

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
11 July 2002 (11.07.2002)

PCT

(10) International Publication Number  
**WO 02/053867 A3**

(51) International Patent Classification<sup>7</sup>: **E21B 43/10**,  
19/00

(21) International Application Number: PCT/US02/00093

(22) International Filing Date: 2 January 2002 (02.01.2002)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/259,486 3 January 2001 (03.01.2001) US

(71) Applicant (for all designated States except US): **ENVEN-  
TURE GLOBAL TECHNOLOGY** [US/US]; 16200 A  
Park Row, Houston, TX 77084 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **COOK, Robert,**

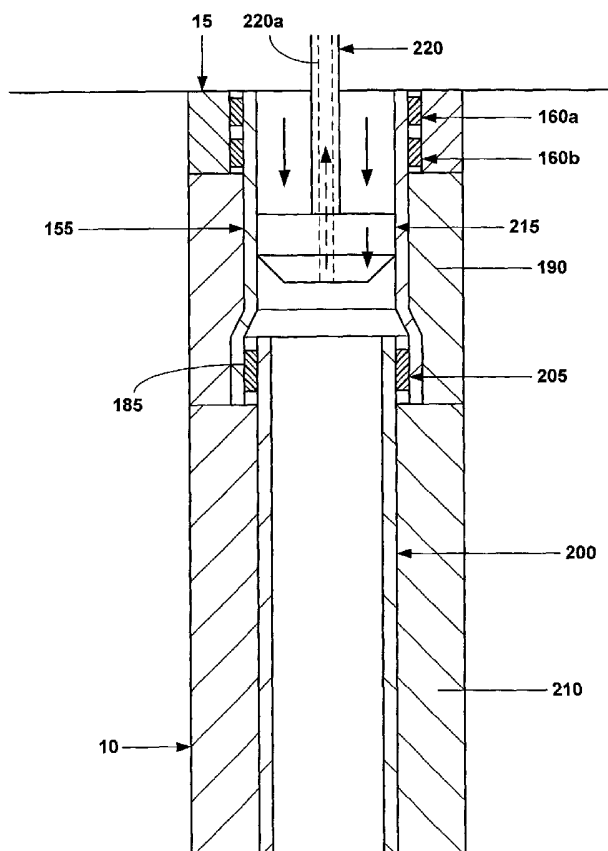
**Lance** [US/US]; 934 Caswell Court, Katy, TX 77450 (US).  
**RING, Lev** [RU/US]; 14126 Heatherhill Place, Houston,  
TX 77077 (US). **ZWALD, Ed** [US/US]; Memorial Drive  
#110, Houston, TX 77024 (US). **FILLIPOV, Andrei**  
[US/US]; 2606 Hidden Shore Drive, Katy, TX 77450 (US).  
**WADELL, Kevin** [US/US]; 11007 Sprucedale Court,  
Houston, TX 77070 (US).

(74) Agents: **MATTINGLY, Todd** et al.; Haynes and Boone,  
LLP, 1000 Louisiana, Suite 4300, Houston, TX 77002-  
5012 (US).

(81) Designated States (national): AE, AG, AL, AM, AT, AU,  
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,  
CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM,  
HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK,  
LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX,  
MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI,  
SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN,  
YU, ZA, ZM, ZW.

[Continued on next page]

(54) Title: MONO-DIAMETER WELLBORE CASING



(57) Abstract: Plastically deforming and radially expanding a first tubular member (155) within a wellbore (10) form a mono-diameter wellbore casing. A second tubular member (200) is then plastically deformed and radially expanded, overlapping the first tubular member (155). Then the second tubular (200) and the overlapped portion of the first tubular (155) are expanded.



WO 02/053867 A3



**(84) Designated States (regional):** ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**(88) Date of publication of the international search report:**  
6 February 2003

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

**Published:**

— *with international search report*

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US02/00093

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : E21B 43/10, 19/00  
 US CL : 166/380, 207

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
 U.S. : 166/380, 207, 378, 381, 383, 206, 209, 212, 216, 242.1, 242.2, 242.3, 242.6, 242.8

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6,085,838 A (VERCAEMER et al.) 11 July 2000 (11.07.00), figure 2; claim 1.	84, 86, 89, 91, 104, 105, 109-112, 119-121, 125-129, 142, 143
X, P	US 6,322,109 B1 (CAMPBELL et al.) 27 November 2001 (27.11.01), abstract.	140, 141
X -- Y	US 6,070,671 A (CUMMING et al.) 06 June 2000 (06.06.00), figure 1.	1-3, 6, 13-15, 37-39, 42, 45, 5-52, 58, 59, 104, 105, 109-111, 113-121, 125-127, 130-139, 142, 143 ----- 146-150

Further documents are listed in the continuation of Box C.  See patent family annex.

* Special categories of cited documents:			
"A"	document defining the general state of the art which is not considered to be of particular relevance	"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
"E"	earlier application or patent published on or after the international filing date	"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
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"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
"O"	document referring to an oral disclosure, use, exhibition or other means	"&"	document member of the same patent family
"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 30 May 2002 (30.05.2002)	Date of mailing of the international search report <b>06 AUG 2002</b>
---	--

Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703)305-3230	Authorized officer David Bagnell <i>Diana Amate for</i> Telephone No. (703) 308-1113
--	--

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US02/00093

C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US 5,918,677 A (HEAD) 06 July 1999 (06.07.99), figures 2-10.	1-3, 6, 13-15, 37-39, 42, 45, 5-52, 58, 59, 104, 105, 109-111, 113-121, 125-127, 130-139, 142, 143 ----- 146-150
X --- Y	US 4,976,322 A (ABDRAKHMANTOV et al.) 11 December 1990 (11.12.00), figure 2.	1-3, 6, 13-15, 37-39, 42, 45, 5-52, 58, 59, 142, 143 ----- 146-150
X, E --- Y, E	US 6,354,373 B1 (VERCAEMER et al.) 12 March 2002 (12.03.02), figure 5; column 6, lines 61-65.	104, 105, 109-111, 119, 120, 125-127, 142, 143, 151 ----- 146-150

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US02/00093

## Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

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

1.  Claim Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claim Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
  
3.  Claim Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:  
Please See Continuation Sheet

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

### Remark on Protest

The additional search fees were accompanied by the applicant's protest.

No protest accompanied the payment of additional search fees.

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US02/00093

### **BOX II. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING**

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claim(s) 1-8, 13-45, 50-83, and 144-149, drawn to expanding a casing to more than one diameter.

Group II, claim(s) 9-12, 46-49, 85, 90, 106-108, and 122-124, drawn to a cone launcher.

Group III, claim(s) 113-118 and 130-139, drawn to deforming an overlap and then the rest of the tube.

Group IV, claim(s) 142 and 143, drawn to deforming to a desired strength.

Group V, claim(s) 84, 86-89, and 91-103, drawn to providing a lipped portion and an expanded portion.

Group VI, claim(s) 104, 105, 109-112, 119-121, and 125-129, drawn to expanding and deforming tube ends.

Group VII, claim(s) 140 and 141, drawn to a bridging a gap.

Group VIII, claim(s) 144-149 and 150, drawn to expanding with a specific initial diameter to thickness ratio.

The inventions listed as Groups I-VIII do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the only common feature shared by the groups is tube expansion, which is well known in the art and therefore cannot serve as a special technical feature linking the inventions. The groups lack unity because they each have a different special technical feature not shared with the other groups.