



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification <sup>6</sup> : <b>E21B 31/16, 31/18</b></p>	<p>A3</p>	<p>(11) International Publication Number: <b>WO 99/37877</b></p> <p>(43) International Publication Date: 29 July 1999 (29.07.99)</p>
<p>(21) International Application Number: PCT/GB99/00077</p> <p>(22) International Filing Date: 22 January 1999 (22.01.99)</p> <p>(30) Priority Data: 09/010,782 22 January 1998 (22.01.98) US</p> <p>(71) Applicants: WEATHERFORD/LAMB, INC. [US/US]; c/o CSC - The United States Corporation Company, 1013 Centre Road, Wilmington, DE 19805 (US). LUCAS, Brian, Ronald [GB/GB]; Lucas &amp; Co., 135 Westhall Road, Warlingham, Surrey CR6 9HJ (GB).</p> <p>(72) Inventors: ROUSE, Geoffrey, Owen; 90 Broomfield Road, Portlethen, Aberdeen AB12 4SU (GB). BROUSSARD, Andre Nole; 900 Henderson #2301, Nassau Bay, TX 77058 (US). SEGURA, Richard, James, Snr.; 17202 Boulder Ridge Court, Houston, TX 77095 (US). SCHNITKER, Mark, William; 2107 McKissick, Friendswood, TX 77546 (US). HART, Shane, Paul; 10222 Sagemill Drive, Houston, TX 77089 (US).</p> <p>(74) Agent: HARDING, Richard, Patrick; Marks &amp; Clerk, 4220 Nash Court, Oxford Business Park South, Oxford OX4 2RU (GB).</p>		<p>(81) Designated States: AU, CA, CN, JP, NO, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).</p> <p><b>Published</b> <i>With international search report.</i></p> <p>(88) Date of publication of the international search report: 8 September 2000 (08.09.00)</p>
<p>(54) Title: SYSTEM, APPARATUS AND METHOD FOR FACILITATING RETRIEVAL OF AN ITEM FROM A WELL</p>		
<p>(57) Abstract</p>		
<p>An apparatus for facilitating retrieval of an item, for example a well head, from a well, said apparatus comprising means (28) for engaging said item characterised in that said apparatus further comprises locking means (66, 68) for inhibiting said means (20) from inadvertently releasing said item. A system for facilitating retrieval of an item from a well, the system comprising a grapple (20), and a cutting tool (30) arranged therebelow characterised in that said system further comprises means (122, 154) for expelling fluid under pressure disposed above said cutting tool (30). A method for facilitating retrieval of an item from a well using the system of the invention, the method comprising the steps of inserting at least part of said system into a tubular, rotating said cutting tool, at least part of said cutting tool engaging said tubular to cut said tubular, which cutting action generates swarf characterised in that said method comprises the step of expelling fluid above said cutting tool for inhibiting said swarf reaching said grapple. An apparatus for facilitating retrieval of an item from a well, said apparatus comprising at least one arm (28), characterised in that said at least one arm (28) comprises at least one groove (59, 59a) for receiving debris that might otherwise inhibit the operation of said apparatus.</p>		

**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece	ML	Mali	TR	Turkey
BG	Bulgaria	HU	Hungary	MN	Mongolia	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MR	Mauritania	UA	Ukraine
BR	Brazil	IL	Israel	MW	Malawi	UG	Uganda
BY	Belarus	IS	Iceland	MX	Mexico	US	United States of America
CA	Canada	IT	Italy	NE	Niger	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NL	Netherlands	VN	Viet Nam
CG	Congo	KE	Kenya	NO	Norway	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NZ	New Zealand	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	PL	Poland		
CM	Cameroon	KR	Republic of Korea	PT	Portugal		
CN	China	KZ	Kazakstan	RO	Romania		
CU	Cuba	LC	Saint Lucia	RU	Russian Federation		
CZ	Czech Republic	LJ	Liechtenstein	SD	Sudan		
DE	Germany	LK	Sri Lanka	SE	Sweden		
DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/GB 99/00077

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> IPC 6 E21B31/16 E21B31/18		
According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b>		
Minimum documentation searched (classification system followed by classification symbols) IPC 6 E21B		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practical, search terms used)		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category <sup>o</sup>	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 703 802 A (BRYAN LEONARD B ET AL) 3 November 1987 (1987-11-03) column 4, line 18-27 figures 2,3	1-5,11
Y	---	12
Y	GB 2 259 930 A (HOMCO INTERNATIONAL INC) 31 March 1993 (1993-03-31) cited in the application page 7, line 21 - page 8, line 6	12
X	US 2 687 323 A (K. R. STOHN) 24 August 1954 (1954-08-24) column 4, line 25 - column 5, line 3 figures 1-5	1,2
---	---	---
-/--	-/--	-/--
<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C.		
<input checked="" type="checkbox"/> Patent family members are listed in annex.		
<sup>o</sup> 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	"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 document 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.	"Z" document member of the same patent family
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"P" document published prior to the international filing date but later than the priority date claimed	
"O" document referring to an oral disclosure, use, exhibition or other means	Date of the actual completion of the international search	
"P" document published prior to the international filing date but later than the priority date claimed	Date of mailing of the international search report	
8 April 1999	23. 07. 1999	
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer  Schouten, A	

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/GB 99/00077

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	GB 2 159 855 A (A Z INT TOOL CO) 11 December 1985 (1985-12-11) page 2, line 60-64 figures 5,7 ---	1
A	--- US 4 181 196 A (DARBY LACY B ET AL) 1 January 1980 (1980-01-01) abstract ---	1
A	--- GB 2 310 873 A (SMITH INTERNATIONAL) 10 September 1997 (1997-09-10) abstract ---	1
A	--- US 5 146 989 A (ROUSE GEOFFREY O) 15 September 1992 (1992-09-15) column 3, line 48 - column 4, line 11 -----	1

# INTERNATIONAL SEARCH REPORT

national application No.

PCT/GB 99/ 00077

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

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

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

## Box 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:

see additional sheet

1.  As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2.  As all searchable claims could be searched without effort justifying an additional 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.:

1-12

Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
- No protest accompanied the payment of additional search fees.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

1. Claims: 1-12

An apparatus for facilitating retrieval of an item from a well, characterised by locking means.

2. Claims: 13-21

An apparatus and method for facilitating retrieval of an item from a well, characterised by means that prevent swarf or debris from interfering with the operation of said apparatus.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 99/00077

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4703802 A	03-11-1987	GB 2165286 A,B IE 56969 B	09-04-1986 26-02-1992
GB 2259930 A	31-03-1993	NO 178941 B US 5318115 A	25-03-1996 07-06-1994
US 2687323 A	24-08-1954	NONE	
GB 2159855 A	11-12-1985	US 4550781 A GB 2188353 A,B	05-11-1985 30-09-1987
US 4181196 A	01-01-1980	AU 521213 B AU 3718878 A CA 1074697 A GB 1599390 A	25-03-1982 20-12-1979 01-04-1980 30-09-1981
GB 2310873 A	10-09-1997	AU 2102197 A CA 2247812 A EP 0885344 A WO 9733066 A NO 984003 A	22-09-1997 12-09-1997 23-12-1998 12-09-1997 31-08-1998
US 5146989 A	15-09-1992	CA 2036376 A,C DE 69007060 D DE 69007060 T EP 0436706 A WO 9102138 A NO 178940 B RU 2015303 C	04-02-1991 07-04-1994 09-06-1994 17-07-1991 21-02-1991 25-03-1996 30-06-1994