



Europäisches Patentamt  
European Patent Office  
Office européen des brevets



(11) **EP 0 825 324 A3**

(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:  
**19.04.2000 Bulletin 2000/16**

(51) Int Cl.7: **E21B 17/04**, E21B 43/116,  
E21B 17/06, E21B 23/04

(43) Date of publication A2:  
**25.02.1998 Bulletin 1998/09**

(21) Application number: **97306247.4**

(22) Date of filing: **18.08.1997**

(84) Designated Contracting States:  
**AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC  
NL PT SE**  
Designated Extension States:  
**AL LT LV RO SI**

(72) Inventors:  
• **Burleson, John D.**  
**Denton, Texas 76207 (US)**  
• **Henke, Joseph A.**  
**Lewisville, Texas 75067 (US)**

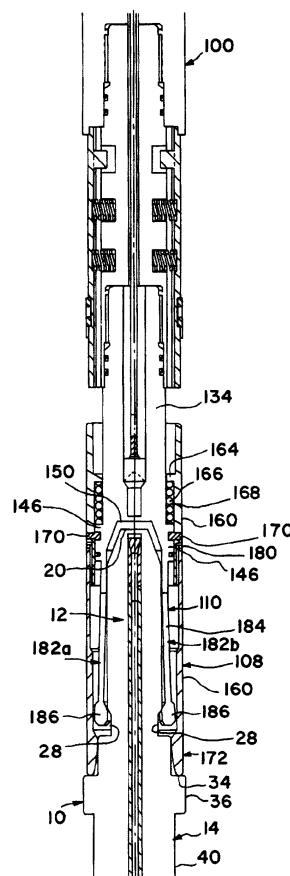
(30) Priority: **16.08.1996 US 698608**  
**16.08.1996 US 698603**

(74) Representative: **Wain, Christopher Paul et al**  
**A.A. Thornton & Co.**  
**235 High Holborn**  
**London WC1V 7LE (GB)**

(71) Applicant: **Halliburton Energy Services, Inc.**  
**Dallas, Texas 75381-9052 (US)**

(54) **Tool connector**

(57) A tool connector for downhole use in oil and gas fields. The tool connector includes a stinger (10) and a stinger receptacle (100), the stinger (10) being adapted to be stabbed into the stinger receptacle (100). A loaded engaging member (108) is provided, which is movable between a running position before the stinger (10) is stabbed into the stinger receptacle (100) and a latched position when the stinger (10) is stabbed into the stinger receptacle to latch the stinger and the stinger receptacle together. A release member (170) retains the loaded engaging member in the running position. When the stinger (10) is stabbed into the stinger receptacle (100) and a set force is applied to the stinger (10) and stinger receptacle (100), the release member releases the loaded engaging member to move to the latched position and latch the stinger (10) and the stinger receptacle (100) together. The tool connector is particularly suitable for connecting perforating guns.



**FIG. 7**

**EP 0 825 324 A3**



European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number  
EP 97 30 6247

| DOCUMENTS CONSIDERED TO BE RELEVANT                                                                                                                                                                                                                    |                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                              |                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|
| Category                                                                                                                                                                                                                                               | Citation of document with indication, where appropriate, of relevant passages                                                                                                                                                               | Relevant to claim                                                                                                                                                                                                                                                            | CLASSIFICATION OF THE APPLICATION (Int.Cl.6) |
| X                                                                                                                                                                                                                                                      | EP 0 647 765 A (HALLIBURTON CO)<br>12 April 1995 (1995-04-12)                                                                                                                                                                               | 1-5,<br>11-14                                                                                                                                                                                                                                                                | E21B17/04<br>E21B43/116                      |
| Y                                                                                                                                                                                                                                                      | * column 1, line 37 - column 3, line 36 *<br>* column 4, line 48 - column 5, line 7 *<br>* column 8, line 13 - line 19 *<br>* column 9, line 30 - column 12, line 55 *<br>* column 13, line 44 - line 54; claims 1-4; figures 8,10 *<br>--- | 7-9                                                                                                                                                                                                                                                                          | E21B17/06<br>E21B23/04                       |
| X                                                                                                                                                                                                                                                      | US 4 436 157 A (BROOKS ROBERT T)<br>13 March 1984 (1984-03-13)                                                                                                                                                                              | 1,3-6,<br>10,11,<br>13,14                                                                                                                                                                                                                                                    |                                              |
| Y                                                                                                                                                                                                                                                      | * column 3, line 52 - column 7, line 52 *<br>* column 17, line 34 - column 19, line 15 *<br>* column 19, line 35 - column 21, line 10; figure 6 *<br>---                                                                                    | 7-9                                                                                                                                                                                                                                                                          |                                              |
| X                                                                                                                                                                                                                                                      | US 5 518 072 A (MCVERNAGHAN KENNETH)<br>21 May 1996 (1996-05-21)<br>* column 1, line 37 - column 2, line 22; claims 1-4 *                                                                                                                   | 1,3-5,<br>11,13,14                                                                                                                                                                                                                                                           | TECHNICAL FIELDS<br>SEARCHED (Int.Cl.6)      |
| X                                                                                                                                                                                                                                                      | US 4 305 465 A (ELLIS GARY D)<br>15 December 1981 (1981-12-15)<br>* column 2, line 1 - line 25 *<br>* column 4, line 23 - line 44 *<br>* column 5, line 53-66 *<br>* column 7, line 34 - column 10, line 26; figures 2,6,7 *<br>---         | 1,3-5,<br>11,13,14                                                                                                                                                                                                                                                           | E21B                                         |
| X                                                                                                                                                                                                                                                      | US 4 391 326 A (GREENLEE DONALD R)<br>5 July 1983 (1983-07-05)<br>* abstract; figure 1 *                                                                                                                                                    | 1,3-5,<br>11,13,14                                                                                                                                                                                                                                                           |                                              |
| X                                                                                                                                                                                                                                                      | US 5 111 884 A (STRIECH STEVEN G ET AL)<br>12 May 1992 (1992-05-12)<br>* claims 1-11; figure 1 *<br>---                                                                                                                                     | 1,3-5,<br>11,13,14                                                                                                                                                                                                                                                           |                                              |
|                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                             | -/--                                                                                                                                                                                                                                                                         |                                              |
| The present search report has been drawn up for all claims                                                                                                                                                                                             |                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                              |                                              |
| Place of search<br><b>MUNICH</b>                                                                                                                                                                                                                       |                                                                                                                                                                                                                                             | Date of completion of the search<br><b>8 February 2000</b>                                                                                                                                                                                                                   | Examiner<br><b>Tompouloglou, C</b>           |
| CATEGORY OF CITED DOCUMENTS<br>X : particularly relevant if taken alone<br>Y : particularly relevant if combined with another document of the same category<br>A : technological background<br>O : non-written disclosure<br>P : intermediate document |                                                                                                                                                                                                                                             | T : theory or principle underlying the invention<br>E : earlier patent document, but published on, or after the filing date<br>D : document cited in the application<br>L : document cited for other reasons<br>& : member of the same patent family, corresponding document |                                              |

EPO FORM 1503 03.82 (F04C01)



European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number  
EP 97 30 6247

| DOCUMENTS CONSIDERED TO BE RELEVANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                  |                                                            |                                              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|------------------------------------------------------------|----------------------------------------------|
| Category                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Citation of document with indication, where appropriate, of relevant passages                    | Relevant to claim                                          | CLASSIFICATION OF THE APPLICATION (Int.Cl.6) |
| X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | US 4 449 736 A (BLACKWELL HENRY W)<br>22 May 1984 (1984-05-22)<br>* claims 1-6; figure 1 *       | 1,3-5,<br>11,13,14                                         |                                              |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | US 5 529 127 A (BURLESON JOHN D ET AL)<br>25 June 1996 (1996-06-25)<br>* abstract; figures 1-3 * | 2,8,9,12                                                   |                                              |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | US 5 273 121 A (KITNEY HOWARD R ET AL)<br>17 August 1993 (1993-08-17)<br>* abstract; figure 3 *  | 2,8,9,12                                                   |                                              |
| The present search report has been drawn up for all claims                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                  |                                                            | TECHNICAL FIELDS SEARCHED (Int.Cl.6)         |
| Place of search<br><b>MUNICH</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                  | Date of completion of the search<br><b>8 February 2000</b> | Examiner<br><b>Tompouloglou, C</b>           |
| <p><b>CATEGORY OF CITED DOCUMENTS</b></p> <p>X : particularly relevant if taken alone<br/> Y : particularly relevant if combined with another document of the same category<br/> A : technological background<br/> O : non-written disclosure<br/> P : intermediate document</p> <p>T : theory or principle underlying the invention<br/> E : earlier patent document, but published on, or after the filing date<br/> D : document cited in the application<br/> L : document cited for other reasons<br/> &amp; : member of the same patent family, corresponding document</p> |                                                                                                  |                                                            |                                              |

EPO FORM 1503 03.82 (P04C01)

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

EP 97 30 6247

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

08-02-2000

| Patent document<br>cited in search report | Publication<br>date | Patent family<br>member(s)                                                                 | Publication<br>date                                                              |
|-------------------------------------------|---------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| EP 0647765 A                              | 12-04-1995          | US 5398760 A<br>CA 2133817 A<br>NO 943754 A                                                | 21-03-1995<br>09-04-1995<br>10-04-1995                                           |
| US 4436157 A                              | 13-03-1984          | US 4320804 A<br>GB 2103689 A,B<br>CA 1141289 A<br>FR 2463257 A<br>GB 2055133 A,B           | 23-03-1982<br>23-02-1983<br>15-02-1983<br>20-02-1981<br>25-02-1981               |
| US 5518072 A                              | 21-05-1996          | CA 2168301 A<br>FR 2730004 A<br>GB 2297368 A,B<br>NO 960276 A                              | 31-07-1996<br>02-08-1996<br>31-07-1996<br>31-07-1996                             |
| US 4305465 A                              | 15-12-1981          | US 4363358 A                                                                               | 14-12-1982                                                                       |
| US 4391326 A                              | 05-07-1983          | CA 1181002 A<br>GB 2091789 A,B                                                             | 15-01-1985<br>04-08-1982                                                         |
| US 5111884 A                              | 12-05-1992          | NONE                                                                                       |                                                                                  |
| US 4449736 A                              | 22-05-1984          | CA 1191452 A                                                                               | 06-08-1985                                                                       |
| US 5529127 A                              | 25-06-1996          | AU 686485 B<br>AU 4079696 A<br>BR 9600489 A<br>CA 2167666 A<br>EP 0728913 A<br>NO 960113 A | 05-02-1998<br>01-08-1996<br>03-03-1998<br>21-07-1996<br>28-08-1996<br>22-07-1996 |
| US 5273121 A                              | 28-12-1993          | NONE                                                                                       |                                                                                  |

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82