being moveable along the inner bore from a third position to a fourth position; and a sleeve shifting device for both (i) actuating the first sleeve, as it passes thereby, to form a ball stop on the first sleeve and

- (ii) for landing in and creating a seal against the second sleeve to permit the second sleeve to be driven by fluid pressure from the third position to the fourth position;
- b. conveying the sleeve shifting device both (i) actuate the first sleeve, as it passes thereby, to form a ball stop on the first sleeve and (ii) land in and create a seal against the second sleeve to permit the second sleeve to be driven by fluid pressure from the third position to the fourth position; and
- c. increasing fluid pressure in the tubing string above the second sleeve to drive the second sleeve from the third position to the fourth position.

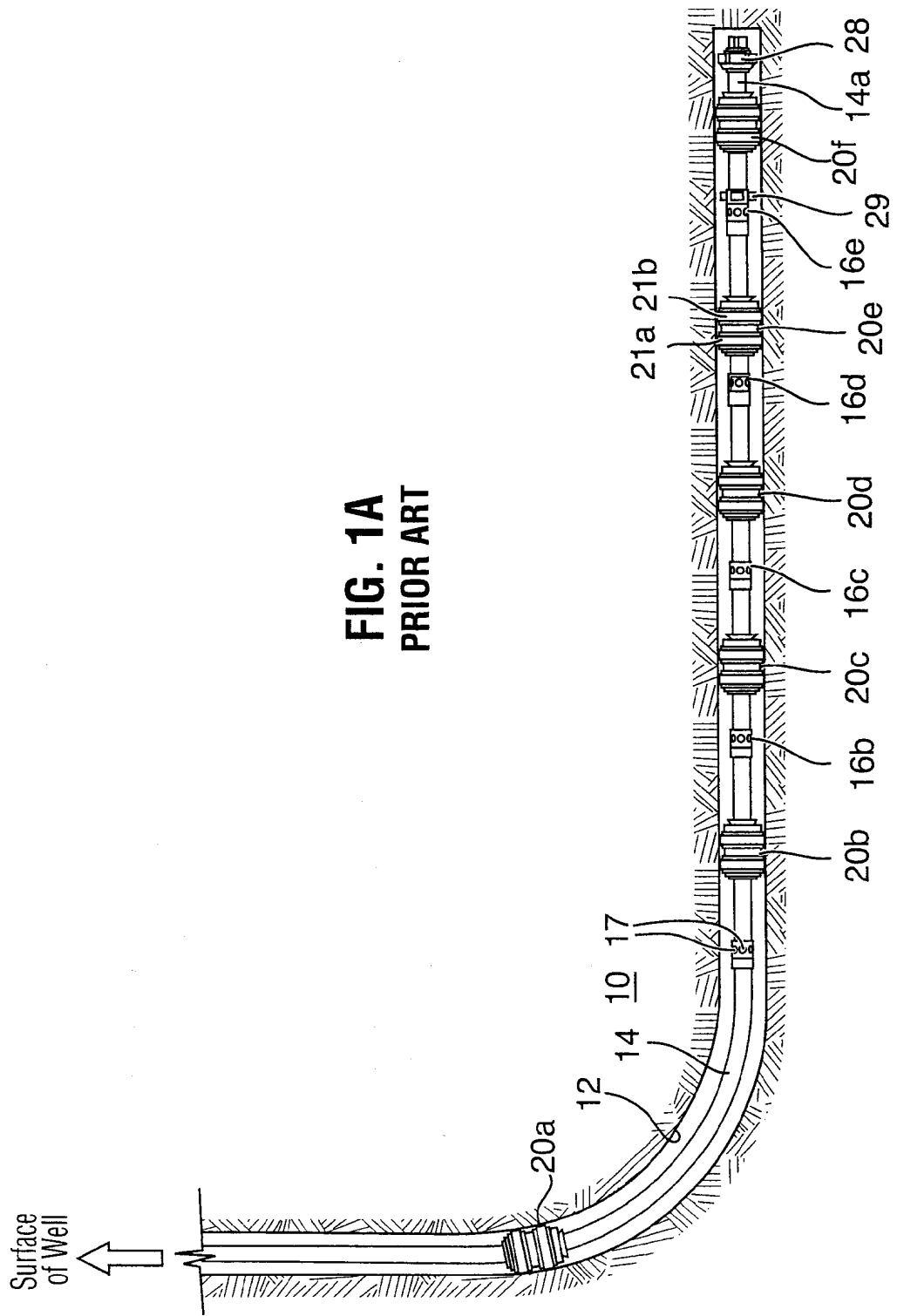


FIG. 1A
PRIOR ART

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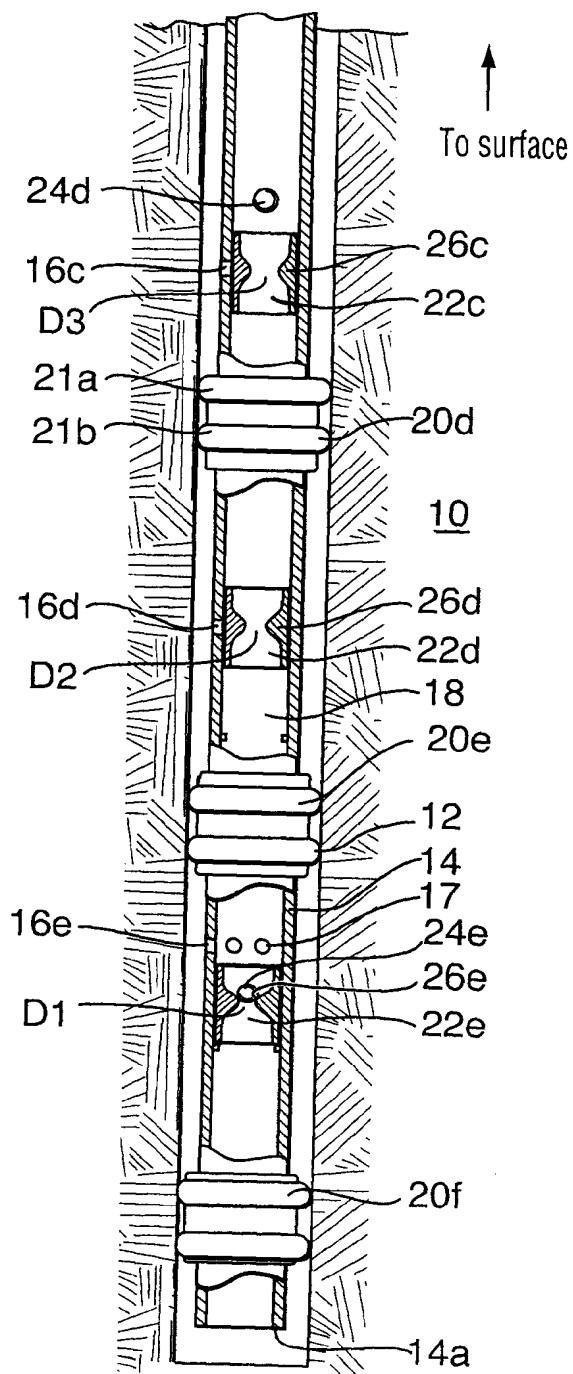


FIG. 1B
PRIOR ART

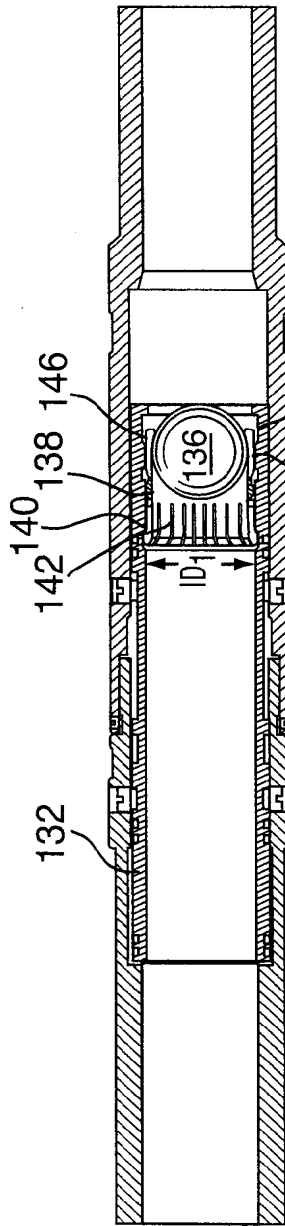


FIG. 2A

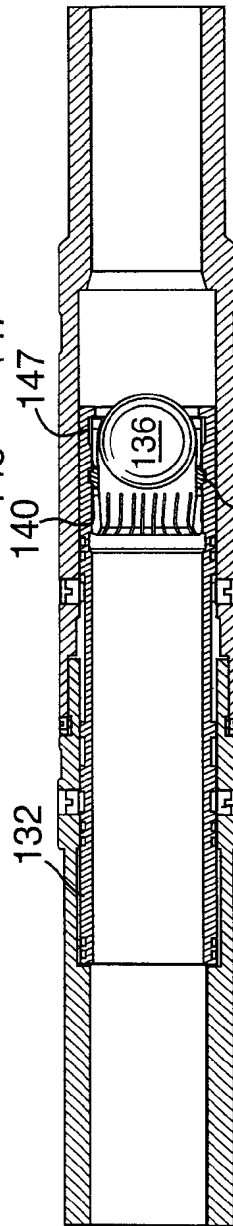


FIG. 2B

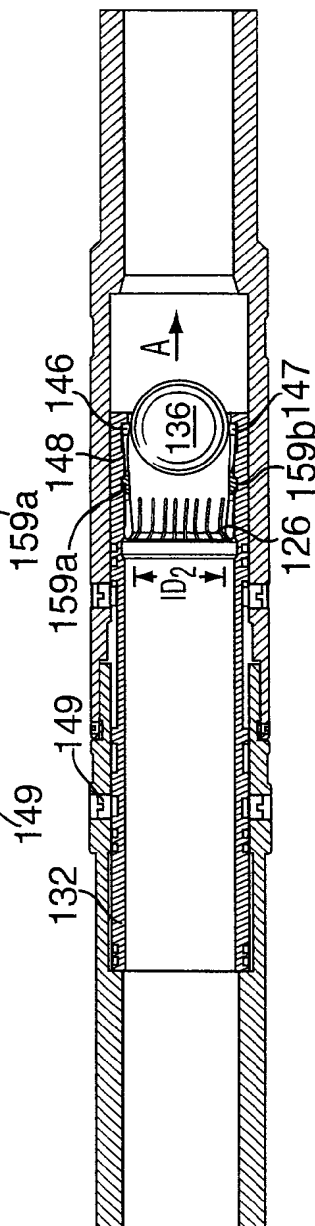


FIG. 2C

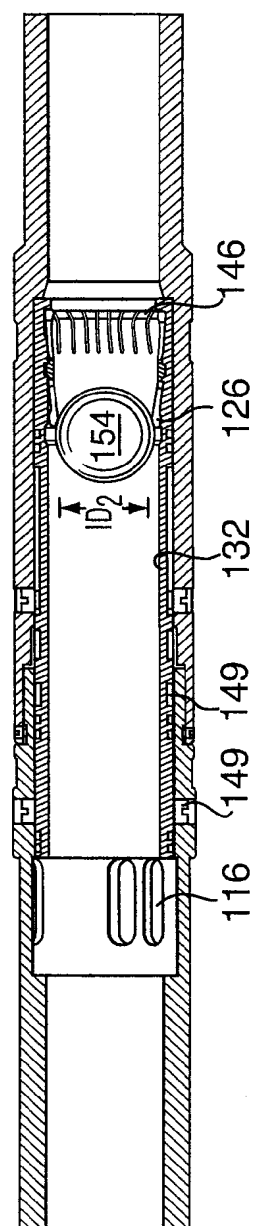


FIG. 2D

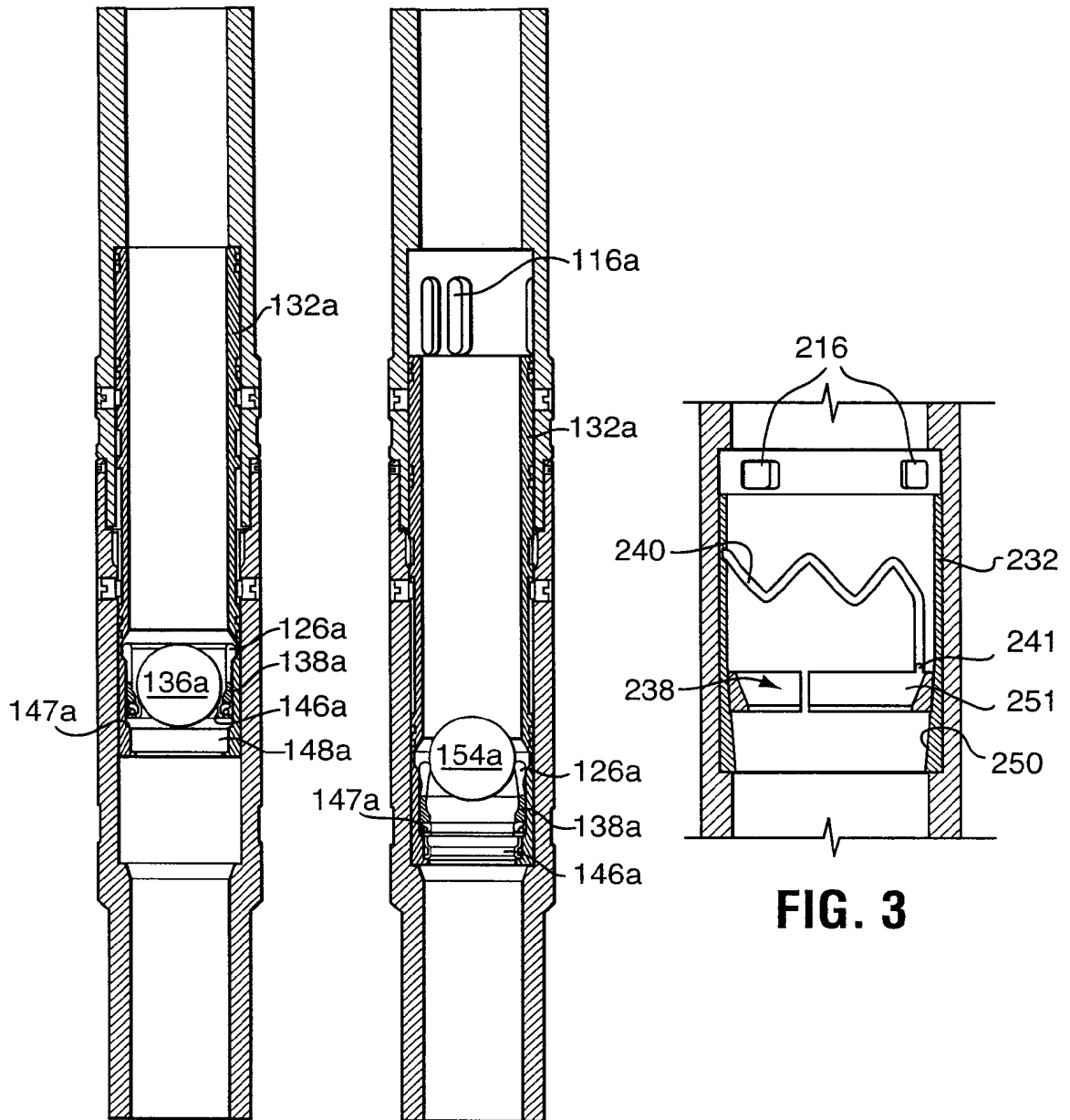


FIG. 2E

FIG. 2F

FIG. 3

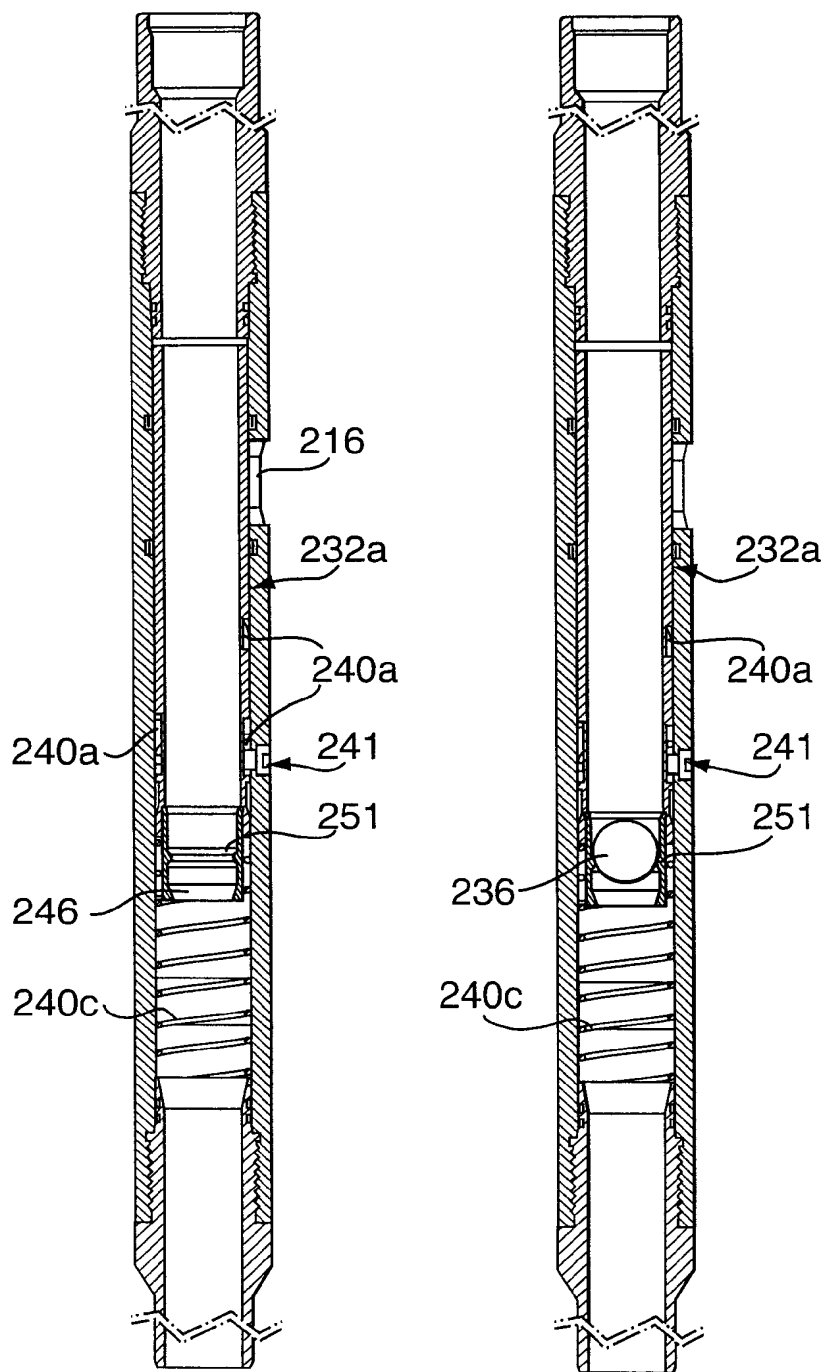


FIG. 3A

FIG. 3B

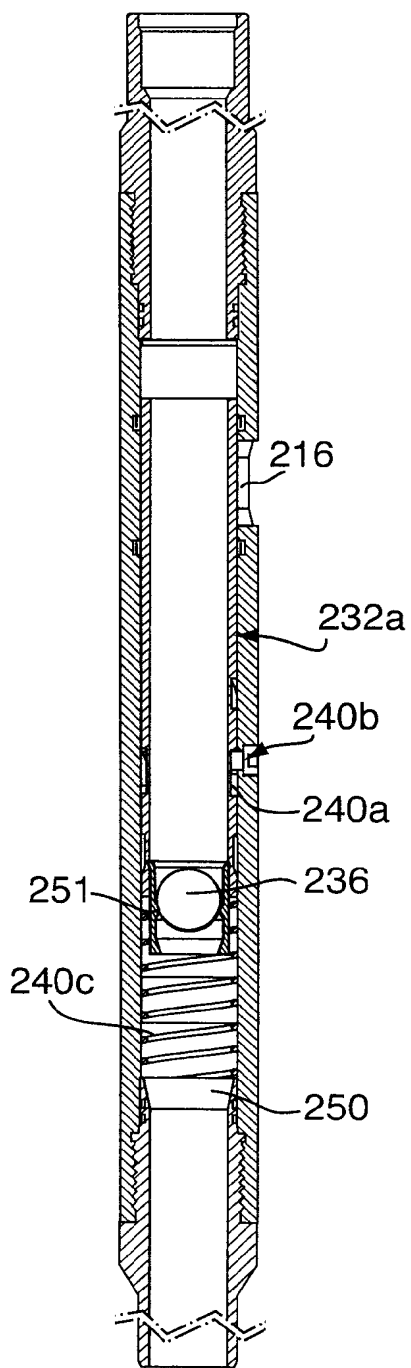


FIG. 3C

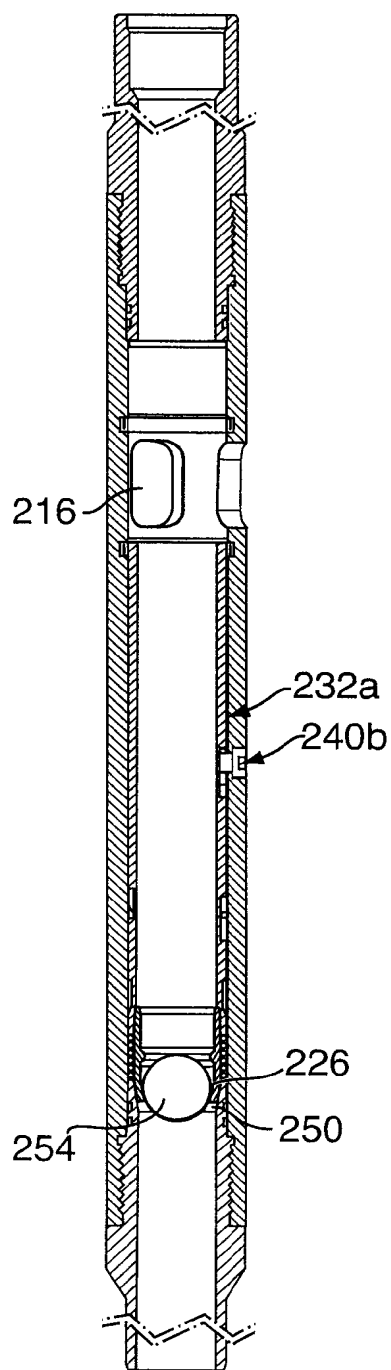


FIG. 3D

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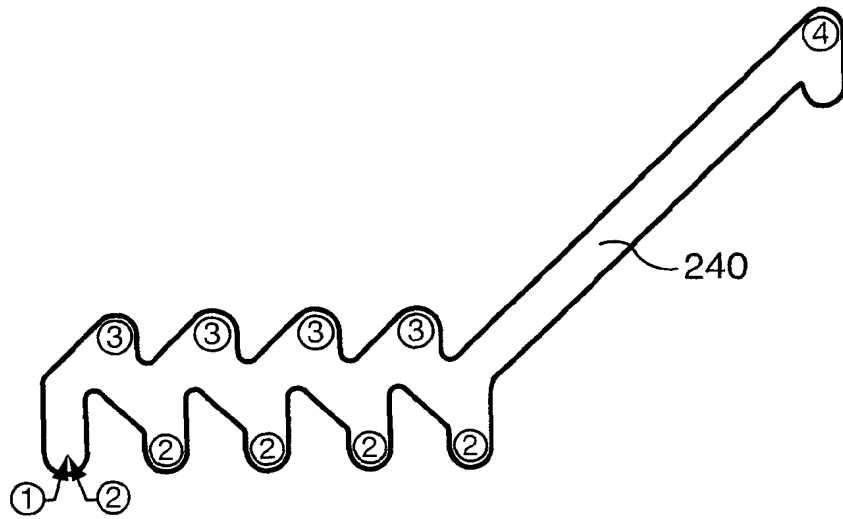


FIG. 3E

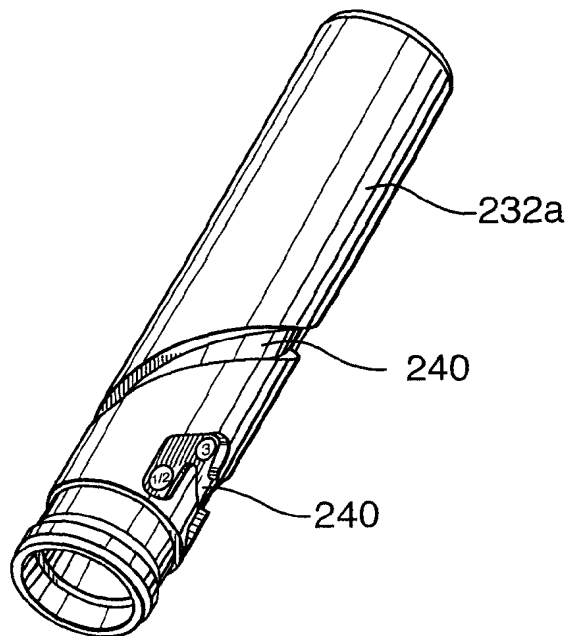


FIG. 3F

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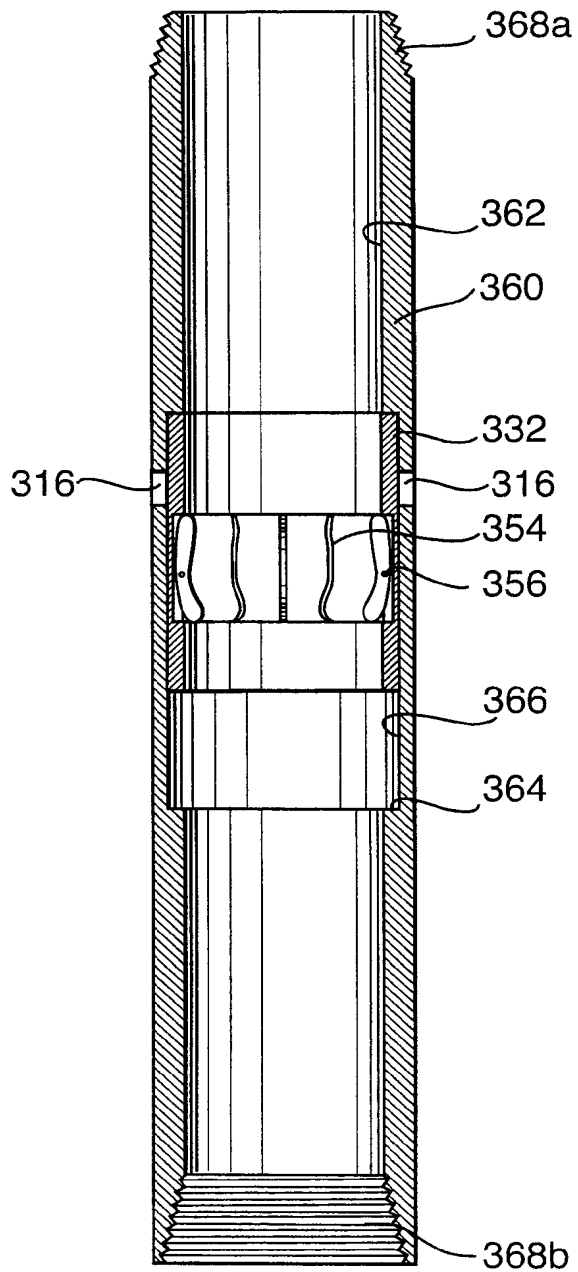


FIG.4

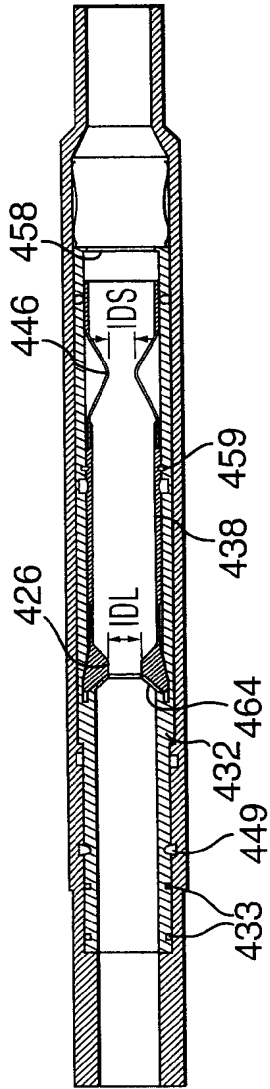


FIG. 5A

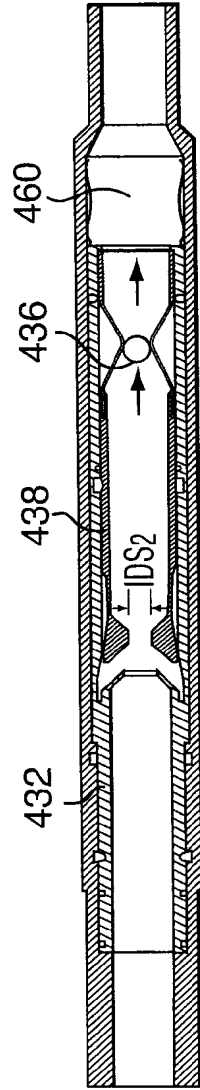


FIG. 5B

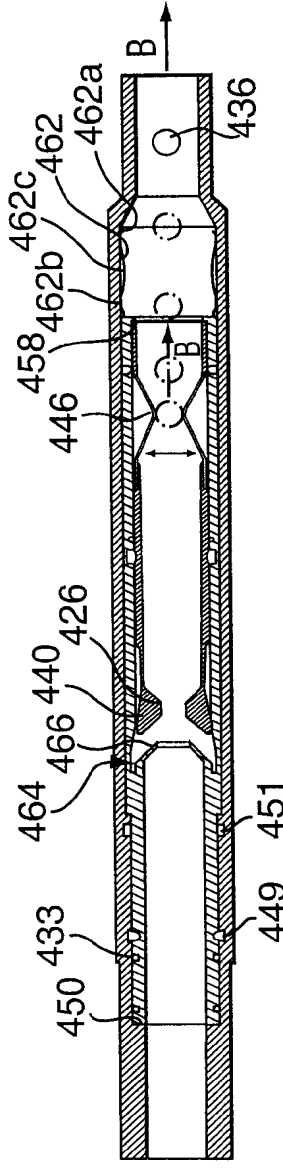


FIG. 5C

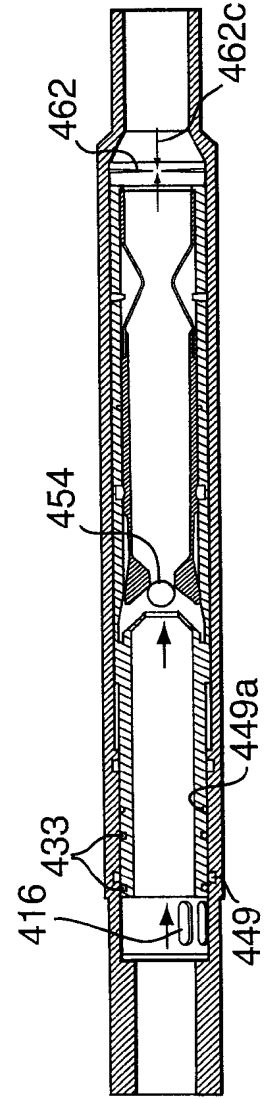


FIG. 5D

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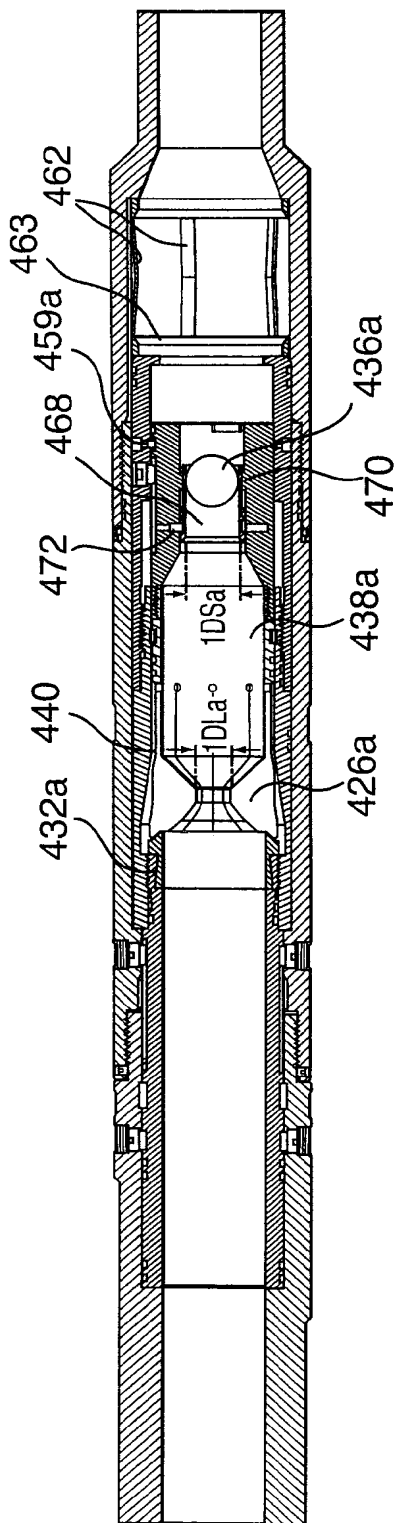


FIG. 5E

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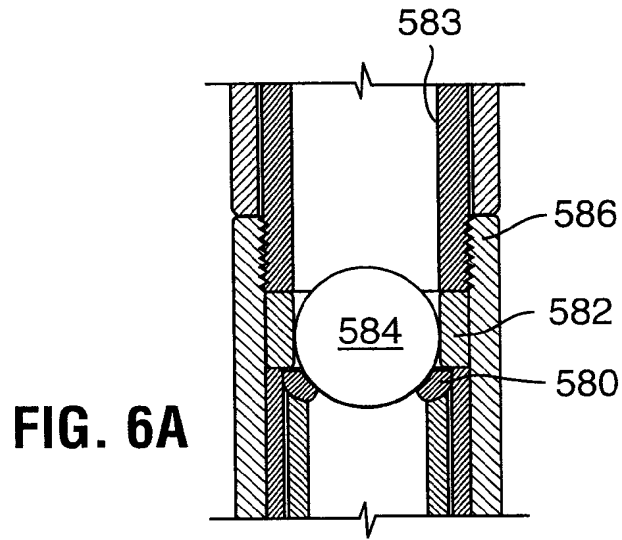


FIG. 6A

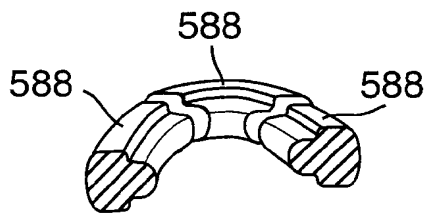


FIG. 6B



FIG. 6C

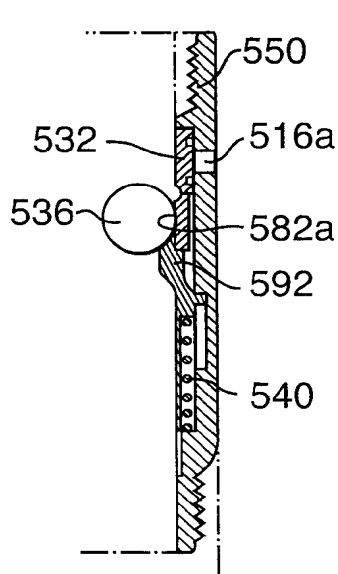


FIG. 6D

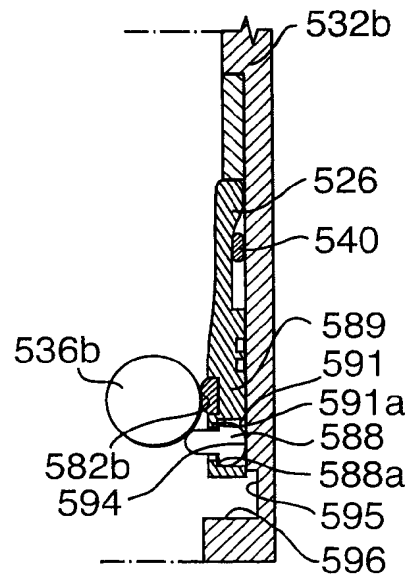


FIG. 6E

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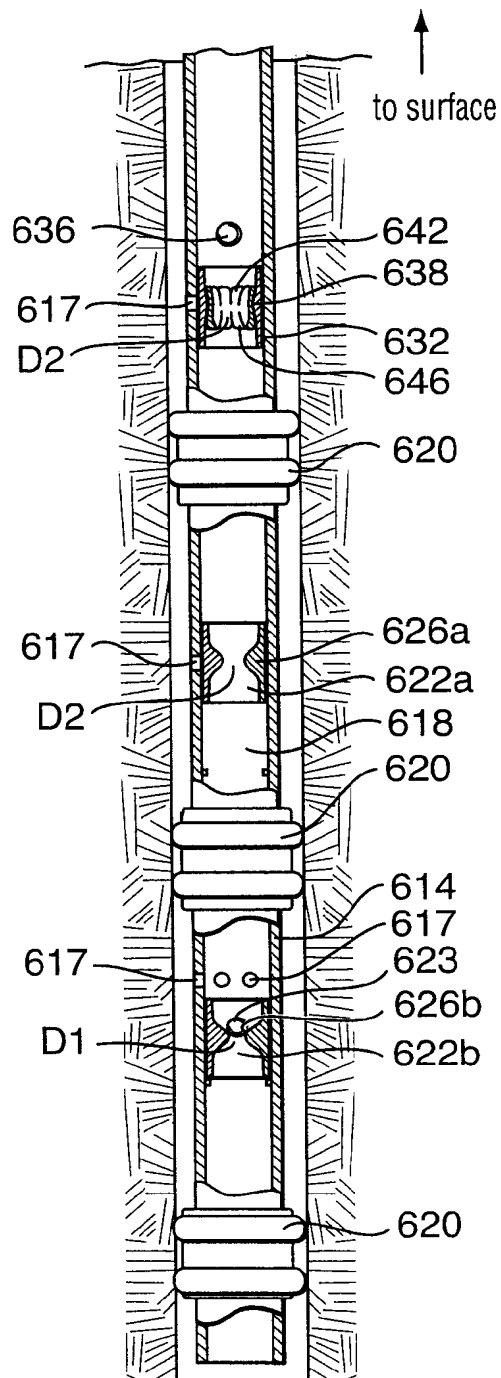


FIG. 7

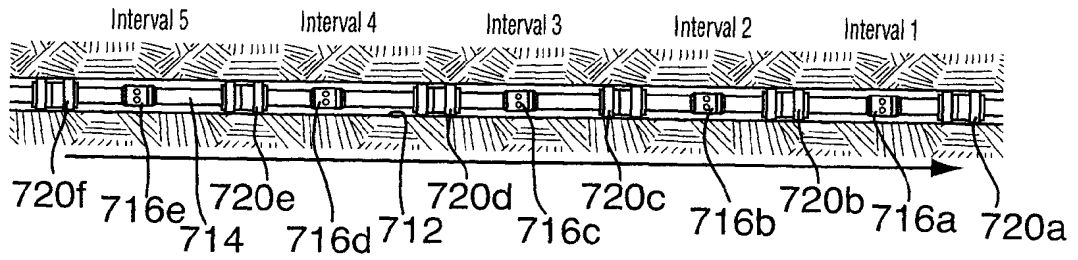


FIG. 8A

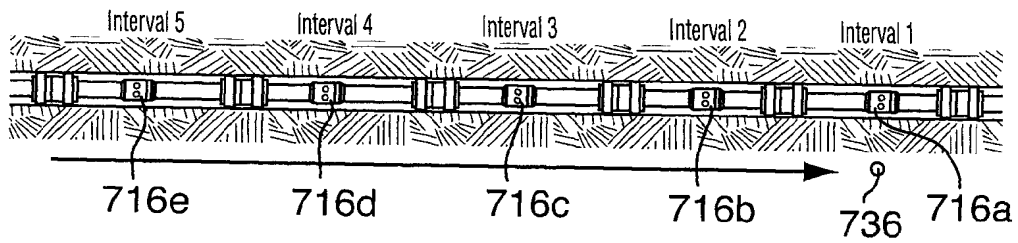


FIG. 8B

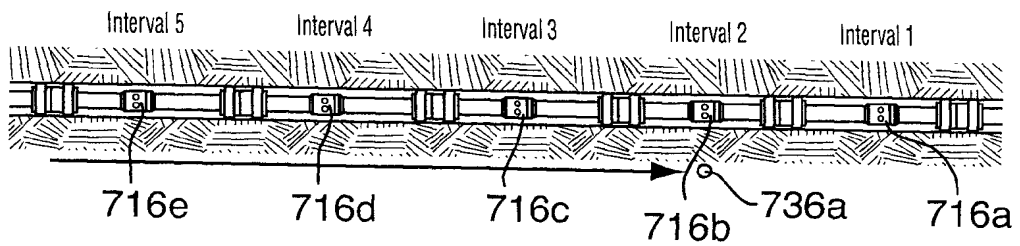


FIG. 8C

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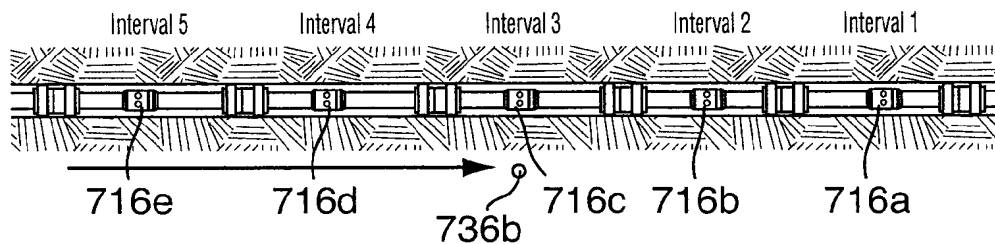


FIG. 8D

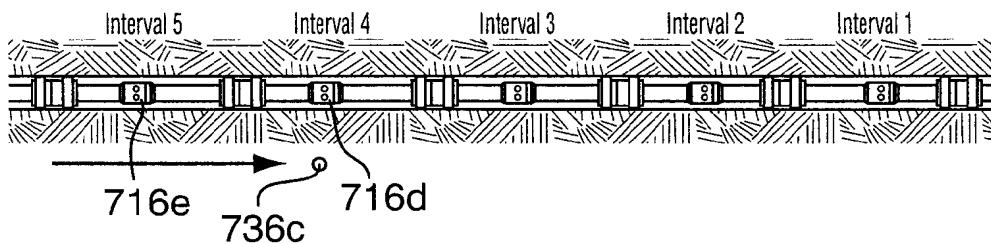


FIG. 8E

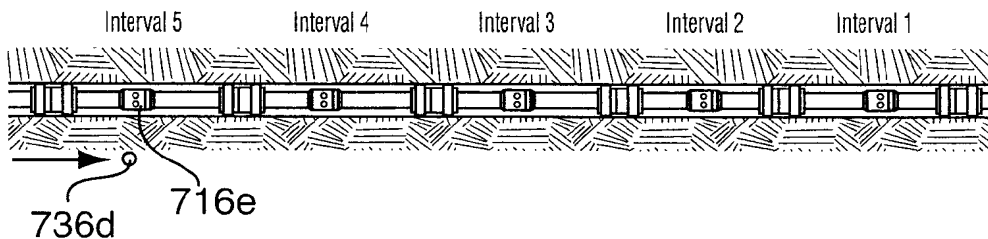


FIG. 8F

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CA2010/000727

<p>A. CLASSIFICATION OF SUBJECT MATTER IPC: E21B 33/124 (2006.01) , E21B 34/14 (2006.01) According to International Patent Classification (IPC) or to both national classification and IPC</p>																				
<p>B. FIELDS SEARCHED</p> <p>Minimum documentation searched (classification system followed by classification symbols) IPC: E21B 33/124 (2006.01) , E21B 34/14 (2006.01)</p> <p>Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched</p> <p>Electronic database(s) consulted during the international search (name of database(s) and, where practicable, search terms used) Epodoc; keywords: slide, move, shift, sleeve, collar, ball, dart, stop, seat (singly or in combination, variations thereof, with or without class as necessary).</p>																				
<p>C. DOCUMENTS CONSIDERED TO BE RELEVANT</p> <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:10%;">Category*</th> <th style="width:60%;">Citation of document, with indication, where appropriate, of the relevant passages</th> <th style="width:30%;">Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td align="center">A</td> <td>US7108067 B2 (THEMIG, D.J., et al.) 19 September 2006 (19-09-2006)</td> <td align="center">1 - 19</td> </tr> <tr> <td align="center">A</td> <td>US6907936 B2 (FEHR, J., et al.) 21 June 2005 (21-06-2005)</td> <td align="center">1 - 19</td> </tr> <tr> <td align="center">A</td> <td>US3053322 A (KLINE, A.K.) 11 September 1962 (11-09-1962)</td> <td align="center">1 - 19</td> </tr> <tr> <td align="center">A</td> <td>US2947363 A (SACKETT, T.H., et al.) 2 August 1960 (02-08-1960)</td> <td align="center">1 - 19</td> </tr> <tr> <td align="center">A</td> <td>US2155609 A (McCLENDON, W.R., et al.) 25 April 1939 (25-04-1939)</td> <td align="center">1 - 19</td> </tr> </tbody> </table>			Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	A	US7108067 B2 (THEMIG, D.J., et al.) 19 September 2006 (19-09-2006)	1 - 19	A	US6907936 B2 (FEHR, J., et al.) 21 June 2005 (21-06-2005)	1 - 19	A	US3053322 A (KLINE, A.K.) 11 September 1962 (11-09-1962)	1 - 19	A	US2947363 A (SACKETT, T.H., et al.) 2 August 1960 (02-08-1960)	1 - 19	A	US2155609 A (McCLENDON, W.R., et al.) 25 April 1939 (25-04-1939)	1 - 19
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A	US2155609 A (McCLENDON, W.R., et al.) 25 April 1939 (25-04-1939)	1 - 19																		
<p><input type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.</p> <table border="1" style="width:100%; border-collapse: collapse;"> <tbody> <tr> <td style="width:30%;">* Special categories of cited documents .</td> <td style="width:70%;">“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</td> </tr> <tr> <td>“A” document defining the general state of the art which is not considered to be of particular relevance</td> <td>“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</td> </tr> <tr> <td>“E” earlier application or patent but published on or after the international filing date</td> <td>“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</td> </tr> <tr> <td>“I.” 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)</td> <td>“&” document member of the same patent family</td> </tr> <tr> <td>“O” document referring to an oral disclosure, use, exhibition or other means</td> <td></td> </tr> <tr> <td>“P” document published prior to the international filing date but later than the priority date claimed</td> <td></td> </tr> </tbody> </table>			* Special categories of cited documents .	“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	“A” document defining the general state of the art which is not considered to be of particular relevance	“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	“E” earlier application or patent but published on or after the international filing date	“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	“I.” 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)	“&” document member of the same patent family	“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							
* Special categories of cited documents .	“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																			
“A” document defining the general state of the art which is not considered to be of particular relevance	“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																			
“E” earlier application or patent but published on or after the international filing date	“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																			
“I.” 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)	“&” document member of the same patent family																			
“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																				
Date of the actual completion of the international search 5 July 2010 (05-07-2010)	Date of mailing of the international search report 30 July 2010 (30-07-2010)																			
Name and mailing address of the ISA/CA Canadian Intellectual Property Office Place du Portage I, C114 - 1st Floor, Box PCT 50 Victoria Street Gatineau, Quebec K1A 0C9 Facsimile No.: 001-819-953-2476	Authorized officer Edward Dabrowski (819) 953-1378																			

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CA2010/000727

Patent Document Cited in Search Report	Publication Date	Patent Family Member(s)	Publication Date
US7108067B2	19-09-2006	CA2412072A1	19-05-2003
		CA2437635A1	21-02-2004
		CA2437678A1	21-02-2004
		US2003127227A1	10-07-2003
		US6907936B2	21-06-2005
		US2004129422A1	08-07-2004
		US7021384B2	04-04-2006
		US2004118564A1	24-06-2004
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		US7134505B2	14-11-2006
		US2006090906A1	04-05-2006
		US7353878B2	08-04-2008
		US2007007007A1	11-01-2007
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		US2007151734A1	05-07-2007
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		US2008314596A1	25-12-2008
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US2009071644A1	19-03-2009		
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US6907936B2	21-06-2005	CA2412072A1	19-05-2003
		CA2437635A1	21-02-2004
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		US2003127227A1	10-07-2003
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		US7431091B2	07-10-2008
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		US7543634B2	09-06-2009
		US2008277110A1	13-11-2008
		US7571765B2	11-08-2009
		US2008314596A1	25-12-2008
		US2009008083A1	08-01-2009
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US2009283280A1	19-11-2009		
US2010065276A1	18-03-2010		
US3053322A	11-09-1962	US3053322A	11-09-1962
US2947363A	02-08-1960	US2947363A	02-08-1960
US2155609A	25-04-1939	US2155609A	25-04-1939

Electronic Acknowledgement Receipt

EFS ID:	12328188
Application Number:	13329077
International Application Number:	
Confirmation Number:	2094
Title of Invention:	BOTTOM SET DOWNHOLE PLUG
First Named Inventor/Applicant Name:	W. Lynn Frazier
Customer Number:	60935
Filer:	Jared E. Cmaidalka/Denise Barberis
Filer Authorized By:	Jared E. Cmaidalka
Attorney Docket Number:	MOTI-018P1C1
Receipt Date:	16-MAR-2012
Filing Date:	16-DEC-2011
Time Stamp:	17:57:38
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	MOTI_018P1C1_Transmittal_ID S.pdf	42581 <small>c12286fa60ae9e2233d0125e782ca0064f9950a9</small>	no	1

Warnings:

Information:

2	Information Disclosure Statement (IDS) Form (SB08)	MOTI_018P1C1_IDS.pdf	617054	no	19
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Information:					
3	Foreign Reference	GB914030A.pdf	314207	no	4
			da8807ce79ba995b4896f7915c22eb3a28333022		
Warnings:					
Information:					
4	Foreign Reference	WO2010127457A1.pdf	2314339	no	53
			ec4bc9e948348391a73fdaded11b86fff514e21a		
Warnings:					
Information:					
5	Non Patent Literature	Teledyne_Merla_Oil_Tools.pdf	4480778	no	40
			430e333bef57ff52e4b29d1f7b2dac6f03d19e92		
Warnings:					
Information:					
6	Non Patent Literature	Pengo_Industries_Catalog.pdf	1501916	no	12
			4808459b1029acd8c68f52f167783ee51b70a748		
Warnings:					
Information:					
7	Non Patent Literature	MAP_Oil_Tools_Catalog.pdf	2204883	no	46
			db883e66d5604d7a4281c848f7ca0bba7e4f610		
Warnings:					
Information:					
8	Non Patent Literature	Lovejoy.pdf	1076629	no	30
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9	Non Patent Literature	Halliburton_Services_Sales_Service_Catalog.pdf	441702	no	2
			763c1ca3cfa9d12e30dc67d3f2f1f6127b74005		
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Warnings:					
Information:					

11	Non Patent Literature	Garfield_Formation_Damage_Control.pdf	667752 78ed52bdebd563036c8554b3c9d5021b102ba83	no	8
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Information:					
12	Non Patent Literature	Garfield_Composite_Bridge_Plug.pdf	658636 905f2c5c621f3927cc27a62b55649afa90b869cb	no	6
Warnings:					
Information:					
13	Non Patent Literature	Garfield_Composite_Research.pdf	3677369 f5afc5686ffff4958cb91bbbb24bbd5cda8bda1	no	4
Warnings:					
Information:					
14	Non Patent Literature	Baker_Hughes_Its_About_Time.pdf	153750 fb4a45e45bb6d258c1281eee7b57259fb1cd4ead	no	2
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Information:					
15	Non Patent Literature	Baker_Hughes_Baker_Oil_Tools_Workover_System.pdf	1891191 fd1d8f7632bfd5a39cb231d8f1ab4244b333a861	no	3
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Information:					
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Information:					
17	Non Patent Literature	Halliburton_Catalog_43_pt1.pdf	9185110 14f28bc983adc3a1a9b82c83d24a7d28504ecec2	no	50
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Information:					
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Information:					

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Information:					
21	Non Patent Literature	Alpha-Oil-Tools-Catalog.pdf	9741647	no	136
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Warnings:					
Information:					
Total Files Size (in bytes):				76784286	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Applicant: W. Lynn Frazier	§	Conf. No.:	2094
	§		
Filed: December 16, 2011	§	Art Unit:	3672
	§		
Serial No.: 13/239,077	§	Examiner:	Not Yet Assigned
	§		
For: Bottom Set Downhole Plug	§	Docket No.:	MOTI-018P1C1
	§		
	§	Date:	March 16, 2012

Commissioner for Patents
Mail Stop Amendment
P.O. Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL OF INFORMATION DISCLOSURE STATEMENT

Dear examiner:

In compliance with the duty of disclosure under 37 CFR §1.56, and in accordance with the practice under 37 CFR 1.97 and 1.98, the Examiner's attention is directed to the documents listed on the Form PTO-SB08 transmitted herewith. The Information Disclosure Statement is being filed within three months of the United States filing date or before the mailing date of a first Office Action on the merits. Therefore, no certification or fee is required (37 CFR § 1.97(b)).

Respectfully submitted,

/Robb D. Edmonds/

Dated: March 16, 2012

Robb D. Edmonds
Attorney for Applicant
Registration No. 46,681

Edmonds & Nolte, PC
2625 Bay Area Boulevard, Suite 530
Houston, Texas 77058
Telephone: (281) 480-2700
Facsimile: (281) 480-2701

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number
13/329,077

APPLICATION AS FILED - PART I

(Column 1) (Column 2)

FOR	NUMBER FILED	NUMBER EXTRA
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A
TOTAL CLAIMS (37 CFR 1.16(j))	20 minus 20 = *	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 = *	
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).	
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))		

* If the difference in column 1 is less than zero, enter "0" in column 2.

SMALL ENTITY

RATE(\$)	FEE(\$)
N/A	95
N/A	310
N/A	125
x 30 =	0.00
x 125 =	0.00
	0.00
	0.00
TOTAL	530

OR OTHER THAN SMALL ENTITY

RATE(\$)	FEE(\$)
N/A	
N/A	
N/A	
TOTAL	

APPLICATION AS AMENDED - PART II

(Column 1) (Column 2) (Column 3)

AMENDMENT A		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
	Total (37 CFR 1.16(i))	*	Minus	**	=
	Independent (37 CFR 1.16(h))	*	Minus	***	=
	Application Size Fee (37 CFR 1.16(s))				
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					

SMALL ENTITY

RATE(\$)	ADDITIONAL FEE(\$)
x =	
x =	
TOTAL ADD'L FEE	

OR OTHER THAN SMALL ENTITY

RATE(\$)	ADDITIONAL FEE(\$)
x =	
x =	
TOTAL ADD'L FEE	

(Column 1) (Column 2) (Column 3)

AMENDMENT B		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
	Total (37 CFR 1.16(i))	*	Minus	**	=
	Independent (37 CFR 1.16(h))	*	Minus	***	=
	Application Size Fee (37 CFR 1.16(s))				
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					

SMALL ENTITY

RATE(\$)	ADDITIONAL FEE(\$)
x =	
x =	
TOTAL ADD'L FEE	

OR OTHER THAN SMALL ENTITY

RATE(\$)	ADDITIONAL FEE(\$)
x =	
x =	
TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

Table with 7 columns: APPLICATION NUMBER, FILING or 371(c) DATE, GRP ART UNIT, FIL FEE REC'D, ATTY. DOCKET NO, TOT CLAIMS, IND CLAIMS. Row 1: 13/329,077, 12/16/2011, 3672, 595, MOTI-018P1C1, 20, 3

CONFIRMATION NO. 2094

UPDATED FILING RECEIPT



60935
Edmonds & Nolte, PC
2625 Bay Area Boulevard, Suite 530
Houston, TX 77058

Date Mailed: 03/09/2012

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections

Applicant(s)

W. Lynn Frazier, Corpus Christi, TX;

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CON of 13/194,871 07/29/2011 PAT 8079413
which is a CIP of 12/317,497 12/23/2008

Foreign Applications (You may be eligible to benefit from the Patent Prosecution Highway program at the USPTO. Please see http://www.uspto.gov for more information.)

If Required, Foreign Filing License Granted: 12/30/2011

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is US 13/329,077

Projected Publication Date: 06/14/2012

Non-Publication Request: No

Early Publication Request: No

** SMALL ENTITY **

Title

BOTTOM SET DOWNHOLE PLUG

Preliminary Class

166

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4158).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as

set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	§	
W. Lynn Frazier	§	Examiner:
	§	
Serial No.: 13/329,077	§	Group Art Unit: 3672
	§	
Filed: December 16, 2011	§	Docket No: MOTI-018P1C1
	§	
For: <i>Bottom Set Downhole Plug</i>	§	Confirmation No.: 2094
	§	
	§	
	§	
	§	Date: March 2, 2012

MAIL STOP MISSING PARTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

**RESPONSE TO NOTICE TO FILE MISSING PARTS
UNDER 37 CFR §1.53(b)**

Applicant files this response to a Notice to File Missing Parts (Form PTO-1533), set to expire on March 5, 2012. The Notice indicates that the application was filed without the signed oath or declaration that is required to avoid abandonment.

In response to the missing parts request associated with this Communication, enclosed for filing in the above-referenced application is a copy of the declaration from prior application Serial No. 13/194,871, which is now issued Patent No. 8,079,413.

Respectfully submitted,

March 2, 2012

/Robb D. Edmonds/

Date

Robb D. Edmonds
Attorney for Applicant
Registration No. 46,681

EDMONDS & NOLTE, P.C.
2625 Bay Area Boulevard
Suite 530
Houston, Texas 77058
Phone: 281-480-2700
Fax: 281-480-2701

Electronic Patent Application Fee Transmittal

Application Number:	13329077
Filing Date:	16-Dec-2011
Title of Invention:	BOTTOM SET DOWNHOLE PLUG
First Named Inventor/Applicant Name:	W. Lynn Frazier
Filer:	Robb D. Edmonds/Denise Barberis
Attorney Docket Number:	MOTI-018P1C1

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Late filing fee for oath or declaration	2051	1	65	65

Petition:

Patent-Appeals-and-Interference:

Post-Allowance-and-Post-Issuance:

Extension-of-Time:

MOTI Ex. [2003] p. 312

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Total in USD (\$)				65

Electronic Acknowledgement Receipt

EFS ID:	12216252
Application Number:	13329077
International Application Number:	
Confirmation Number:	2094
Title of Invention:	BOTTOM SET DOWNHOLE PLUG
First Named Inventor/Applicant Name:	W. Lynn Frazier
Customer Number:	60935
Filer:	Robb D. Edmonds/Denise Barberis
Filer Authorized By:	Robb D. Edmonds
Attorney Docket Number:	MOTI-018P1C1
Receipt Date:	02-MAR-2012
Filing Date:	16-DEC-2011
Time Stamp:	17:26:52
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$65
RAM confirmation Number	4636
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part/.Zip	Pages (if appl.)
			MOTI Ex. [2003]	P. 314	

1	Applicant Response to Pre-Exam Formalities Notice	MOTI_018P1C1_Response_to_Missing_Parts.pdf	42212 f13384f6169de78e20b739b3d9533dc7f1da29de	no	1
Warnings:					
Information:					
2	Oath or Declaration filed	MOTI_018P1C1_Executed_Declaration.pdf	89071 12c9ad9ddb00e8a00453ad88bf3a32cd8d4da0a	no	1
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30219 f529dab88d02da08664c2f6f8c0d7fcd23389a7d	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			161502		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

Table with 7 columns: APPLICATION NUMBER, FILING or 371(c) DATE, GRP ART UNIT, FIL FEE REC'D, ATTY.DOCKET.NO, TOT CLAIMS, IND CLAIMS. Row 1: 13/329,077, 12/16/2011, 3672, 530, MOTI-018P1C1, 20, 3

CONFIRMATION NO. 2094

FILING RECEIPT



60935
Edmonds Nolte, PC
16815 ROYAL CREST DRIVE
SUITE 130
HOUSTON, TX 77058

Date Mailed: 01/05/2012

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections

Applicant(s)

W. Lynn Frazier, Corpus Christi, TX;

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CON of 13/194,871 07/29/2011 PAT 8079413
which is a CIP of 12/317,497 12/23/2008

Foreign Applications (You may be eligible to benefit from the Patent Prosecution Highway program at the USPTO. Please see http://www.uspto.gov for more information.)

If Required, Foreign Filing License Granted: 12/30/2011

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is US 13/329,077

Projected Publication Date: To Be Determined - pending completion of Missing Parts

Non-Publication Request: No

Early Publication Request: No

** SMALL ENTITY **

Title

BOTTOM SET DOWNHOLE PLUG

Preliminary Class

166

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4158).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as

set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

SelectUSA

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage, facilitate, and accelerate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number
13/329,077

APPLICATION AS FILED - PART I

(Column 1) (Column 2)

FOR	NUMBER FILED	NUMBER EXTRA
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A
TOTAL CLAIMS (37 CFR 1.16(j))	20 minus 20 = *	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 = *	
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).	
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))		

* If the difference in column 1 is less than zero, enter "0" in column 2.

SMALL ENTITY

RATE(\$)	FEE(\$)
N/A	95
N/A	310
N/A	125
x 30 =	0.00
x 125 =	0.00
	0.00
	0.00
TOTAL	530

OR OTHER THAN SMALL ENTITY

RATE(\$)	FEE(\$)
N/A	
N/A	
N/A	
TOTAL	

APPLICATION AS AMENDED - PART II

(Column 1) (Column 2) (Column 3)

AMENDMENT A		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
	Total (37 CFR 1.16(j))	*	Minus	**	=
	Independent (37 CFR 1.16(h))	*	Minus	***	=
	Application Size Fee (37 CFR 1.16(s))				
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))				

SMALL ENTITY

RATE(\$)	ADDITIONAL FEE(\$)
x =	
x =	
TOTAL ADD'L FEE	

OR OTHER THAN SMALL ENTITY

RATE(\$)	ADDITIONAL FEE(\$)
x =	
x =	
TOTAL ADD'L FEE	

(Column 1) (Column 2) (Column 3)

AMENDMENT B		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
	Total (37 CFR 1.16(j))	*	Minus	**	=
	Independent (37 CFR 1.16(h))	*	Minus	***	=
	Application Size Fee (37 CFR 1.16(s))				
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))				

RATE(\$)	ADDITIONAL FEE(\$)
x =	
x =	
TOTAL ADD'L FEE	

OR OTHER THAN SMALL ENTITY

RATE(\$)	ADDITIONAL FEE(\$)
x =	
x =	
TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
 ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
 *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
 The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.



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Table with 4 columns: APPLICATION NUMBER (13/329,077), FILING OR 371(C) DATE (12/16/2011), FIRST NAMED APPLICANT (W. Lynn Frazier), ATTY. DOCKET NO./TITLE (MOTI-018P1C1)

CONFIRMATION NO. 2094

FORMALITIES LETTER



60935
Edmonds Nolte, PC
16815 ROYAL CREST DRIVE
SUITE 130
HOUSTON, TX 77058

Date Mailed: 01/05/2012

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

Items Required To Avoid Abandonment:

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given TWO MONTHS from the date of this Notice within which to file all required items below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The oath or declaration is missing.
A properly signed oath or declaration in compliance with 37 CFR 1.63, identifying the application by the above Application Number and Filing Date, is required.
Note: If a petition under 37 CFR 1.47 is being filed, an oath or declaration in compliance with 37 CFR 1.63 signed by all available joint inventors, or if no inventor is available by a party with sufficient proprietary interest, is required.

The applicant needs to satisfy supplemental fees problems indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- A surcharge (for late submission of filing fee, search fee, examination fee or oath or declaration) as set forth in 37 CFR 1.16(f) of \$65 for a small entity in compliance with 37 CFR 1.27, must be submitted.

SUMMARY OF FEES DUE:

Total fee(s) required within TWO MONTHS from the date of this Notice is \$65 for a small entity

- \$65 Surcharge.

Replies should be mailed to:

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web.
<https://sportal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html>

For more information about EFS-Web please call the USPTO Electronic Business Center at **1-866-217-9197** or visit our website at <http://www.uspto.gov/ebc>.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

/hchin/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Attorney Docket No.	MOTI-018P1C1
First Inventor	W. Lynn Frazier
Title	Bottom Set Downhole Plugs
Express Mail Label No.	VIA EFS

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

1. **Fee Transmittal Form** (e.g., PTO/SB/17)
2. **Applicant claims small entity status.**
See 37 CFR 1.27.
3. **Specification** [Total Pages 25]
Both the claims and abstract must start on a new page
(For information on the preferred arrangement, see MPEP 608.01(a))
4. **Drawing(s)** (35 U.S.C. 113) [Total Sheets 7]
5. **Oath or Declaration** [Total Sheets _____]
 - a. Newly executed (original or copy)
 - b. A copy from a prior application (37 CFR 1.63(d))
(for continuation/divisional with Box 18 completed)
 - i. **DELETION OF INVENTOR(S)**
Signed statement attached deleting inventor(s)
name in the prior application, see 37 CFR
1.63(d)(2) and 1.33(b).
6. **Application Data Sheet.** See 37 CFR 1.76
7. **CD-ROM or CD-R** in duplicate, large table or
Computer Program (Appendix)
 Landscape Table on CD
8. **Nucleotide and/or Amino Acid Sequence Submission**
(if applicable, items a. – c. are required)
 - a. Computer Readable Form (CRF)
 - b. Specification Sequence Listing on:
 - i. CD-ROM or CD-R (2 copies); or
 - ii. Paper
 - c. Statements verifying identity of above copies

ADDRESS TO:

Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

ACCOMPANYING APPLICATION PARTS

9. **Assignment Papers** (cover sheet & document(s))
Name of Assignee _____
10. **37 CFR 3.73(b) Statement** **Power of Attorney**
(when there is an assignee)
11. **English Translation Document** (if applicable)
12. **Information Disclosure Statement** (PTO/SB/08 or PTO-1449)
 Copies of citations attached
13. **Preliminary Amendment**
14. **Return Receipt Postcard** (MPEP 503)
(Should be specifically itemized)
15. **Certified Copy of Priority Document(s)**
(if foreign priority is claimed)
16. **Nonpublication Request** under 35 U.S.C. 122(b)(2)(B)(i).
Applicant must attach form PTO/SB/35 or equivalent.
17. Other: _____

18. If a CONTINUING APPLICATION, check appropriate box, and supply the requisite information below and in the first sentence of the specification following the title, or in an Application Data Sheet under 37 CFR 1.76:

 Continuation Divisional Continuation-in-part (CIP) of prior application No.: 13/194,871.....

Prior application information:

Examiner Robert Edward FullerArt Unit: 3676

19. CORRESPONDENCE ADDRESS

 The address associated with Customer Number: 60935 OR Correspondence address below

Name

Address

City

State

Zip Code

Country

Telephone

Email

Signature

/Robb D. Edmonds/

Date

December 16, 2011

Name

Robb D. Edmonds

Registration No.
(Attorney/Agent)

46681

This collection of information is required by 37 CFR 1.53(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	BOTTOM SET DOWNHOLE PLUG
First Named Inventor/Applicant Name:	W. Lynn Frazier
Filer:	Robb D. Edmonds/Denise Barberis
Attorney Docket Number:	MOTI-018P1C1

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Utility filing Fee (Electronic filing)	4011	1	95	95
Utility Search Fee	2111	1	310	310
Utility Examination Fee	2311	1	125	125

Pages:

Claims:

Miscellaneous-Filing:

Petition:

Patent-Appeals-and-Interference:

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				530

Electronic Acknowledgement Receipt

EFS ID:	11644911
Application Number:	13329077
International Application Number:	
Confirmation Number:	2094
Title of Invention:	BOTTOM SET DOWNHOLE PLUG
First Named Inventor/Applicant Name:	W. Lynn Frazier
Customer Number:	60935
Filer:	Robb D. Edmonds/Denise Barberis
Filer Authorized By:	Robb D. Edmonds
Attorney Docket Number:	MOTI-018P1C1
Receipt Date:	16-DEC-2011
Filing Date:	
Time Stamp:	19:16:12
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$530
RAM confirmation Number	6393
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part/.Zip	Pages (if appl.)
			MOTI Ex. [2003]	P. 326	

1		MOTI_018P1C1_Patent_Application.pdf	3993809 70f970c0630a5e7a75ad69dc8c8ec73fb17017b7	yes	25
Multipart Description/PDF files in .zip description					
		Document Description	Start	End	
		Specification	1	21	
		Claims	22	24	
		Abstract	25	25	
Warnings:					
Information:					
2	Drawings-only black and white line drawings	MOTI_018P1C1_Figures.pdf	477590 1e975dad92baa6c89ce4fa8954ebeb5b56ca0a10	no	7
Warnings:					
Information:					
3	Application Data Sheet	MOTI_018P1C1_sb0014.pdf	1023309 02a72d8b9ea530358d93ea2903750ab71a70ceee	no	4
Warnings:					
Information:					
4	Transmittal of New Application	MOTI_018P1C1_sb0005.pdf	276053 eb6d6eaf11cf5eb9a2aaab8a5e507deaa6ba4120	no	2
Warnings:					
Information:					
5	Fee Worksheet (SB06)	fee-info.pdf	33005 cb4d21996ee7a877cc9a90d5f2e72982564e64fc	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			5803766		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

BOTTOM SET DOWNHOLE PLUG

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is continuation of U.S. Patent Application having Serial No. 13/194,871, which is a continuation-in-part of U.S. Patent Application having Serial No. 12/317,497, filed December 23, 2008, the entirety of which is incorporated by reference herein.

BACKGROUND

Field

[0002] Embodiments described generally relate to downhole tools. More particularly, embodiments described relate to downhole tools that are set within a wellbore with a lower shear mechanism.

Description of the Related Art

[0003] Bridge plugs, packers, and frac plugs are downhole tools that are typically used to permanently or temporarily isolate one wellbore zone from another. Such isolation is often necessary to pressure test, perforate, frac, or stimulate a zone of the wellbore without impacting or communicating with other zones within the wellbore. To reopen and/or restore fluid communication through the wellbore, plugs are typically removed or otherwise compromised.

[0004] Permanent, non-retrievable plugs and/or packers are typically drilled or milled to remove. Most non-retrievable plugs are constructed of a brittle material such as cast iron, cast aluminum, ceramics, or engineered composite materials, which can be drilled or milled. Problems sometimes occur, however, during the removal or drilling of such non-retrievable plugs. For instance, the non-retrievable plug components can bind upon the drill bit, and rotate within the casing string. Such binding can result in extremely long drill-out times, excessive casing wear, or both. Long drill-out times are highly undesirable, as rig time is typically charged by the hour.

[0005] In use, non-retrievable plugs are designed to perform a particular function. A bridge plug, for example, is typically used to seal a wellbore such that fluid is prevented from

flowing from one side of the bridge plug to the other. On the other hand, drop ball plugs allow for the temporary cessation of fluid flow in one direction, typically in the downhole direction, while allowing fluid flow in the other direction. Depending on user preference, one plug type may be advantageous over another, depending on the completion and/or production activity.

[0006] Certain completion and/or production activities may require several plugs run in series or several different plug types run in series. For example, one well may require three bridge plugs and five drop ball plugs, and another well may require two bridge plugs and ten drop ball plugs for similar completion and/or production activities. Within a given completion and/or production activity, the well may require several hundred plugs and/or packers depending on the productivity, depths, and geophysics of each well. The uncertainty in the types and numbers of plugs that might be required typically leads to the over-purchase and/or under-purchase of the appropriate types and numbers of plugs resulting in fiscal inefficiencies and/or field delays.

[0007] There is a need, therefore, for a downhole tool that can effectively seal the wellbore at wellbore conditions; be quickly, easily, and/or reliably removed from the wellbore; and configured in the field to perform one or more functions.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] Non-limiting, illustrative embodiments are depicted in the drawings, which are briefly described below. It is to be noted, however, that these illustrative drawings illustrate only typical embodiments and are not to be considered limiting of its scope, for the invention can admit to other equally effective embodiments.

[0009] Figure 1A depicts a partial section view of an illustrative insert for use with a plug for downhole use, according to one or more embodiments described.

[0010] Figure 1B depicts a partial section view of another illustrative embodiment of the insert for use with a plug for downhole use, according to one or more embodiments described.

[0011] Figure 2A depicts a partial section view of an illustrative plug configured with the insert of Figure 1, according to one or more embodiments described.

[0012] Figure 2B depicts a partial section view of the illustrative plug configured with the insert of Figure 1 and a flapper valve, according to one or more embodiments described.

[0013] Figure 2C depicts a partial section view of another illustrative plug with a lower shear mechanism disposed directly on the plug body, according to one or more embodiments.

[0014] Figure 3A depicts a partial section view of the plug of Figure 2A located within a casing prior to installation, according to one or more embodiments described.

[0015] Figure 3B depicts a partial section view of the plug of Figure 2B located within the casing prior to installation, according to one or more embodiments described.

[0016] Figure 3C depicts a partial section view of the plug of Figure 2A located in an expanded or actuated position within the casing, according to one or more embodiments described.

[0017] Figure 3D depicts a partial section view of the plug of Figure 2B located in an expanded or actuated position within the casing, according to one or more embodiments described.

[0018] Figure 4 depicts a partial section view of the expanded plug depicted in Figures 3C and 3D, according to one or more embodiments described.

[0019] Figure 5 depicts an illustrative, complementary set of angled surfaces that function as anti-rotation features to interact and/or engage between a first plug and a second plug in series, according to one or more embodiments described.

[0020] Figure 6 depicts an illustrative, dog clutch anti-rotation feature, allowing a first plug and a second plug to interact and/or engage in series according to one or more embodiments described.

[0021] Figure 7 depicts an illustrative, complementary set of flats and slots that serve as anti-rotation features to interact and/or engage between a first plug and a second plug in series, according to one or more embodiments described.

[0022] Figure 8 depicts another illustrative, complementary set of flats and slots that serve as anti-rotation features to interact and/or engage between a first plug and a second plug in series, according to one or more embodiments described.

DETAILED DESCRIPTION

[0023] A plug for isolating a wellbore is provided. The plug can include one or more lower shear or shearable mechanisms for connecting to a setting tool. The lower shear or shearable mechanism can be located directly on the body of the plug or on a separate component or insert that is placed within the body of the plug. The lower shear or shearable mechanism is adapted to engage a setting tool and release the setting tool when exposed to a predetermined stress that is sufficient to deform the shearable threads to release the setting tool but is less than a stress sufficient to break the plug body. The term "stress" and "force" are used interchangeably, and are intended to refer to a system of forces that may include axial force, radial force, and/or a combination thereof. The terms "shear mechanism" and "shearable mechanism" are used interchangeably, and are intended to refer to any component, part, element, member, or thing that shears or is capable of shearing at a predetermined stress that is less than the stress required to shear the body of the plug. The term "shear" means to fracture, break, or otherwise deform thereby releasing two or more engaged components, parts, or things or thereby partially or fully separating a single component into two or more components/pieces. The term "plug" refers to any tool used to permanently or temporarily isolate one wellbore zone from another, including any tool with blind passages, plugged mandrels, as well as open passages extending completely therethrough and passages that are blocked with a check valve. Such tools are commonly referred to in the art as "bridge plugs," "frac plugs," and/or "packers." And such tools can be a single assembly (i.e. one plug) or two or more assemblies (i.e. two or more plugs) disposed within a work string or otherwise connected thereto that is run into a wellbore on a wireline, slickline, production tubing, coiled tubing or any technique known or yet to be discovered in the art.

[0024] Figure 1A depicts a partial section view of an illustrative, shearable insert 100 for a plug, according to one or more embodiments. The insert 100 can include a body 102 having a first or upper end 112 and a second or lower end 114. A passageway or bore 110 can be completely or at least partially formed through the body 102. One or more threads 120 can be disposed or formed on an outer surface of the body 102. The threads 120 can be disposed on the outer surface of the body 102 toward the upper end 112. As discussed in more detail below with reference to Figures 2A-2C and Figures 3A-D, the threads 120 can be used to secure the insert 100 within a surrounding component, such as another insert 100, setting tool, tubing string, plug, or other tool.

[0025] Figure 1B depicts a partial section view of an alternative embodiment of the illustrative, shearable insert 100B for a plug. The insert 100B can include any combination of features of insert 100, and additionally, a ball 150 or other solid impediment can seat against either or both ends of the bore 110 to regulate or check fluid flow therethrough. As depicted in Figure 1B, the body 102 can include a shoulder 155 formed in, coupled to, or otherwise provided, which can be sized to receive the ball 150 and to seal therewith. Accordingly, the ball 150 can seat against the shoulder 155 to restrict fluid flow through the bore 110 from below the insert 100B. An adapter pin 160 can be inserted through the body 102 to cage the ball 150 or other solid impediment in the bore 110, between the pin 160 and the shoulder 155.

[0026] One or more shearable threads 130 can be disposed or formed on an inner surface of the body 102. The shearable threads 130 can be used to couple the insert 100, 100B to another insert 100, 100B, setting tool, tubing string, plug, or other tool. The shearable threads 130 can be located anywhere along the inner surface of the body 102, and are not dependent on the location of the outer threads 120. For example, the location of the shearable threads 130 can be located beneath or above the outer threads 120; toward the first end 112 of the insert 100, 100B, as depicted in Figures 1 and 1B; and/or toward the second end 114 of the insert 100, 100B.

[0027] Any number of shearable threads 130 can be used. The number, pitch, pitch angle, and/or depth of the shearable threads 130 can depend, at least in part, on the operating conditions of the wellbore where the insert 100, 100B will be used. The number, pitch, pitch

angle, and/or depth of the shearable threads 130 can also depend, at least in part, on the materials of construction of both the insert 100, 100B and the component, *e.g.*, another insert 100, 100B, a setting tool, another tool, plug, tubing string, *etc.*, to which the insert 100, 100B is connected. The number of threads 130, for example, can range from about 2 to about 100, such as about 2 to about 50; about 3 to about 25; or about 4 to about 10. The number of threads 130 can also range from a low of about 2, 4, or 6 to a high of about 7, 12, or 20. The pitch between each thread 130 can also vary depending on the force required to shear, break, or otherwise deform the threads 130. The pitch between each thread 130 can be the same or different. For example, the pitch between each thread 130 can vary from about 0.1 mm to about 200 mm; 0.2 mm to about 150 mm; 0.3 mm to about 100 mm; or about 0.1 mm to about 50 mm. The pitch between each thread 130 can also range from a low of about 0.1 mm, 0.2 mm, or 0.3 mm to a high of about 2 mm, 5 mm or 10 mm.

[0028] The shearable threads 130 can be adapted to shear, break, or otherwise deform when exposed to a predetermined stress or force, releasing the component engaged within the body 102. The predetermined stress or force can be less than a stress and/or force required to fracture or break the body 102 of the insert 100, 100B. Upon the threads 130 shearing, breaking, or deforming, the component engaged within the body 102 can be freely removed or separated therefrom.

[0029] Any number of outer threads 120 can be used. The number of outer threads 120, for example, can range from about 2 to about 100, such as about 2 to about 50; about 3 to about 25; or about 4 to about 10. The number of threads 120 can also range from a low of about 2, 4, or 6 to a high of about 7, 12, or 20. The pitch between each thread 120 can also vary. The pitch between each thread 120 can be the same or different. For example, the pitch between each thread 120 can vary from about 0.1 mm to about 200 mm; 0.2 mm to about 150 mm; 0.3 mm to about 100 mm; or about 0.1 mm to about 50 mm. The pitch between each thread 120 can also range from a low of about 0.1 mm, 0.2 mm, or 0.3 mm to a high of about 2 mm, 5 mm or 10 mm.

[0030] The threads 120 and the shearable threads 130 can be right-handed and/or left-handed threads. For example, to facilitate connection of the insert 100, 100B to a setting tool when the setting tool is coupled to, for example, screwed into the insert 100, 100B, the threads 120

can be right-handed threads and the shearable threads 130 can be left-handed threads, or vice versa.

[0031] The outer surface of the insert 100, 100B can have a constant diameter, or its diameter can vary, as depicted in Figures 1A and 1B. For example, the outer surface can include a smaller first diameter portion or area 140 that transitions to a larger, second diameter portion or area 142, forming a ledge or shoulder 144 therebetween. The shoulder 144 can have a first end that is substantially flat, abutting the second diameter 142, a second end that gradually slopes or transitions to the first diameter 140, and can be adapted to anchor the insert into the plug. The shoulder 144 can be formed adjacent the outer threads 120 or spaced apart therefrom, and the outer threads 120 can be above or below the shoulder 144.

[0032] The insert 100, 100B and/or the shearable threads 130 can be made of an alloy that includes brass. Suitable brass compositions include, but are not limited to, admiralty brass, Aich's alloy, alpha brass, alpha-beta brass, aluminum brass, arsenical brass, beta brass, cartridge brass, common brass, dezincification resistant brass, gilding metal, high brass, leaded brass, lead-free brass, low brass, manganese brass, Muntz metal, nickel brass, naval brass, Nordic gold, red brass, rich low brass, tonval brass, white brass, yellow brass, and/or any combinations thereof.

[0033] The insert 100, 100B can also be formed or made from other metallic materials (such as aluminum, steel, stainless steel, copper, nickel, cast iron, galvanized or non-galvanized metals, *etc.*), fiberglass, wood, composite materials (such as ceramics, wood/polymer blends, cloth/polymer blends, *etc.*), and plastics (such as polyethylene, polypropylene, polystyrene, polyurethane, polyethylethylketone (PEEK), polytetrafluoroethylene (PTFE), polyamide resins (such as nylon 6 (N6), nylon 66 (N66)), polyester resins (such as polybutylene terephthalate (PBT), polyethylene terephthalate (PET), polyethylene isophthalate (PEI), PET/PEI copolymer) polynitrile resins (such as polyacrylonitrile (PAN), polymethacrylonitrile, acrylonitrile-styrene copolymers (AS), methacrylonitrile-styrene copolymers, methacrylonitrile-styrene-butadiene copolymers; and acrylonitrile-butadiene-styrene (ABS)), polymethacrylate resins (such as polymethyl methacrylate and polyethylacrylate), cellulose resins (such as cellulose acetate and cellulose acetate butyrate); polyimide resins (such as aromatic polyimides), polycarbonates (PC), elastomers (such as

ethylene-propylene rubber (EPR), ethylene propylene-diene monomer rubber (EPDM), styrenic block copolymers (SBC), polyisobutylene (PIB), butyl rubber, neoprene rubber, halobutyl rubber and the like)), as well as mixtures, blends, and copolymers of any and all of the foregoing materials.

[0034] Figure 2A depicts a partial section view of an illustrative plug 200 configured with the insert 100, 100B and adapted to receive a ball type impediment or another type of impediment, according to one or more embodiments. The plug 200 can include a mandrel or body 210 having a first or upper end 207 and a second or lower end 208. A passageway or bore 255 can be formed at least partially through the body 210. The body 210 can be a single, monolithic component as shown, or the body 210 can be or include two or more components connected, engaged, or otherwise attached together. The body 210 serves as a centralized support member, made of one or more components or parts, for one or more outer components to be disposed thereon or thereabout.

[0035] The insert 100, 100B can be threaded or otherwise disposed within the plug 200 at a lower end 208 of the body 210. A setting tool, tubing string, plug, or other tool can enter the bore 255 through the first end 207 of the body 210 and can be threaded to or otherwise coupled to and/or disposed within the insert 100. As further described herein, the shearable threads 130 on the insert 100 can be sheared, fractured, or otherwise deformed, releasing the setting tool, tubing string, plug, or other tool from the plug 200.

[0036] The bore 255 can have a constant diameter throughout, or its diameter can vary, as depicted in Figure 2A. For example, the bore 255 can include a larger, first diameter portion or area 226 that transitions to a smaller, second diameter portion or area 227, forming a seat or shoulder 228 therebetween. The shoulder 228 can have a tapered or sloped surface connecting the two diameter portions or areas 226, 227. Although not shown, the shoulder 228 can be flat or substantially flat, providing a horizontal or substantially horizontal surface connecting the two diameters 226, 227. As will be explained in more detail below, the shoulder 228 can serve as a seat or receiving surface for plugging off the bore 255 when a ball (shown in Figure 3C) or other impediment, such as a flapper member 215 (shown in Figures 3D), is placed within the bore 255.

[0037] At least one conical member (two are shown: 230, 235), at least one slip (two are shown: 240, 245), and at least one malleable element 250 can be disposed about the body 210. As used herein, the term "disposed about" means surrounding the component, *e.g.*, the body 210, allowing for relative movement therebetween (*e.g.*, by sliding, rotating, pivoting, or a combination thereof). A first section or second end of the conical members 230, 235 has a sloped surface adapted to rest underneath a complementary sloped inner surface of the slips 240, 245. As explained in more detail below, the slips 240, 245 travel about the surface of the adjacent conical members 230, 235, thereby expanding radially outward from the body 210 to engage an inner surface of a surrounding tubular or borehole. A second section or second end of the conical members 230, 235 can include two or more tapered pedals or wedges adapted to rest about an adjacent malleable element 250. One or more circumferential voids 236 can be disposed within or between the first and second sections of the conical members 230, 235 to facilitate expansion of the wedges about the malleable element 250. The wedges are adapted to hinge or pivot radially outward and/or hinge or pivot circumferentially. The groove or void 236 can facilitate such movement. The wedges pivot, rotate, or otherwise extend radially outward, and can contact an inner diameter of the surrounding tubular or borehole. Additional details of the conical members 230, 235 are described in U.S. Patent No. 7,762,323.

[0038] The inner surface of each slip 240, 245 can conform to the first end of the adjacent conical member 230, 235. An outer surface of the slips 240, 245 can include at least one outwardly-extending serration or edged tooth to engage an inner surface of a surrounding tubular, as the slips 240, 245 move radially outward from the body 210 due to the axial movement across the adjacent conical members 230, 235.

[0039] The slips 240, 245 can be designed to fracture with radial stress. The slips 240, 245 can include at least one recessed groove 242 milled or otherwise formed therein to fracture under stress allowing the slips 240, 245 to expand outward and engage an inner surface of the surrounding tubular or borehole. For example, the slips 240, 245 can include two or more, for example, four, sloped segments separated by equally-spaced recessed grooves 242 to contact the surrounding tubular or borehole.

[0040] The malleable element 250 can be disposed between the conical members 230, 235. A three element 250 system is depicted in Figure 2A, but any number of elements 250 can be used. The malleable element 250 can be constructed of any one or more malleable materials capable of expanding and sealing an annulus within the wellbore. The malleable element 250 is preferably constructed of one or more synthetic materials capable of withstanding high temperatures and pressures, including temperatures up to 450°F, and pressure differentials up to 15,000 psi. Illustrative materials include elastomers, rubbers, TEFLON[®], blends and combinations thereof.

[0041] The malleable element(s) 250 can have any number of configurations to effectively seal the annulus defined between the body 210 and the wellbore. For example, the malleable element(s) 250 can include one or more grooves, ridges, indentations, or protrusions designed to allow the malleable element(s) 250 to conform to variations in the shape of the interior of the surrounding tubular or borehole.

[0042] At least one component, ring, or other annular member 280 for receiving an axial load from a setting tool can be disposed about the body 210 adjacent a first end of the slip 240. The annular member 280 for receiving the axial load can have first and second ends that are substantially flat. The first end can serve as a shoulder adapted to abut a setting tool (not shown). The second end can abut the slip 240 and transmit axial forces therethrough.

[0043] Each end of the plug 200 can be the same or different. Each end of the plug 200 can include one or more anti-rotation features 270, disposed thereon. Each anti-rotation feature 270 can be screwed onto, formed thereon, or otherwise connected to or positioned about the body 210 so that there is no relative motion between the anti-rotation feature 270 and the body 210. Alternatively, each anti-rotation feature 270 can be screwed onto or otherwise connected to or positioned about a shoe, nose, cap, or other separate component, which can be made of composite, that is screwed onto threads, or otherwise connected to or positioned about the body 210 so that there is no relative motion between the anti-rotation feature 270 and the body 210. The anti-rotation feature 270 can have various shapes and forms. For example, the anti-rotation feature 270 can be or can resemble a mule shoe shape (not shown), half-mule shoe shape (illustrated in Figure 5), flat protrusions or flats (illustrated in Figures 7

and 8), clutches (illustrated in Figure 6), or otherwise angled surfaces 285, 290, 295 (illustrated in Figures 2A, 2B, 2C, 3A, 3B, 3C, 3D and 5).

[0044] As explained in more detail below, the anti-rotation features 270 are intended to engage, connect, or otherwise contact an adjacent plug, whether above or below the adjacent plug, to prevent or otherwise retard rotation therebetween, facilitating faster drill-out or mill times. For example, the angled surfaces 285, 290 at the bottom of a first plug 200 can engage the sloped surface 295 at the top of a second plug 200 in series, so that relative rotation therebetween is prevented or greatly reduced.

[0045] A pump down collar 275 can be located about a lower end of the plug 200 to facilitate delivery of the plug 200 into the wellbore. The pump down collar 275 can be a rubber O-ring or similar sealing member to create an impediment in the wellbore during installation, so that a push surface or resistance can be created.

[0046] Figure 2B depicts a partial section view of the illustrative plug 200 configured with a flapper-type impediment for regulating flow through the bore 255, according to one or more embodiments. The flapper-type impediment can include a flapper member 215 connected to the body 210 using one or more pivot pins 216. The flapper member 215 can be flat or substantially flat. Alternatively, the flapper member 215 can have an arcuate shape, with a convex upper surface and a concave lower surface. A spring (not shown) can be disposed about the one or more pivot pins 216 to urge the flapper member 215 from a run-in ("first" or "open") position wherein the flapper member 215 does not obstruct the bore 255 through the plug 200, to an operating ("second" or "closed") position, as depicted in Figure 2B, where the flapper member 215 assumes a position proximate to the shoulder or valve seat 228, transverse to the bore 255 of the plug 200. At least a portion of the spring can be disposed upon or across the upper surface of the flapper member 215 providing greater contact between the spring and the flapper member 215, offering greater leverage for the spring to displace the flapper member 215 from the run-in position to the operating position. In the run-in position, bi-directional, *e.g.*, upward and downward or side to side, fluid communication through the plug 200 can occur. In the operating position, unidirectional, *e.g.*, upward, as shown.

[0047] As used herein the term "arcuate" refers to any body, member, or thing having a cross-section resembling an arc. For example, a flat, elliptical member with both ends along the major axis turned downwards by a generally equivalent amount can form an arcuate member. The terms "up" and "down"; "upward" and "downward"; "upper" and "lower"; "upwardly" and "downwardly"; "upstream" and "downstream"; "above" and "below"; and other like terms as used herein refer to relative positions to one another and are not intended to denote a particular spatial orientation since the tool and methods of using same can be equally effective in either horizontal or vertical wellbore uses. Additional details of a suitable flapper assembly can be found in U.S. Patent No. 7,708,066, which is incorporated by reference herein in its entirety.

[0048] Figure 2C depicts a partial section view of another illustrative plug 200 with a lower shear mechanism disposed directly on the plug body, according to one or more embodiments. This is an alternative configuration where one or more shearable threads 130A are formed directly on the inner surface of the bore 255. No insert 100, 100B is needed. The shearable threads 130A can be made of the same composite material as the body 210 of the plug 200, or can be made from a different material.

[0049] Any number of shearable threads 130A can be used. The number of shearable threads 130A can depend, at least in part, on the operating conditions and/or environment of the wellbore where the plug 200 will be used. The number of threads 130A, for example, can range from about 2 to about 100, such as about 2 to about 50; about 3 to about 25; or about 4 to about 10. The number of threads 130A can also range from a low of about 2, 4, or 6 to a high of about 7, 12, or 20.

[0050] The pitch of the threads 130A can also vary depending on the force required to shear, break, or otherwise deform the threads 130A. The pitch of the threads 130A can be the same or different. For example, the spacing between each thread 130A can vary from about 0.1 mm to about 200 mm; 0.2 mm to about 150 mm; 0.3 mm to about 100 mm; or about 0.1 mm to about 50 mm. The spacing between each thread 120 can also range from a low of about 0.1 mm, 0.2 mm, or 0.3 mm to a high of about 2 mm, 5 mm or 10 mm.

[0051] The shearable threads 130A can be adapted to shear, break, or otherwise deform when exposed to a predetermined stress or force, releasing the component engaged within the body 210. The predetermined stress or force is preferably less than a stress or force required to fracture, break, or otherwise significantly deform the body 210. Upon the threads 130A shearing, breaking, or deforming, the component engaged within the plug 200 can be freely removed or separated therefrom. The component engaged within the plug 200 via the shearable threads 130A or insert 100 will typically be a rod or extender from a setting tool used to install the plug 200 within a wellbore.

[0052] Figure 3A depicts a partial section view of the plug 200 depicted in Figure 2A, prior to installation or actuation but after being disposed within casing 300, according to one or more embodiments. Figure 3B depicts a partial section view of the plug 200 depicted in Figure 2B, prior to installation or actuation but after being disposed within casing 300, according to one or more embodiments.

[0053] The plug 200 can be installed in a vertical, horizontal, or deviated wellbore using any suitable setting tool adapted to engage the plug 200. One example of such a suitable setting tool or assembly includes a gas operated outer cylinder powered by combustion products and an adapter rod. The outer cylinder of the setting tool abuts an outer, upper end of the plug 200, such as against the annular member 280. The outer cylinder can also abut directly against the upper slip 240, for example, in embodiments of the plug 200 where the annular member 280 is omitted, or where the outer cylinder fits over or otherwise avoids bearing on the annular member 280. The adapter rod 310 is threadably connected to the body 210 and/or the insert 100. Suitable setting assemblies that are commercially-available include the Owen Oil Tools wireline pressure setting assembly or a Model 10, 20 E-4, or E-5 Setting Tool available from Baker Oil Tools, for example.

[0054] During the setting process, the outer cylinder (not shown) of the setting tool exerts an axial force against the outer, upper end of the plug 200 in a downward direction that is matched by the adapter rod 310 of the setting tool exerting an equal and opposite force from the lower end of the plug 200 in an upward direction. For example, in the embodiment illustrated in Figures 3A and 3B, the outer cylinder of the setting assembly exerts an axial force on the annular member 280, which translates the force to the slips 240, 245 and the

malleable elements 250 that are disposed about the body 210 of the plug 200. The translated force fractures the recessed groove(s) 242 of the slips 240, 245, allowing the slips 240, 245 to expand outward and engage the inner surface of the casing or wellbore 300, while at the same time compresses the malleable elements 250 to create a seal between the plug 200 and the inner surface of the casing or wellbore 300, as shown in Figure 4. Figure 4 depicts an illustrative partial section view of the expanded or actuated plug 200, according to one or more embodiments described.

[0055] After actuation or installation of the plug 200, the setting tool can be released from the shearable threads 130, 130A of the plug 200, or the insert 100 that is screwed into the plug 200 by continuing to apply the opposing, axial forces on the body 210 via the adapter rod 310 and the outer cylinder. The opposing, axial forces applied by the outer cylinder and the adapter rod 310 result in a compressive load on the body 210, which is borne as internal stress once the plug 200 is actuated and secured within the casing or wellbore 300. The force or stress is focused on the shearable threads 130, 130A, which will eventually shear, break, or otherwise deform at a predetermined amount, releasing the adapter rod 310 therefrom. The predetermined axial force sufficient to deform the shearable threads 130 and/or 130A to release the setting tool is less than an axial force sufficient to break the plug body 210.

[0056] Using a lower set mechanism, be it the insert 100 or shearable threads 130A directly on the body 210, allows the plug 200 to be squeezed from opposing ends. This provides a more balanced and efficient translation of force to the moveable components about the body 210, and reduces the stress directly applied to the body 210 itself. As such, the body 210 and a majority of the outer components of the plug 200 can be made of a softer, drillable material, such as a composite material, since the stress being asserted thereon during the setting process is reduced. Conventional cast iron and other metallic plugs are set from the upper end of the plug, which translates all of the force needed to squeeze and actuate the plug on the plug body itself. As such, the plug body had to be constructed of a more rigid material capable of withstanding such stress and torque. The lower set mechanism described herein, however, alleviates the torque and stress on the plug body 210, allowing the plug body 210 to be made of lighter, more easily drillable, non-metallic materials.

[0057] Once actuated and released from the setting tool, the plug 200 is left in the wellbore to serve its purpose, as depicted in Figures 3C and 3D. For example, a ball 320 can be dropped in the wellbore to constrain, restrict, and/or prevent fluid communication in a first direction through the body 210. For example, the dropped ball 320 can rest on the transition or ball seat 228 to form an essentially fluid-tight seal therebetween, as depicted in Figure 3C, preventing downward fluid flow through the plug 200 ("the first direction") while allowing upward fluid flow through the plug 200 ("the second direction"). Alternatively, the flapper member 215 can rotate toward the closed position to constrain, restrict, and/or prevent downward fluid flow through the plug 200 ("the first direction") while allowing upward fluid flow through the plug 200 ("the second direction"), as depicted in Figure 3D.

[0058] The ball 150, 320 or the flapper member 215 can be fabricated from one or more decomposable materials. Suitable decomposable materials will decompose, degrade, degenerate, or otherwise fall apart at certain wellbore conditions or environments, such as predetermined temperature, pressure, pH, and/or any combinations thereof. As such, fluid communication through the plug 200 can be prevented for a predetermined period of time, e.g., until and/or if the decomposable material(s) degrade sufficiently allowing fluid flow therethrough. The predetermined period of time can be sufficient to pressure test one or more hydrocarbon-bearing zones within the wellbore. In one or more embodiments, the predetermined period of time can be sufficient to workover the associated well. The predetermined period of time can range from minutes to days. For example, the degradable rate of the material can range from about 5 minutes, 40 minutes, or 4 hours to about 12 hours, 24 hours or 48 hours. Extended periods of time are also contemplated.

[0059] The pressures at which the ball 150, 320 or the flapper member 215 decompose can range from about 100 psig to about 15,000 psig. For example, the pressure can range from a low of about 100 psig, 1,000 psig, or 5,000 psig to a high about 7,500 psig, 10,000 psig, or about 15,000 psig. The temperatures at which the ball 320 or the flapper member 215 decompose can range from about 100°F to about 750°F. For example, the temperature can range from a low of about 100°F, 150°F, or 200°F to a high of about 350°F, 500°F, or 750°F.

[0060] The decomposable material can be soluble in any material, such as soluble in water, polar solvents, non-polar solvents, acids, bases, mixtures thereof, or any combination thereof.

The solvents can be time-dependent solvents. A time-dependent solvent can be selected based on its rate of degradation. For example, suitable solvents can include one or more solvents capable of degrading the soluble components in about 30 minutes, 1 hour, or 4 hours to about 12 hours, 24 hours, or 48 hours. Extended periods of time are also contemplated.

[0061] The pHs at which the ball 150, 320 or the flapper member 215 can decompose can range from about 1 to about 14. For example, the pH can range from a low of about 1, 3, or 5 to a high about 9, 11, or about 14.

[0062] To remove the plug 200 from the wellbore, the plug 200 can be drilled-out, milled, or otherwise compromised. As it is common to have two or more plugs 200 located in a single wellbore to isolate multiple zones therein, during removal of one or more plugs 200 from the wellbore some remaining portion of a first, upper plug 200 can release from the wall of the wellbore at some point during the drill-out. Thus, when the remaining portion of the first, upper plug 200 falls and engages an upper end of a second, lower plug 200, the anti-rotation features 270 of the remaining portions of the plugs 200 will engage and prevent, or at least substantially reduce, relative rotation therebetween.

[0063] Figures 5-8 depict schematic views of illustrative anti-rotation features that can be used with the plugs 200 to prevent or reduce rotation during drill-out. These features are not intended to be exhaustive, but merely illustrative, as there are many other configurations that are effective to accomplish the same results. Each end of the plug 200 can be the same or different. For example, Figure 5 depicts angled surfaces or half-mule anti-rotation features; Figure 6 depicts dog clutch type anti-rotation features; and Figures 7 and 8 depict two flat and slot type anti-rotation features.

[0064] Referring to Figure 5, a lower end of an upper plug 500A and an upper end of a lower plug 500B are shown within the casing 300 where the angled surfaces 285, 290 interact with, interface with, interconnect, interlock, link with, join, jam with or within, wedge between, or otherwise communicate with a complementary angled surface 295 and/or at least a surface of the wellbore or casing 300. The interaction between the lower end of the upper plug 500A and the upper end of the lower plug 500B and/or the casing 300 can counteract a torque placed on the lower end of the upper plug 500A, and prevent or greatly reduce rotation

therebetween. For example, the lower end of the upper plug 500A can be prevented from rotating within the wellbore or casing 300 by the interaction with upper end of the lower plug 500B, which is held securely within the casing 300.

[0065] Referring to Figure 6, dog clutch surfaces of the upper plug 600A can interact with, interface with, interconnect, interlock, link with, join, jam with or within, wedge between, or otherwise communicate with a complementary dog clutch surface of the lower plug 600B and/or at least a surface of the wellbore or casing 300. The interaction between the lower end of the upper plug 600A and the upper end of the lower plug 600B and/or the casing 300 can counteract a torque placed on the lower end of the upper plug 600A, and prevent or greatly reduce rotation therebetween. For example, the lower end of the upper plug 600A can be prevented from rotating within the wellbore or casing 300 by the interaction with upper end of the lower plug 600B, which is held securely within the casing 300.

[0066] Referring to Figure 7, the flats and slot surfaces of the upper plug 700A can interact with, interface with, interconnect, interlock, link with, join, jam with or within, wedge between, or otherwise communicate with complementary flats and slot surfaces of the lower plug 700B and/or at least a surface of the wellbore or casing 300. The interaction between the lower end of the upper plug 700A and the upper end of the lower plug 700B and/or the casing 300 can counteract a torque placed on the lower end of the upper plug 700A, and prevent or greatly reduce rotation therebetween. For example, the lower end of the upper plug 700A can be prevented from rotating within the wellbore or casing 300 by the interaction with upper end of the lower plug 700B, which is held securely within the casing 300. The protruding perpendicular surfaces of the lower end of the upper plug 700A can mate in the perpendicular voids of the upper end of the lower plug 700B. When the lower end of the upper plug 700A and the upper end of the lower plug 700B are mated, any further rotational force applied to the lower end of the upper plug 700A will be resisted by the engagement of the lower plug 700B with the wellbore or casing 300, translated through the mated surfaces of the anti-rotation feature 270, allowing the lower end of the upper plug 700A to be more easily drilled-out of the wellbore.

[0067] One alternative configuration of flats and slot surfaces is depicted in Figure 8. The protruding cylindrical or semi-cylindrical surfaces 810 perpendicular to the base 801 of the

lower end of the upper plug 800A mate with the complementary aperture(s) 820 in the complementary base 802 of the upper end of the lower plug 800B. Protruding surfaces 810 can have any geometry perpendicular to the base 801, as long as the complementary aperture(s) 820 match the geometry of the protruding surfaces 801 so that the surfaces 801 can be threaded into the aperture(s) 820 with sufficient material remaining in the complementary base 802 to resist rotational force that can be applied to the lower end of the upper plug 800A, and thus translated to the complementary base 802 by means of the protruding surfaces 801 being inserted into the aperture(s) 820 of the complementary base 802. The anti-rotation feature 270 may have one or more protrusions or apertures 830, as depicted in Figure 8, to guide, interact with, interface with, interconnect, interlock, link with, join, jam with or within, wedge between, or otherwise communicate or transmit force between the lower end of the upper plug 800A and the upper end of the lower plug 800B. The protrusion or aperture 830 can be of any geometry practical to further the purpose of transmitting force through the anti-rotation feature 270.

[0068] The orientation of the components of the anti-rotation features 270 depicted in all figures is arbitrary. Because plugs 200 can be installed in horizontal, vertical, and deviated wellbores, either end of the plug 200 can have any anti-rotation feature 270 geometry, wherein a single plug 200 can have one end of a first geometry and one end of a second geometry. For example, the anti-rotation feature 270 depicted in Figure 5 can include an alternative embodiment where the lower end of the upper plug 500A is manufactured with geometry resembling 500B and vice versa. Each end of each plug 200 can be or include angled surfaces, half-mule, mule shape, dog clutch, flat and slot, cleated, slotted, spiked, and/or other interdigitating designs. In the alternative to a plug with complementary anti-rotation feature 270 geometry on each end of the plug 200, a single plug 200 can include two ends of differently-shaped anti-rotation features, such as the upper end may include a half-mule anti-rotation feature 270, and the lower end of the same plug 200 may include a dog clutch type anti-rotation feature 270. Further, two plugs 200 in series may each comprise only one type of anti-rotation feature 270 each, however the interface between the two plugs 200 may result in two different anti-rotation feature 270 geometries that can interface with, interconnect, interlock, link with, join, jam with or within, wedge between, or otherwise

communicate or transmit force between the lower end of the upper plug 200 with the first geometry and the upper end of the lower plug 200 with the second geometry.

[0069] Any of the aforementioned components of the plug 200, including the body, rings, cones, elements, shoe, anti-rotation features, *etc.*, can be formed or made from any one or more non-metallic materials or one or more metallic materials (such as aluminum, steel, stainless steel, brass, copper, nickel, cast iron, galvanized or non-galvanized metals, *etc.*). Suitable non-metallic materials include, but are not limited to, fiberglass, wood, composite materials (such as ceramics, wood/polymer blends, cloth/polymer blends, *etc.*), and plastics (such as polyethylene, polypropylene, polystyrene, polyurethane, polyethylethylketone (PEEK), polytetrafluoroethylene (PTFE), polyamide resins (such as nylon 6 (N6), nylon 66 (N66)), polyester resins (such as polybutylene terephthalate (PBT), polyethylene terephthalate (PET), polyethylene isophthalate (PEI), PET/PEI copolymer) polynitrile resins (such as polyacrylonitrile (PAN), polymethacrylonitrile, acrylonitrile-styrene copolymers (AS), methacrylonitrile-styrene copolymers, methacrylonitrile-styrene-butadiene copolymers; and acrylonitrile-butadiene-styrene (ABS)), polymethacrylate resins (such as polymethyl methacrylate and polyethylacrylate), cellulose resins (such as cellulose acetate and cellulose acetate butyrate); polyimide resins (such as aromatic polyimides), polycarbonates (PC), elastomers (such as ethylene-propylene rubber (EPR), ethylene propylene-diene monomer rubber (EPDM), styrenic block copolymers (SBC), polyisobutylene (PIB), butyl rubber, neoprene rubber, halobutyl rubber and the like)), as well as mixtures, blends, and copolymers of any and all of the foregoing materials.

[0070] However, as many components as possible are made from one or more non-metallic materials, and preferably made from one or more composite materials. Desirable composite materials can be or include polymeric composite materials that are wound and/or reinforced by one or more fibers such as glass, carbon, or aramid, for example. The individual fibers can be layered parallel to each other, and wound layer upon layer. Each individual layer can be wound at an angle of from about 20 degrees to about 160 degrees with respect to a common longitudinal axis, to provide additional strength and stiffness to the composite material in high temperature and/or pressure downhole conditions. The particular winding phase can depend, at least in part, on the required strength and/or rigidity of the overall composite material.

[0071] The polymeric component of the composite can be an epoxy blend. The polymer component can also be or include polyurethanes and/or phenolics, for example. In one aspect, the polymeric composite can be a blend of two or more epoxy resins. For example, the polymeric composite can be a blend of a first epoxy resin of bisphenol A and epichlorohydrin and a second cycloaliphatic epoxy resin. Preferably, the cycloaliphatic epoxy resin is ARALDITE® RTM liquid epoxy resin, commercially available from Ciba-Geigy Corporation of Brewster, N.Y. A 50:50 blend by weight of the two resins has been found to provide the suitable stability and strength for use in high temperature and/or pressure applications. The 50:50 epoxy blend can also provide suitable resistance in both high and low pH environments.

[0072] The fibers can be wet wound. A prepreg roving can also be used to form a matrix. The fibers can also be wound with and/or around, spun with and/or around, molded with and/or around, or hand laid with and/or around a metallic material or two or more metallic materials to create an epoxy impregnated metal or a metal impregnated epoxy.

[0073] A post cure process can be used to achieve greater strength of the material. A suitable post cure process can be a two stage cure having a gel period and a cross-linking period using an anhydride hardener, as is commonly known in the art. Heat can be added during the curing process to provide the appropriate reaction energy that drives the cross-linking of the matrix to completion. The composite may also be exposed to ultraviolet light or a high-intensity electron beam to provide the reaction energy to cure the composite material.

[0074] Certain embodiments and features have been described using a set of numerical upper limits and a set of numerical lower limits. It should be appreciated that ranges from any lower limit to any upper limit are contemplated unless otherwise indicated. Certain lower limits, upper limits and ranges appear in one or more claims below. All numerical values are "about" or "approximately" the indicated value, and take into account experimental error and variations that would be expected by a person having ordinary skill in the art.

[0075] Various terms have been defined above. To the extent a term used in a claim is not defined above, it should be given the broadest definition persons in the pertinent art have given that term as reflected in at least one printed publication or issued patent. Furthermore,

all patents, test procedures, and other documents cited in this application are fully incorporated by reference to the extent such disclosure is not inconsistent with this application and for all jurisdictions in which such incorporation is permitted.

[0076] While the foregoing is directed to embodiments of the present invention, other and further embodiments of the invention can be devised without departing from the basic scope thereof, and the scope thereof is determined by the claims that follow.

Claims:

What is claimed is:

1. A plug for isolating a wellbore, comprising:
 - a body having a first end and a second end, wherein the body is formed from one or more composite materials;
 - at least one malleable element disposed about the body;
 - at least one slip disposed about the body;
 - at least one conical member disposed about the body; and
 - one or more shearable threads disposed on an inner surface of the body, adjacent the second end thereof, wherein the one or more shearable threads are adapted to receive at least a portion of a setting tool that enters the body through the first end thereof, and wherein the one or more shearable threads are adapted to engage the setting tool when disposed through the body and adapted to release the setting tool when exposed to a predetermined axial force.
2. The plug of claim 1, wherein the shearable threads are composite and the predetermined axial force sufficient to deform the shearable threads to release the setting tool is less than an axial force sufficient to break the body.
3. The plug of claim 1, wherein the body is adapted to receive an impediment that restricts fluid flow in at least one direction through the body.
4. The plug of claim 3, wherein the impediment is a ball.
5. The plug of claim 3, wherein the impediment is a flapper valve disposed within the body, wherein the flapper valve is adapted to restrict fluid flow in at least one direction through the body.
6. The plug of claim 3, wherein the impediment is degradable at a predetermined temperature, pressure, pH, or a combination thereof.

7. The plug of claim 1, wherein the first end of the body comprises an anti-rotation feature formed thereon.

8. The plug of claim 1, wherein the second end of the body comprises an anti-rotation feature disposed thereon.

9. The plug of claim 1, wherein the first and second ends of the body each comprises an anti-rotation feature disposed thereon, and the anti-rotation features are complementary and adapted to engage each other when two plugs are located in series, preventing relative rotation therebetween.

10. The plug of claim 1, wherein the plug is a frac plug.

11. The plug of claim 10, wherein each anti-rotation feature is individually selected from the group consisting of a taper, a mule shoe, a half-mule shoe, flat protrusions or flats, flats and slots, clutches, and one or more angled surfaces.

12. A plug for isolating a wellbore, comprising:

a body having a first end and a second end, wherein the body is formed from one or more composite materials;

at least one malleable element disposed about the body;

at least one slip disposed about the body;

at least one conical member disposed about the body; and

a brass insert screwed into the body proximate the second end of the body and adapted to receive a setting tool that enters the body through the first end thereof, wherein:

the insert comprises one or more shearable threads disposed on an inner surface thereof;

the one or more shearable threads are adapted to engage the setting tool; and

the one or more shearable threads are adapted to deform to release the setting tool when exposed to a predetermined axial force.

13. The plug of claim 12, wherein the outer surface of the brass insert has a larger diameter and a smaller diameter forming a shoulder therebetween, the shoulder adapted to anchor the brass insert within the body.

14. The plug of claim 12, wherein the first and second ends of the body each comprise anti-rotation features formed thereon, and the anti-rotation features of the first and second ends of the body are complementary and adapted to engage each other when two plugs are located in series, preventing relative rotation therebetween.

15. The plug of claim 12, wherein the body is adapted to receive a ball that restricts fluid flow in at least one direction through the body.

16. The plug of claim 12, wherein the predetermined axial force to release the setting tool is less than an axial force required to break the body.

17. The plug of claim 12, wherein the plug is a frac plug.

18. A shearable insert for a plug, comprising:
a body comprising brass, cast iron, or a combination thereof;
one or more threads disposed on an outer surface of the body, the one or more threads adapted to couple with one or more threads of the plug; and
one or more shearable threads disposed on an inner surface of the body, the shearable threads adapted to couple with one or more threads of a setting tool and release the setting tool when exposed to a predetermined axial force.

19. The insert of claim 18, wherein the outer surface of the body comprises a larger diameter and a smaller diameter forming a shoulder therebetween, the shoulder adapted to anchor the body within the plug.

20. The insert of claim 18, wherein the body is made of brass, and the plug is a frac plug.

ABSTRACT

A plug for isolating a wellbore. The plug can include a body having a first end and a second end, wherein the body is formed from one or more composite materials and adapted to receive a setting tool through the first end thereof, at least one malleable element disposed about the body, at least one slip disposed about the body, at least one conical member disposed about the body, and one or more shearable threads disposed on an inner surface of the body, adjacent the second end thereof, wherein the one or more shearable threads are adapted to receive at least a portion of a setting tool that enters the body through the first end thereof, and wherein the one or more shearable threads are adapted to engage the setting tool when disposed through the body and adapted to release the setting tool when exposed to a predetermined axial force.

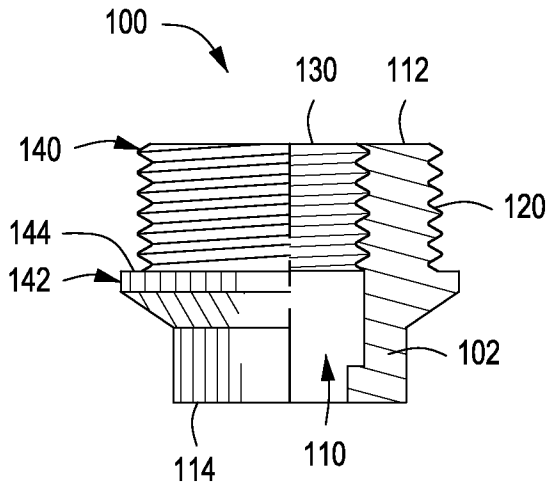


FIG. 1A

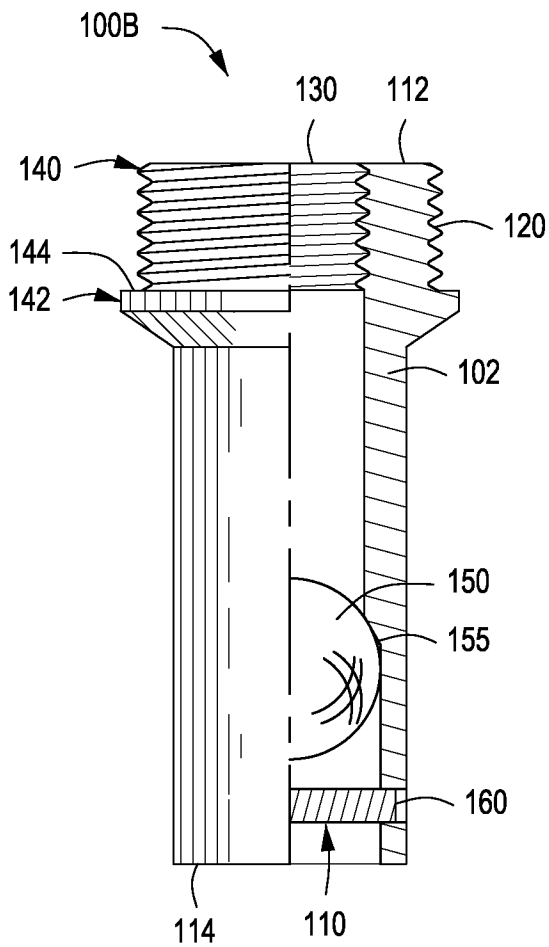


FIG. 1B

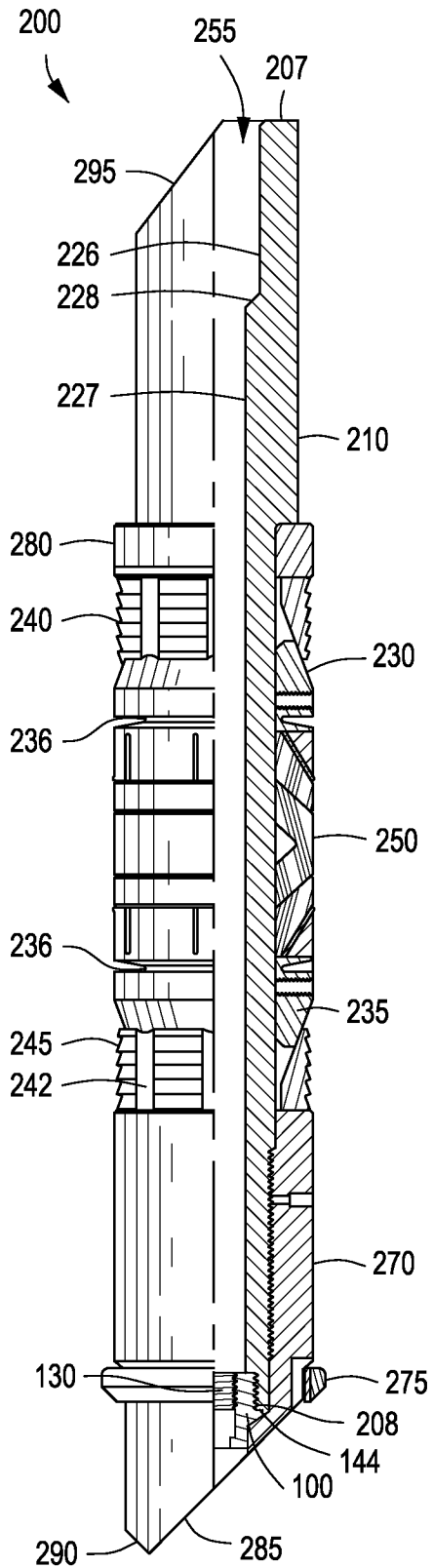


FIG. 2A

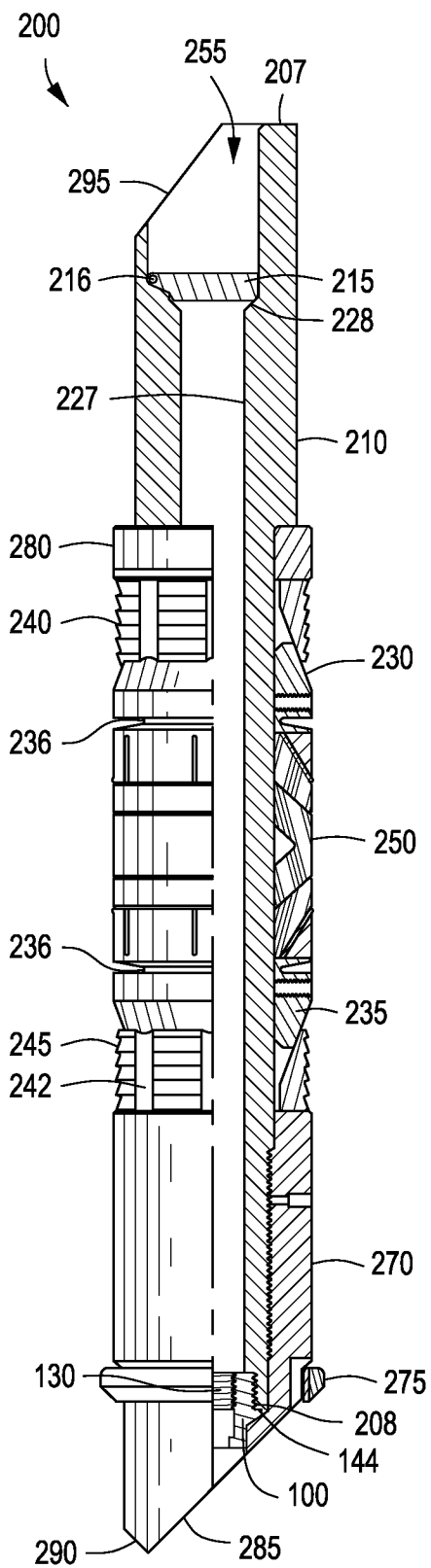


FIG. 2B

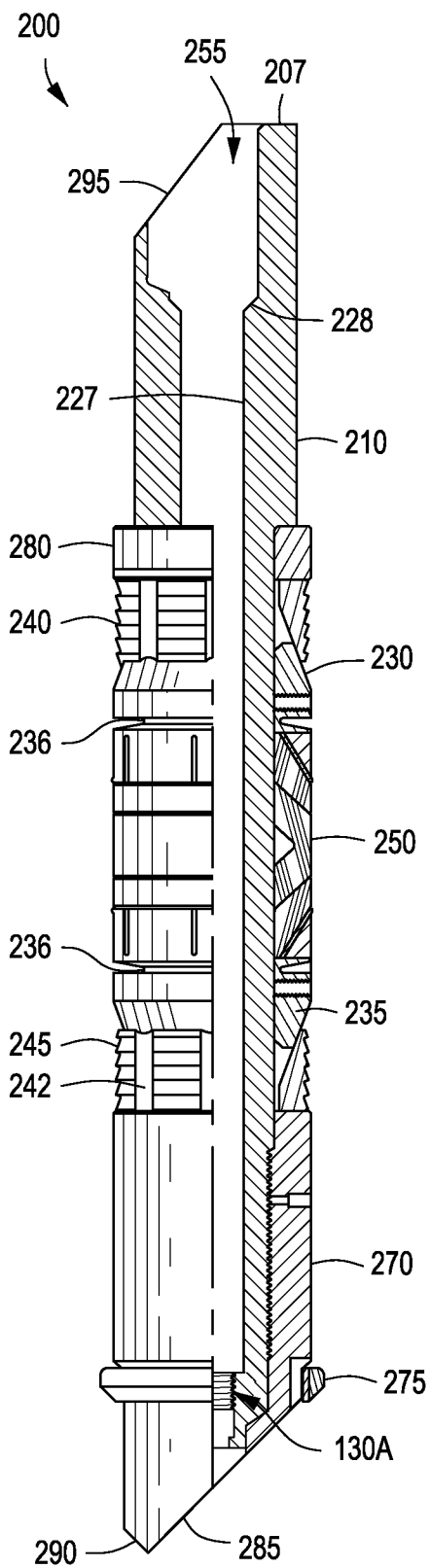


FIG. 2C

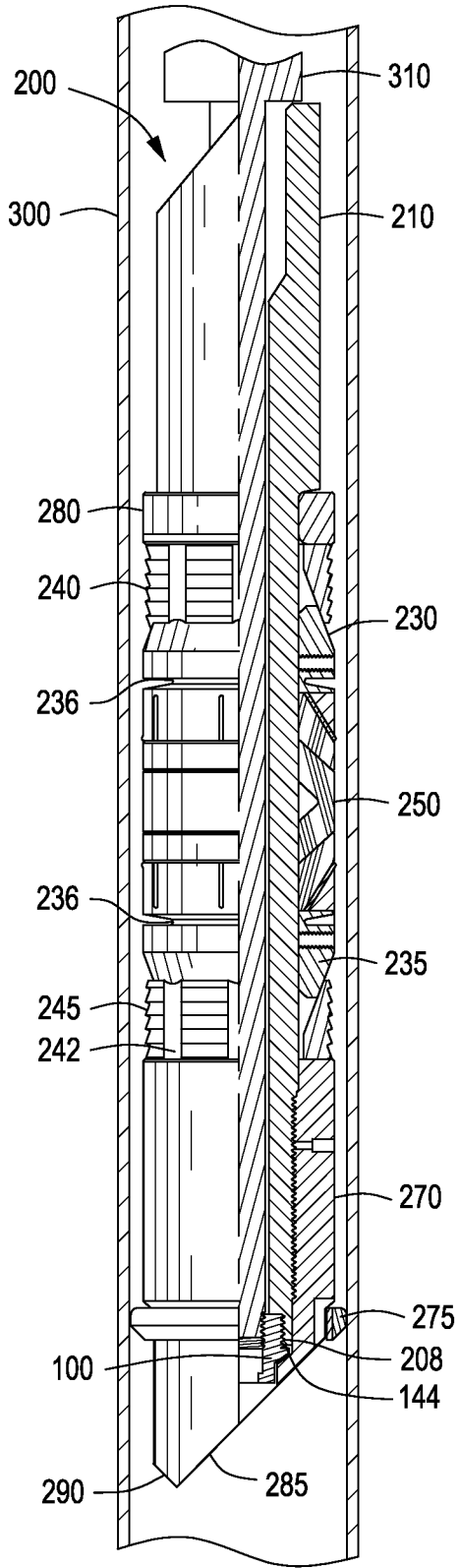


FIG. 3A

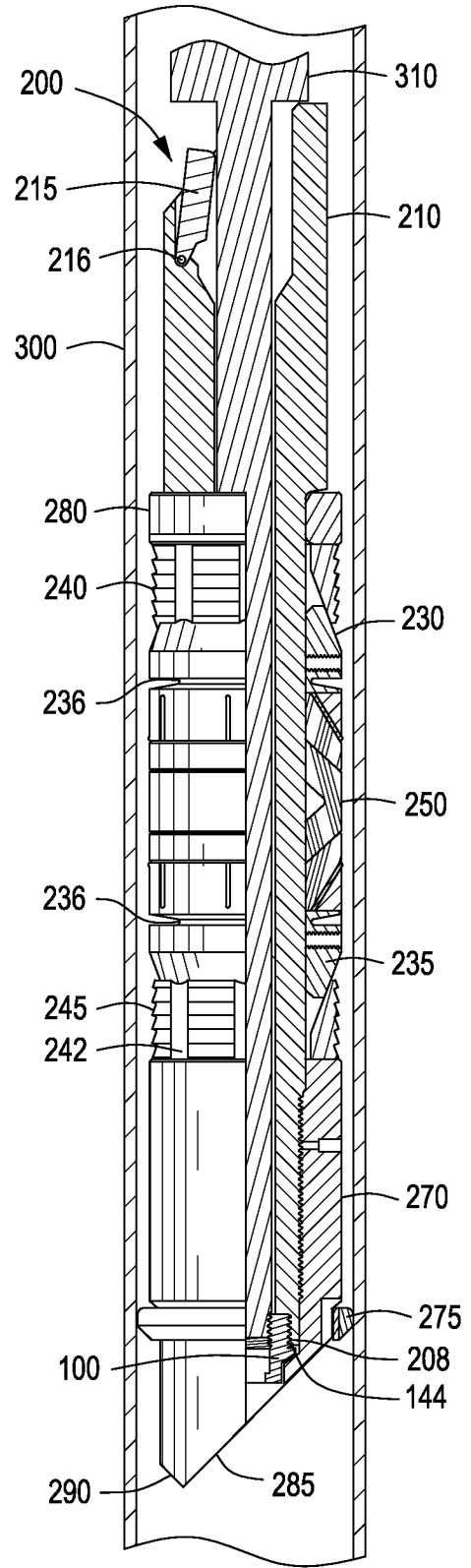


FIG. 3B

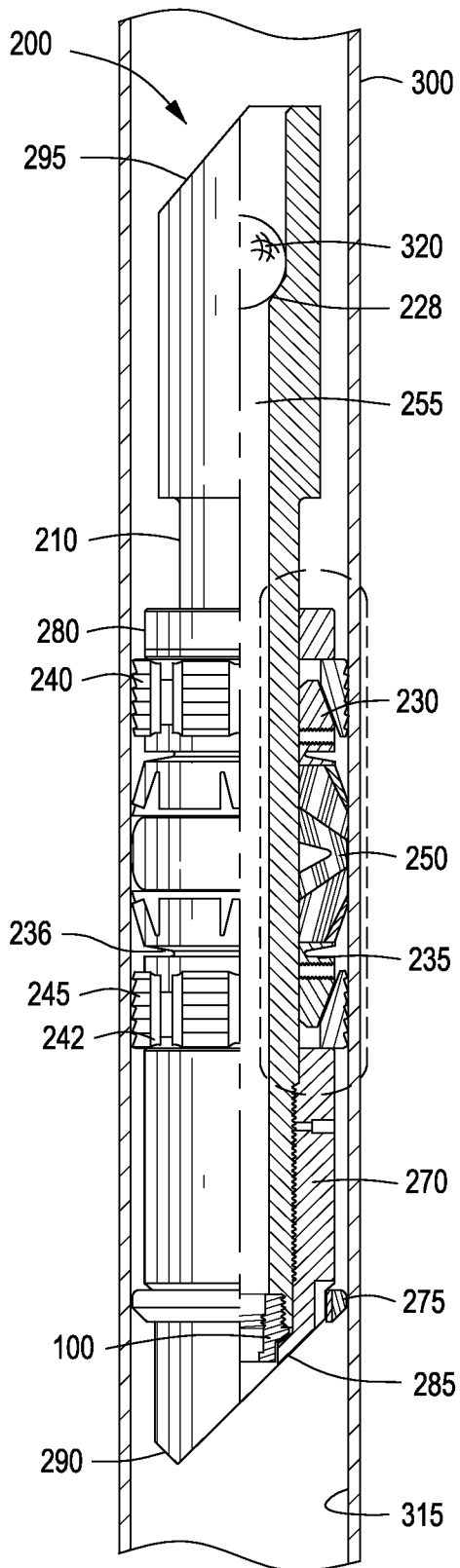


FIG. 3C

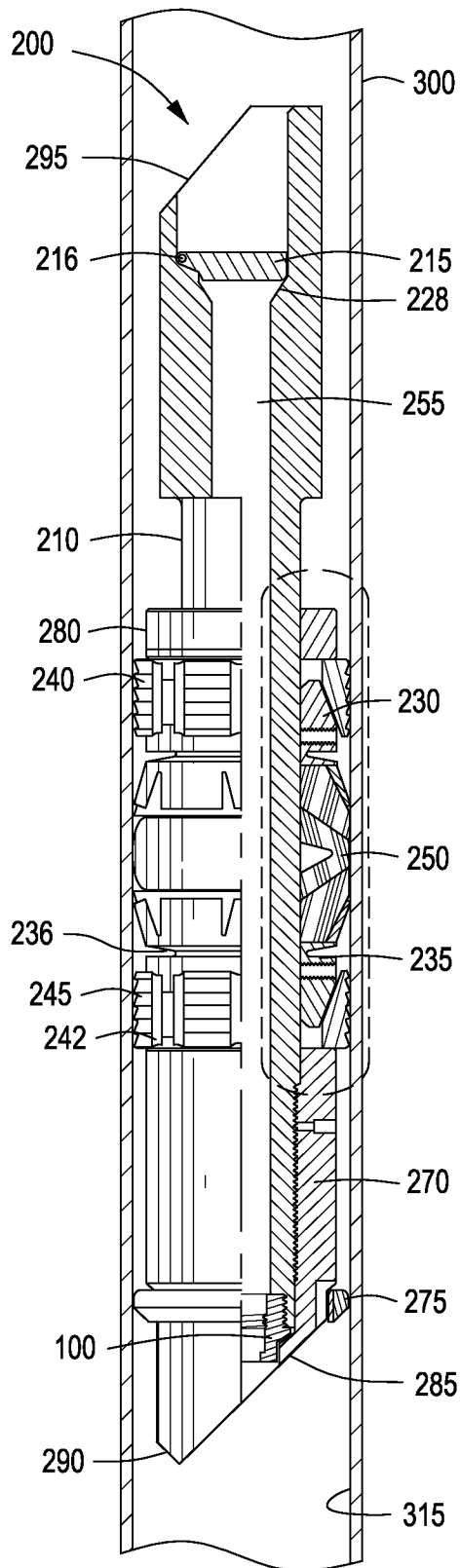


FIG. 3D

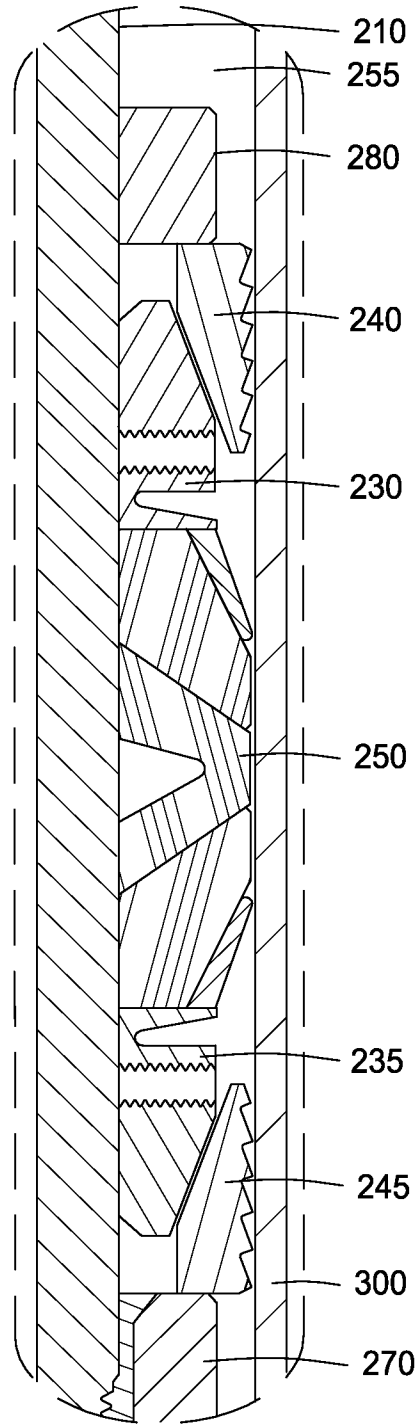


FIG. 4

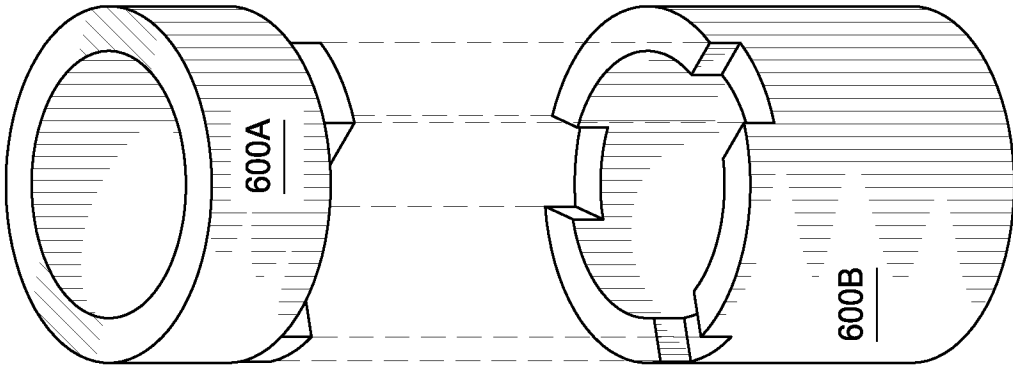


FIG. 6

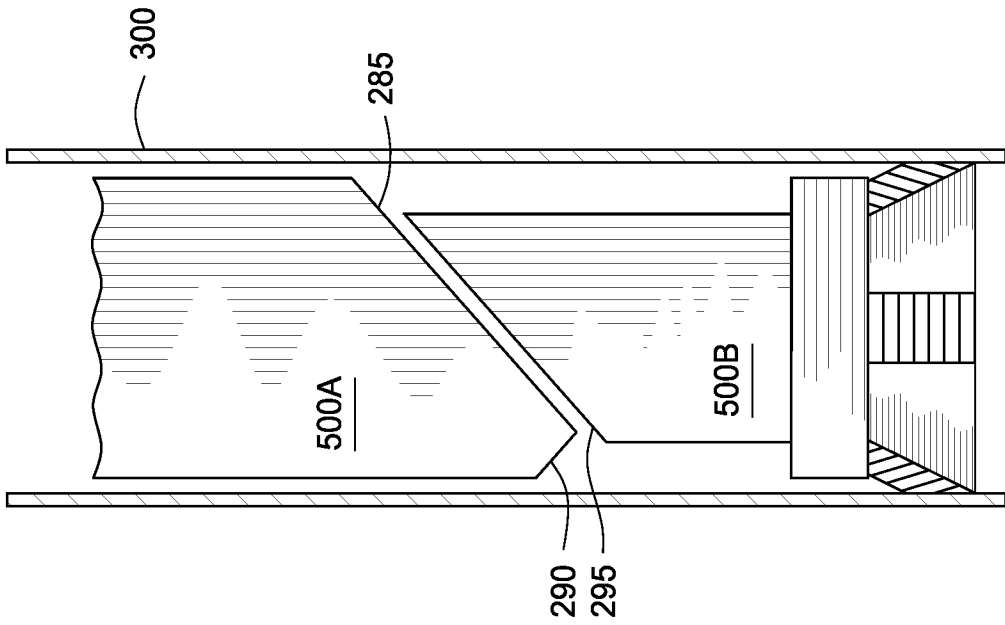


FIG. 5

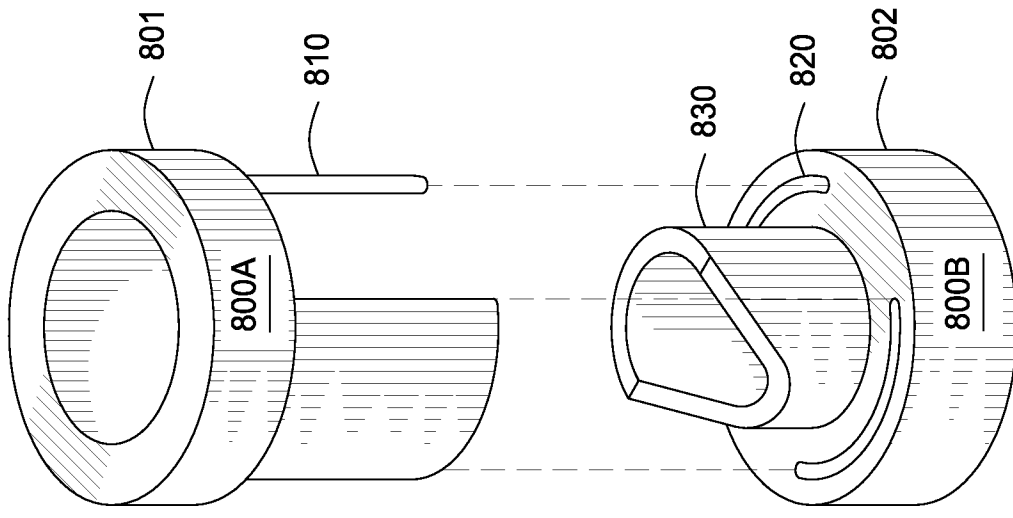


FIG. 8

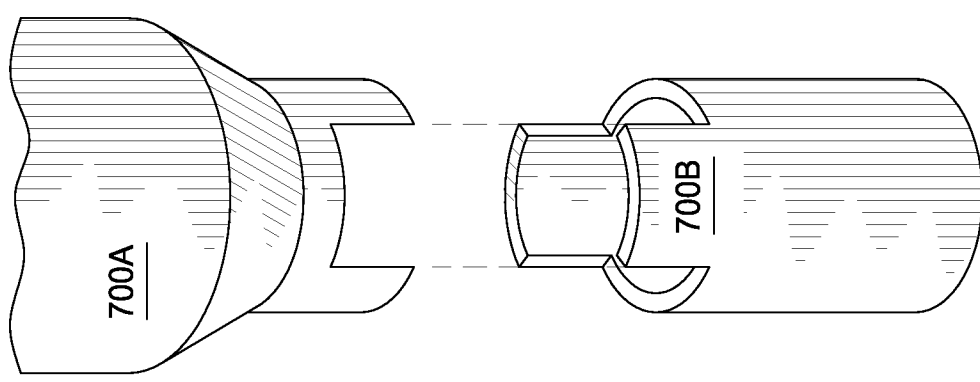


FIG. 7

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	MOTI-018P1C1
		Application Number	
Title of Invention	BOTTOM SET DOWNHOLE PLUG		
The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76. This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.			

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- Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

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Applicant 1					<input type="button" value="Remove"/>
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	W.	Lynn	Frazier		
Residence Information (Select One) <input checked="" type="radio"/> US Residency <input type="radio"/> Non US Residency <input type="radio"/> Active US Military Service					
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Citizenship under 37 CFR 1.41(b) i		US			
Mailing Address of Applicant:					
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Address 2	Suite 100				
City	Corpus Christi	State/Province	TX		
Postal Code	78405	Countryⁱ	US		
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Application Information:

Title of the Invention	BOTTOM SET DOWNHOLE PLUG		
Attorney Docket Number	MOTI-018P1C1	Small Entity Status Claimed	<input checked="" type="checkbox"/>
Application Type	Nonprovisional		
Subject Matter	Utility		
Suggested Class (if any)		Sub Class (if any)	
Suggested Technology Center (if any)			
Total Number of Drawing Sheets (if any)	7	Suggested Figure for Publication (if any)	1

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	MOTI-018P1C1
	Application Number	
Title of Invention	BOTTOM SET DOWNHOLE PLUG	

Publication Information:

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<input type="checkbox"/>	Request Not to Publish. I hereby request that the attached application not be published under 35 U.S. C. 122(b) and certify that the invention disclosed in the attached application has not and will not be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

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Customer Number	60935		

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Prior Application Status	Pending	<input type="button" value="Remove"/>	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	Continuation of	13194871	2011-07-29
Prior Application Status	Pending	<input type="button" value="Remove"/>	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
13194871	Continuation in part of	12317497	2008-12-23
<p>Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the Add button.</p>			<input type="button" value="Add"/>

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<p>This section allows for the applicant to claim benefit of foreign priority and to identify any prior foreign application for which priority is not claimed. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55(a).</p>			
			<input type="button" value="Remove"/>
Application Number	Country ⁱ	Parent Filing Date (YYYY-MM-DD)	Priority Claimed
			<input checked="" type="radio"/> Yes <input type="radio"/> No
<p>Additional Foreign Priority Data may be generated within this form by selecting the Add button.</p>			<input type="button" value="Add"/>

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	MOTI-018P1C1
	Application Number	
Title of Invention	BOTTOM SET DOWNHOLE PLUG	

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Providing this information in the application data sheet does not substitute for compliance with any requirement of part 3 of Title 37 of the CFR to have an assignment recorded in the Office.				
Assignee 1				<input type="button" value="Remove"/>
If the Assignee is an Organization check here. <input type="checkbox"/>				
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Signature:

A signature of the applicant or representative is required in accordance with 37 CFR 1.33 and 10.18. Please see 37 CFR 1.4(d) for the form of the signature.					
Signature	/Robb D. Edmonds/			Date (YYYY-MM-DD)	2011-12-16
First Name	Robb D.	Last Name	Edmonds	Registration Number	46681

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5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.