



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) **EP 0 911 482 A3**

(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
03.04.2002 Bulletin 2002/14

(51) Int Cl.7: **E21B 17/01**, E21B 17/02,
F16L 35/00, B63B 21/50

(43) Date of publication A2:
28.04.1999 Bulletin 1999/17

(21) Application number: **98308732.1**

(22) Date of filing: **26.10.1998**

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

(72) Inventor: **Finn, Lyle David**
Sugar Land, Texas 77479 (US)

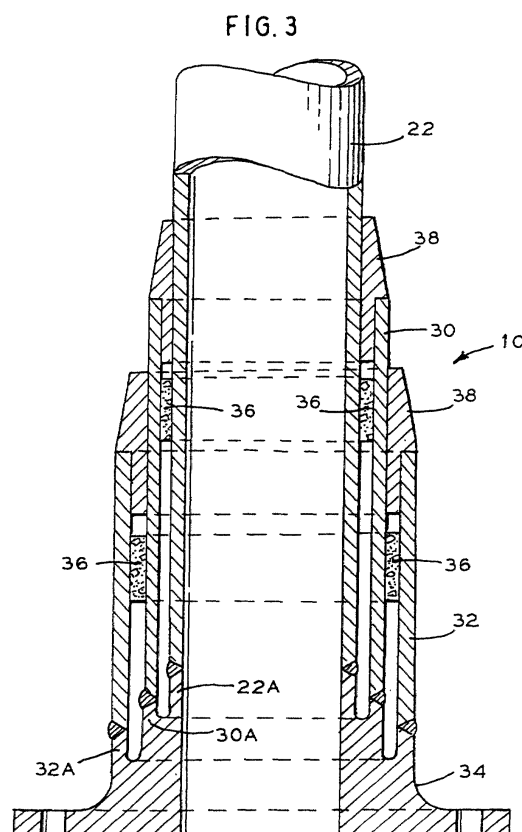
(74) Representative: **Pilch, Adam John Michael**
D. YOUNG & CO.,
21 New Fetter Lane
London EC4A 1DA (GB)

(30) Priority: **27.10.1997 US 958495**

(71) Applicant: **Deep Oil Technology, Incorporated**
Houston, Texas 77079-1709 (US)

(54) **Stress relief joints for risers**

(57) A stress relief joint (10) for use with riser pipe (22) in floating systems wherein a vessel is subjected to variable motion caused by wind, currents and/or wave action. The riser pipe (22) has one end connectable to the sea floor and an upper portion arranged to pass through an opening at the bottom of the vessel. The lower end, which is connectable to other pipes at the sea floor, is provided with concentric pipes or sleeves (30, 32) around the riser (22). The lower ends of the pipes (30, 32) and riser (22) are welded to a flange (34). The upper end of each of the concentric pipes (30, 32) extends beyond the upper end of the pipe immediately surrounding it. The annulus between the concentric pipes (30, 32) and the riser (22) may be filled with a durable and pliable material (36). Also, shims (38) may be inserted in the annulus at the end of each pipe segment.



EP 0 911 482 A3



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 98 30 8732

| 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) |
| A | US 4 854 781 A (SPARKS) 8 August 1989 (1989-08-08) * column 4, line 65 - column 5, line 2 * * column 4, line 30 - line 34 * ---- | 1,4,5,9 | E21B17/01 E21B17/02 F16L35/00 B63B21/50 |
| A | FR 2 397 084 A (INSTITUT FRANÇAIS DU PÉTROLE) 2 February 1979 (1979-02-02) * page 3, line 16 - line 26 * ---- | 1,4,5,9 | |
| A | US 3 605 413 A (MORGAN) 20 September 1971 (1971-09-20) * column 4, line 2 - line 12 * ---- | 1,4,5,9 | |
| P,X | FR 2 760 813 A (COFLEXIP) 18 September 1998 (1998-09-18) * page 15, line 18 - line 27; figure 9 * ---- | 1 | |
| P,A | US 5 683 205 A (HALKYARD) 4 November 1997 (1997-11-04) * column 2, line 62 - column 3, line 20 * ----- | 1,4,5,9 | |
| | | | TECHNICAL FIELDS SEARCHED (Int.Cl.6) |
| | | | E21B F16L B63B |
| The present search report has been drawn up for all claims | | | |
| Place of search | | Date of completion of the search | Examiner |
| THE HAGUE | | 13 February 2002 | Sogno, M |
| <p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p> | | | |

EPO FORM 1503 03/82 (PC4C01)

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

EP 98 30 8732

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.

13-02-2002

| Patent document cited in search report | | Publication date | Patent family member(s) | Publication date |
|---|---|---------------------|----------------------------|---------------------|
| US 4854781 | A | 08-08-1989 | FR 2616858 A1 | 23-12-1988 |
| | | | BR 8802981 A | 10-01-1989 |
| | | | EP 0296056 A1 | 21-12-1988 |
| | | | NO 180244 B | 02-12-1996 |
| FR 2397084 | A | 02-02-1979 | FR 2397084 A1 | 02-02-1979 |
| US 3605413 | A | 20-09-1971 | NONE | |
| FR 2760813 | A | 18-09-1998 | FR 2760813 A1 | 18-09-1998 |
| | | | AU 725311 B2 | 12-10-2000 |
| | | | AU 6734198 A | 12-10-1998 |
| | | | BR 9804779 A | 17-08-1999 |
| | | | CN 1220717 A | 23-06-1999 |
| | | | CN 1220717 T | 23-06-1999 |
| | | | EP 0910723 A1 | 28-04-1999 |
| | | | WO 9841729 A1 | 24-09-1998 |
| | | | NO 984995 A | 13-01-1999 |
| | | | US 6220303 B1 | 24-04-2001 |
| | | | ZA 9801661 A | 03-09-1998 |
| US 5683205 | A | 04-11-1997 | NONE | |