



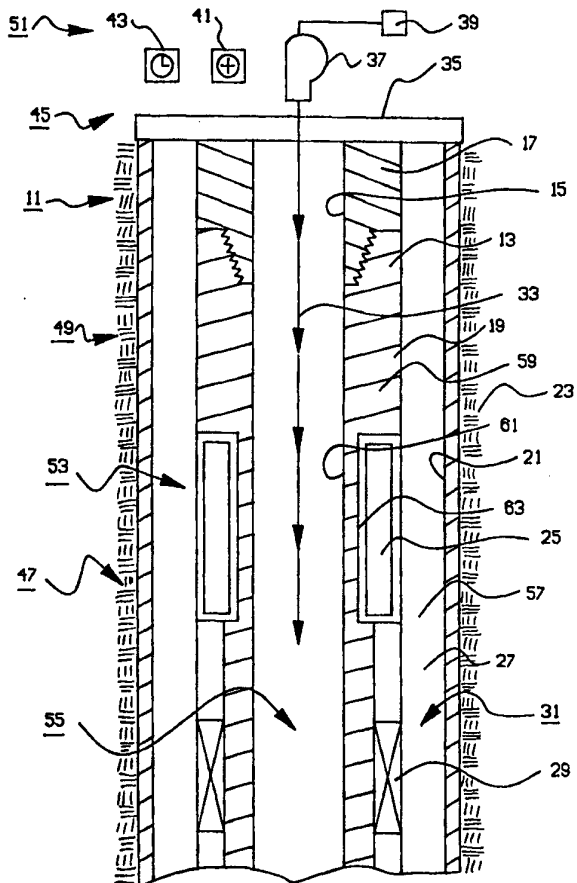
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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|---|------------------|--|
| <p>(51) International Patent Classification <sup>6</sup> :<br/><b>E21B 47/18, 23/04, 34/06, F16B 31/00</b></p>  | <p><b>A3</b></p> | <p>(11) International Publication Number: <b>WO 96/24752</b></p> <p>(43) International Publication Date: 15 August 1996 (15.08.96)</p>   |
| <p>(21) International Application Number: PCT/US96/01612</p> <p>(22) International Filing Date: 7 February 1996 (07.02.96)</p> <p>(30) Priority Data:<br/>08/386,565 10 February 1995 (10.02.95) US</p> <p>(71) Applicant: BAKER HUGHES INCORPORATED [US/US];<br/>Suite 1200, 3900 Essex Lane, Houston, TX 77027 (US).</p> <p>(72) Inventors: TUBEL, Paulo, S.; 118 E. Placid Hill, The Woodlands, TX 77381 (US). ROTHERS, David, Eugene; 21717 Inverness Forest Boulevard #607, Houston, TX 77073 (US). MULLINS, Albert, A., II; 18706 Arcaro Glen, Humble, TX 77436 (US). MCCORY, Mark; 125 Le Crescent, Bridge of Don, Aberdeen AB2 2FH (GB).</p> <p>(74) Agents: ROWOLD, Carl et al.; Baker Hughes Incorporated, Suite 1200, 3900 Essex Lane, Houston, TX 77027 (US).</p> |                  | <p>(81) Designated States: AU, CA, DE, DK, GB, NO, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).</p> <p><b>Published</b><br/><i>With international search report.<br/>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p> <p>(88) Date of publication of the international search report:<br/>28 November 1996 (28.11.96)</p> |

(54) Title: METHOD AND APPARTUS FOR REMOTE CONTROL OF WELLBORE END DEVICES

(57) Abstract

A wellbore remote control system is disclosed which includes (1) a transmission apparatus for generating at least one acoustic transmission having a particular transmission frequency, (2) a reception apparatus which includes an electronic circuit (preferably digital) which detects and identifies the acoustic transmissions, and which provides an actuation signal to an electrically-actuated wellbore tool if a match is detected.



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**INTERNATIONAL SEARCH REPORT**

International Application No

PCT/US 96/01612

A. CLASSIFICATION OF SUBJECT MATTER  
 IPC 6 E21B47/18 E21B23/04 E21B34/06 F16B31/00

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)  
 IPC 6 E21B F16B

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)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

| Category * | Citation of document, with indication, where appropriate, of the relevant passages                       | Relevant to claim No. |
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| Y          | FR,A,2 256 357 (BRUGUIER) 25 July 1975<br>see abstract; figures<br>---                                   | 41-47                 |
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| Y          | US,A,5 156 220 (BAKER HUGHES) 20 October 1992<br>see column 4, line 32 - line 51; figures<br>---<br>-/-- | 46                    |

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

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|---|--|
| Date of the actual completion of the international search<br><br>2 October 1996   | Date of mailing of the international search report<br><br>-9.10.96 |
| Name and mailing address of the ISA<br>European Patent Office, P.B. 5818 Patentlaan 2<br>NL - 2280 HV Rijswijk<br>Tel. (+ 31-70) 340-2040, Tx. 31 651 epo nl,<br>Fax (+ 31-70) 340-3016 | Authorized officer<br><br>Fonseca Fernandez, H                     |

**INTERNATIONAL SEARCH REPORT**

International Application No  
PCT/US 96/01612

| C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT |  |  |
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| Category *   | Citation of document, with indication, where appropriate, of the relevant passages                         | Relevant to claim No.                          |
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## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 96/01612

**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:

1. Claims 1-40
2. Claims 41-47
3. Claims 48-52

1.  As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
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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.
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# INTERNATIONAL SEARCH REPORT

information on patent family members

International Application No

PCT/US 96/01612

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