

CONTROL FLOW, INC.
PATENTS

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US006817422B2

(12) **United States Patent**
Jordan

(10) **Patent No.:** US 6,817,422 B2
(45) **Date of Patent:** Nov. 16, 2004

(54) **AUTOMATED RISER RECOIL CONTROL SYSTEM AND METHOD**

(58) **Field of Search** 166/355, 335, 166/352, 381; 175/5, 7, 27, 85

(75) **Inventor:** Larry Russell Jordan, Houston, TX (US)

(56) **References Cited**

(73) **Assignee:** Cooper Cameron Corporation, Houston, TX (US)

U.S. PATENT DOCUMENTS

(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 3 days.

3,653,635 A	4/1972	Bates, Jr. et al.	
4,121,806 A	10/1978	Iato et al.	254/172
4,351,261 A	9/1982	Shanks	114/264
4,432,420 A	2/1984	Gregory et al.	166/355
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4,487,150 A	12/1984	Shanks	114/264
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4,759,256 A	7/1988	Kovit et al.	91/29
4,962,817 A	10/1990	Jones et al.	175/166
5,209,302 A	5/1993	Robichaux et al.	166/355

(21) **Appl. No.:** 10/276,411

(22) **PCT Filed:** May 15, 2001

(86) **PCT No.:** PCT/US01/15623

§ 371 (c)(1),
(2), (4) **Date:** Nov. 14, 2002

(87) **PCT Pub. No.:** WO01/88323

PCT Pub. Date: Nov. 22, 2001

(65) **Prior Publication Data**

US 2003/0205383 A1 Nov. 6, 2003

Related U.S. Application Data

(60) **Provisional application No.** 60/204,442, filed on May 15, 2000.

(51) **Int. Cl.⁷** E21B 19/00; E21B 23/00

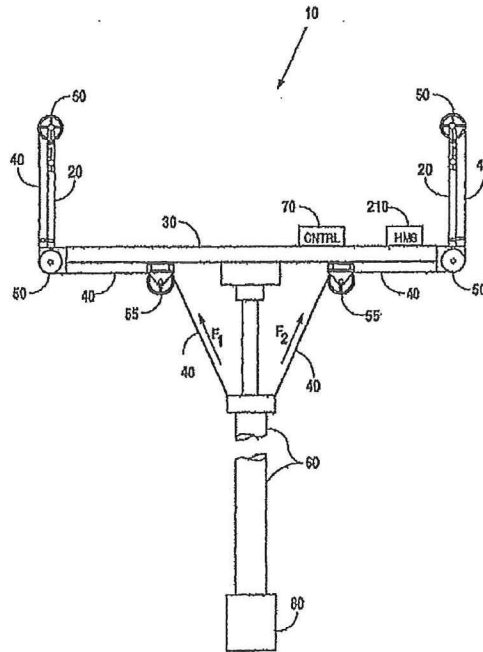
(52) **U.S. Cl.** 166/381; 166/355; 175/7; 175/27

Primary Examiner—David Bagnell
Assistant Examiner—Jennifer Gay
(74) *Attorney, Agent, or Firm*—Michael P. Hartmann; Peter J. Bielinski

(57) **ABSTRACT**

An automated riser recoil control system (10) including a plurality of riser tensioners (20), a vessel heave measurement system (210) and a control processor (70) with each tensioner (20) having a piston travel indicator (27) which signals the processor (70) and a method of operation is disclosed.

15 Claims, 4 Drawing Sheets





US007163054B2

(12) **United States Patent**
Adams

(10) **Patent No.:** **US 7,163,054 B2**
(45) **Date of Patent:** **Jan. 16, 2007**

(54) **BREECHBLOCK CONNECTORS FOR USE WITH OIL FIELD LINES AND OIL FIELD EQUIPMENT**

(75) Inventor: **James Murph Adams**, Cypress, TX (US)

(73) Assignee: **Control Flow Inc.**, Houston, TX (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 170 days.

3,442,536 A	5/1969	Fowler	
3,800,869 A	4/1974	Herd et al.	
3,895,829 A	7/1975	Manson, Jr.	
3,948,545 A	4/1976	Bonds	
4,165,891 A	8/1979	Sullaway et al.	
4,185,856 A *	1/1980	McCaskill	285/18
4,209,191 A	6/1980	Lawson	
4,290,482 A *	9/1981	Brisco	166/75.13
4,540,053 A *	9/1985	Baugh et al.	166/382
4,807,705 A	2/1989	Henderson et al.	
5,069,288 A *	12/1991	Singetham	166/382

FOREIGN PATENT DOCUMENTS

GB	260140	10/1926
GB	2 114 631 A	8/1983

* cited by examiner

Primary Examiner—David Bagnell
Assistant Examiner—Matthew J. Smith
(74) *Attorney, Agent, or Firm*—Bracewell & Giuliani LLP;
Anthony F. Matheny

(21) Appl. No.: **10/827,653**

(22) Filed: **Apr. 19, 2004**

(65) **Prior Publication Data**

US 2004/0256096 A1 Dec. 23, 2004

Related U.S. Application Data

(63) Continuation-in-part of application No. 10/601,946, filed on Jun. 23, 2003, now Pat. No. 7,040,393.

(51) **Int. Cl.**
E21B 17/02 (2006.01)

(52) **U.S. Cl.** **166/75.13; 166/242.6; 285/18**

(58) **Field of Classification Search** **166/360, 166/380, 382, 75.13, 242.6; 285/18**
See application file for complete search history.

(56) **References Cited**

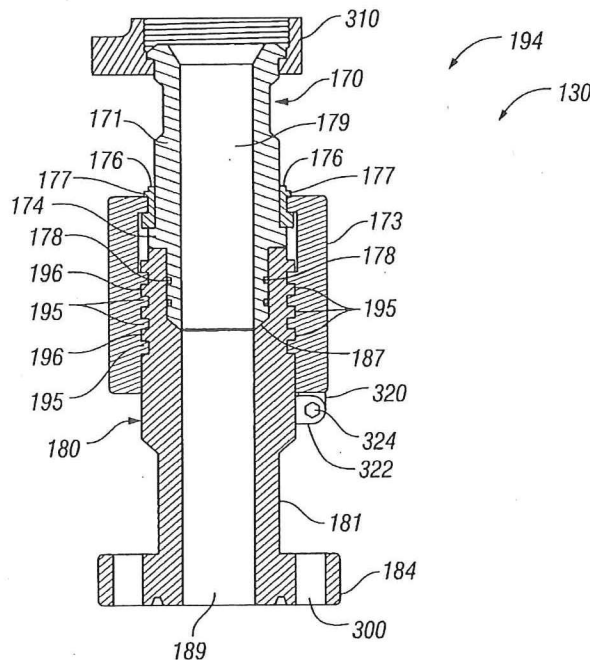
U.S. PATENT DOCUMENTS

3,421,580 A 1/1969 Fowler et al.

ABSTRACT

The invention is directed to breechblock connections to and between oil field equipment and oil field lines for use with oil field equipment associated with oil and gas exploration, drilling, and production. The oil field lines and oil field equipment of the invention include a breechblock connection for quick and easy removal and installation of the oil field lines to oil field equipment and to other oil field lines, and connections between different pieces of oil field equipment. Methods of connecting lines to oil field equipment and connecting one piece of oil field equipment to a second piece of oil field equipment are also disclosed.

29 Claims, 7 Drawing Sheets



THE REGISTRY OF PATENTS
SINGAPORE

THE PATENTS ACT
(CHAPTER 221)

CERTIFICATE OF GRANT OF PATENT

In accordance with section 35 of the Patents Act, it is hereby certified that a patent having the P-No. 116624 has been granted in respect of an invention having the following particulars:

Title : BREECHBLOCK CONNECTORS FOR USE WITH
OIL FIELD LINES AND OIL FIELD EQUIPMENT

Application Number : 200502347-8

Date of Filing : 18 April 2005

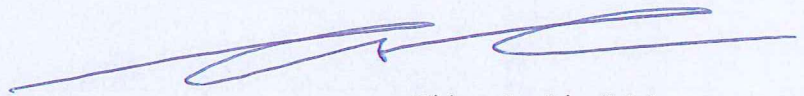
Priority Data : 19 April 2004 - PATENT APPLICATION NO.
10/827,653 (UNITED STATES OF AMERICA)

Name of Inventor(s) : JAMES M. ADAMS

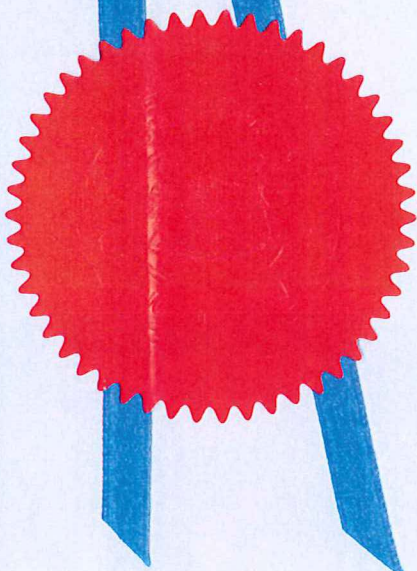
Name(s) and Address(es) of
Proprietor(s) of Patent : CONTROL FLOW INC.
9201 FAIRBANKS NORTH HOUSTON ROAD
HOUSTON,
TEXAS 77064
UNITED STATES OF AMERICA

Date of Grant : 31 August 2007

Dated this 31st day of August 2007



Chiam Lu Lin (Ms)
Deputy Registrar of Patents,
Singapore.





(12) PATENT

(19) NO

(11) 336548

(13) B1

NORGE

(51) Int Cl.

F16L 23/00 (2006.01)
E21B 33/038 (2006.01)
E21B 33/064 (2006.01)
E21B 33/076 (2006.01)

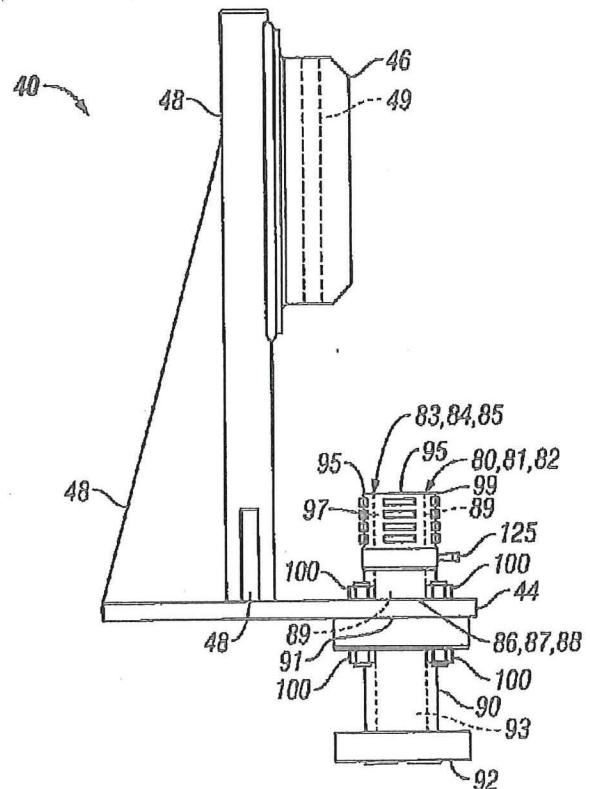
✓ Breechblock Connectors for use with Oil Field Lines and Oil Field Equipment

Patentstyret

(21)	Søknadsnr	20051701	(86)	Int.inng.dag og søknadsnr	
(22)	Inng.dag	2005.04.06	(85)	Videreføringsdag	
(24)	Løpedag	2005.04.06	(30)	Prioritet	2004.04.19, US, 827653
(41)	Alm.tilgj	2005.10.20			
(45)	Meddelt	✓ 2015.09.21			
(73)	Innehaver	Control Flow Inc, 9201 Fairbanks North Houston Road, US-TX77064 HOUSTON, USA			
(72)	Oppfinner	James M Adams, 12418 Winding Lane, US-TX77429 CYPRESS, USA			
(74)	Fullmektig	Tandbergs Patentkontor AS, Postboks 1570 Vika, 0118 OSLO, Norge			

(54)	Benevnelse	Koplingsystem for tilkopling av ledninger til utrustning på oljefelt
(56)	Anførte publikasjoner	GB 2114631 A US 5069288 A US 4540053 A
(57)	Sammendrag	

Oppfinnelsen retter seg mot låseblokkkoblinger til og mellom oljefeltutstyr og oljefeltledninger for bruk med oljefeltutstyr forbundet med olje og gassutforskning, boring og produksjon. Oljefeltledningene og oljefeltutstyret ifølge oppfinnelsen omfatter en låseblokkkobling for hurtig og enkel fjerning og installasjon av oljefeltledninger til oljefeltutstyret og til andre oljefeltledninger, og tilkoblinger mellom ulike deler oljefeltutstyr. Fremgangsmåter for å tilkoble ledninger til oljefeltutstyr og tilkobling av en del av oljefeltutstyr til en andre del av oljefeltutstyr er også omtalt.



(19)



(11)

EP 1 491 717 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention of the grant of the patent:
03.10.2007 Bulletin 2007/40

(51) Int Cl.:
E21B 33/038^(2006.01) E21B 33/06^(2006.01)

(21) Application number: **04076680.0**

(22) Date of filing: **08.06.2004**

(54) Choke and kill line systems for blowout preventers

Choke und Kill-Leitungen System für ein Backenausbruchsventil

System de connecteur de conduite d'injection pour un obturateur anti-éruption

(84) Designated Contracting States:
FI FR GB NL RO

• **Curtiss, Jason P. III**
Houston,
Texas 77065 (US)

(30) Priority: **23.06.2003 US 601946**

(74) Representative: **Newstead, Michael John et al**
Page Hargrave
Southgate
Whitefriars
Lewins Mead
Bristol BS1 2NT (GB)

(43) Date of publication of application:
 — **29.12.2004 Bulletin 2004/53**

(73) Proprietor: **Control Flow Inc.**
Houston, TX 77064 (US)

(56) References cited:
US-A- 4 668 126 US-A- 6 089 321
US-A1- 2003 024 705 US-A1- 2003 136 927
US-B1- 6 470 975

(72) Inventors:
 • **Adams, James M.**
Cypress,

Texas 77429 (US)

EP 1 491 717 B1

Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).



US007040393B2

(12) **United States Patent**
Adams et al.

(10) **Patent No.:** **US 7,040,393 B2**

(45) **Date of Patent:** **May 9, 2006**

(54) **CHOKES AND KILL LINE SYSTEMS FOR BLOWOUT PREVENTERS**

4,668,126 A 5/1987 Burton
4,807,705 A 2/1989 Henderson et al.
4,848,472 A 7/1989 Hopper

(75) Inventors: **James M. Adams**, Cypress, TX (US);
Jason P. Curtiss, III, Houston, TX (US)

(Continued)

OTHER PUBLICATIONS

(73) Assignee: **Control Flow Inc.**, Houston, TX (US)

RetroSearch Search Results with Abstracts, Mar. 24, 2003, pp. 1-8.

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 204 days.

Primary Examiner—Jennifer H. Gay
Assistant Examiner—Matthew J. Smith
(74) *Attorney, Agent, or Firm*—Andrews Kurth LLP; Anthony F. Matheny

(21) Appl. No.: **10/601,946**

(22) Filed: **Jun. 23, 2003**

(57) **ABSTRACT**

(65) **Prior Publication Data**

US 2004/0256107 A1 Dec. 23, 2004

(51) **Int. Cl.**
E21B 23/02 (2006.01)

(52) **U.S. Cl.** **166/77.51**; 166/85.4; 166/85.5; 285/401; 285/391

(58) **Field of Classification Search** 166/77.51, 166/85.4, 85.5, 338, 344, 345, 368, 363; 285/124.4, 124.5, 360, 378, 401, 391
See application file for complete search history.

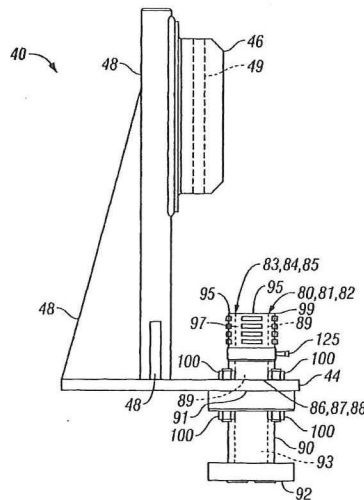
The invention is directed to pressure lines for use with equipment associated with drilling and production risers, and in particular, pressure lines having breechblock connections with the equipment and with choke and kill lines for use in connection with different sized blowout preventer stacks ("BOP stacks"). The pressure line systems and choke and kill line systems of the invention include a breechblock connection for quick and easy removal and installation of the pressure lines to riser equipment and the choke and kill lines to BOP stacks. Additionally, the choke and kill lines of the invention may include a coupling system having a BOP connector, or plate assembly, for permitting one set of choke and kill lines to be used on various sized BOP stacks. The plate assembly is in fluid communication with a first choke or kill line connector. Each of the choke and kill lines, or hoses, include a second choke or kill line connector, preferably as part of a line assembly, which is capable of being releasably secured to the first choke or kill line connector. Therefore, by installing a plate assembly on different sized BOP stacks, one set of choke and kill lines can be used in connection with multiple sized BOP stacks. Methods of replacing BOP stacks and installing and removing choke and kill lines and pressure lines are also disclosed.

(56) **References Cited**

U.S. PATENT DOCUMENTS

- 3,688,840 A * 9/1972 Curington et al. 166/341
- 3,877,520 A 4/1975 Putnam
- 3,974,875 A * 8/1976 Herd et al. 166/367
- 4,053,023 A 10/1977 Herd et al.
- 4,210,208 A 7/1980 Shanks
- 4,319,637 A * 3/1982 Wilson 166/340
- 4,488,740 A 12/1984 Baugh et al.
- 4,540,053 A 9/1985 Baugh et al.
- 4,597,448 A 7/1986 Baugh
- 4,615,544 A 10/1986 Baugh
- 4,618,314 A 10/1986 Hailey

26 Claims, 5 Drawing Sheets



THE REGISTRY OF PATENTS
SINGAPORE

THE PATENTS ACT
(CHAPTER 221)

CERTIFICATE OF GRANT OF PATENT

In accordance with section 35 of the Patents Act, it is hereby certified that a patent having the P-No. 118286 has been granted in respect of an invention having the following particulars:

Title : CHOKE AND KILL LINE SYSTEMS FOR
BLOWOUT PREVENTERS

Application Number : 200404133-1

Date of Filing : 11 June 2004

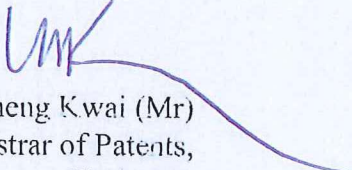
Priority Data : 23 June 2003 - PATENT APPLICATION NO. US
10/601,946 (UNITED STATES OF AMERICA)

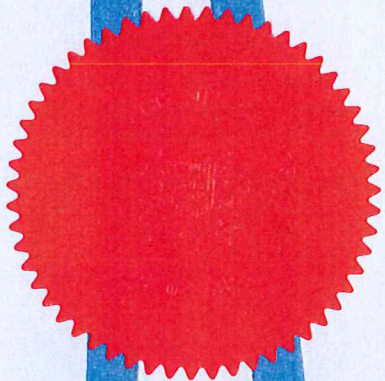
Name of Inventor(s) : JAMES M. ADAMS; JASON P. CURTISS, III

Name(s) and Address(es) of
Proprietor(s) of Patent : CONTROL FLOW INC.
9201 FAIRBANKS NORTH HOUSTON ROAD,
HOUSTON, TEXAS 77064.
UNITED STATES OF AMERICA

Date of Grant : 29 December 2006

Dated this 29th day of December 2006.


Wong Sheng Kwai (Mr)
Acting Registrar of Patents,
Singapore





NORGE

(51) Int Cl.
E21B 33/038 (2006.01)
E21B 33/064 (2006.01)
E21B 33/076 (2006.01)

Patentstyret

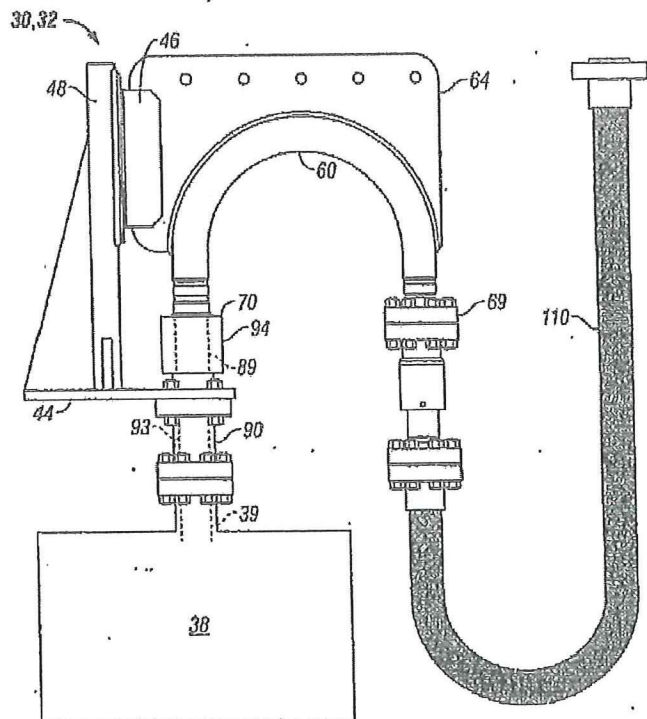
✓Choke and Kill Line Systems for Blowout Preventers

(21)	Søknadsnr	20042458	(86)	Int.inng.dag og søknadsnr	
(22)	Inng.dag	2004.06.14	(85)	Videreføringsdag	
(24)	Løpedag	2004.06.14	(30)	Prioritet	2003.06.23, US, 601946
(41)	Alm.tilgj	2004.12.27			
(45)	Meddelt	→ 2015.07.13			
(73)	Innehaver	Control Flow Inc, 9201 Fairbanks North Houston Road, US-TX77064 HOUSTON, USA			
(72)	Oppfinner	James M Adams, 12418 Winding Lane, US-TX77429 CYPRESS, USA Jason P Curtiss III, 12519 Brants Way Court, US-TX77065 HOUSTON, USA			
(74)	Fullmektig	Tandbergs Patentkontor AS, Postboks 1570 Vika, 0118 OSLO, Norge			

(54)	Benevnelse	Strupe- og drepeledning og koplingsystem for en utblåsingssikring.
(56)	Anførte publikasjoner	US 6089321 A US 2003024705 A1 US 2003/136927 A1
(57)	Sammendrag	

Oppfinnelsen vedrører trykkledninger for anvendelse sammen med utstyr tilknyttet bore- og produksjonsstigerør, særlig stigerør som har låseblokkoplinger til utstyret og med strupe- og drepeledninger for anvendelse med utblåsingssikringer av forskjellige størrelser (UBIS-stakker).

Trykkledningssystemene og drepe- og strupeledningssystemene ifølge oppfinnelsen omfatter en låseblokkopling for hurtig og enkel fjerning og installasjon av trykkledningene til stigerørsutstyret og strupe- og drepeledningene til UBIS-stakkene. Dessuten kan strupe- og drepeledningene omfatte et koplingsystem som har en UBIS koplingsanordning, eller en platenhet for å muliggjøre anvendelse av ett sett strupe- og drepeledninger i forbindelse med en første strupe- og drepeledningskoplingsanordning. Hver strupe- og drepeledning eller -slange, omfatter en andre strupe- eller drepeledningskoplings-anordning, fortrinnsvis som del av en ledning, for løsgjørbar festing til den første strupe- eller drepeledningskoplingsanordning. Ved å installere en platenhet for UBIS-stakker av forskjellig størrelse kan det derfor ett sett strupe- eller drepeledninger sammen med UBIS-stakker av flere forskjellige størrelser. Fremgangsmåter for utskifting UBIS-stakker og installering og fjerning av strupe- og drepeledninger beskrives.





(12) PATENT

(19) NO

(11) 330579

(13) B1

NORGE

(51) Int Cl.
E21B 19/00 (2006.01)

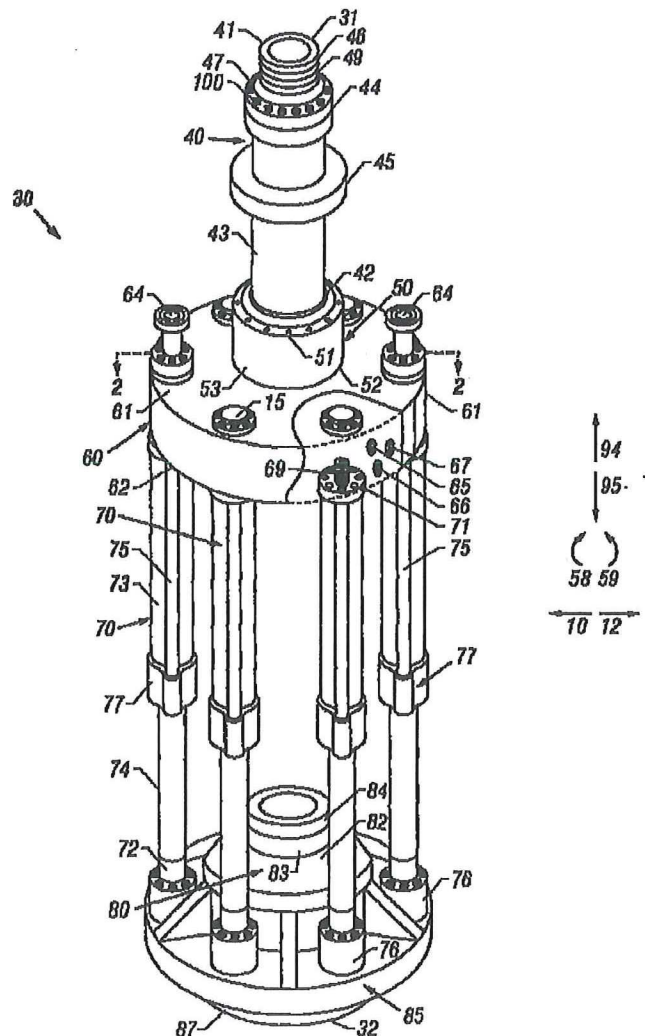
Patentstyret

Co-Linear Tensioner and Methods for Assembling Production and Drilling Risers using same

(21)	Søknadsnr	20025468	(86)	Int.inng.dag og søknadsnr	
(22)	Inng.dag	→ 2002.11.15	(85)	Videreføringsdag	
(24)	Løpedag	2002.11.15	(30)	Prioritet	2001.11.30, US, 000393
(41)	Alm.tilgj	2003.06.02			
(45)	Meddelt	2011.05.16			
(73)	Innehaver	Control Flow Inc, 9201 Fairbanks North Houston Road, US-TX77064 HOUSTON, USA			
(72)	Oppfinner	Graeme E Reynolds, 2053 Western Village, Houston, TX 77043, USA Timothy I Mournian, 4237 Olive Avenue, Long Beach, CA 90807, USA			
(74)	Fullmektig	Acapo AS, Postboks 1880 Nordnes, 5817 BERGEN, Norge			

(54)	Benevnelse	Anordning ved koblingsorgan for stigerørssystemer
(56)	Anførte publikasjoner	GB 2358032 A, US 4934870 A, US 20010041096 A1
(57)	Sammendrag	

Foreliggende oppfinnelse vedrører en strekkmodul for å skaffe en rørledning, for eksempel bore- og produksjons-stigerør, fra et drivende fartøy på vannoverflaten til sjøen til utblåsningssikringen, produksjonstre, eller en annen anordning som er koblet til brønnhodet på sjøbunnen. Strekkmodulen kompensere for fartøysbevegelse forårsaket av bølgenes virkning, og hiv, og opprettholder en variabel strekk på stigerørstrengen, og reduserer dermed potensialet for kompresjon og således knekking eller sammenbrudd av stigerørstrengen. Strekkmodulen ifølge foreliggende oppfinnelse omfatter fortrinnsvis minst én røropphengsforing som omfatter minst en opphengsring, minst én øvre fleksibel dreieskjøtsammenstilling, minst én manifold med radiale åpninger, og minst én strekksylinder, kolinear kombinert i en enhet. Fremgangsmåter for å sammenstille stigerør omfattes også.



(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

EP 1 316 671 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:
01.06.2005 Bulletin 2005/22

(51) Int Cl.7: **E21B 19/00**

(21) Application number: **02258242.3**

(22) Date of filing: **29.11.2002**

(54) **Co-linear tensioner and methods for assembling production and drilling risers using same**

Kolineare Spannvorrichtung und Verfahren zur Montage von Bohrloch- und Produktionssteigrohren unter Verwendung desselben

Dispositif tendeur co-linéaire et méthode d'assemblage de colonnes montantes de forage et de production utilisant ce dispositif

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
IE IT LI LU MC NL PT SE SK TR**

• **Mournian, Timothy I.**
Long Beach, California 90807 (US)

(30) Priority: **30.11.2001 US 393**

(74) Representative: **Newstead, Michael John et al**
Page Hargrave
Southgate
Whitefriars
Lewins Mead
Bristol BS1 2NT (GB)

(43) Date of publication of application:
04.06.2003 Bulletin 2003/23

(73) Proprietor: **Control Flow Inc.**
Houston, TX 77064 (US)

(56) References cited:
EP-A- 0 390 728 **GB-A- 2 358 032**
US-A1- 2001 041 096

(72) Inventors:
• **Reynolds, Graeme E.**
Houston, Texas 77043 (US)

P 1 316 671 B1

Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(4) European Patent Convention)