



US008783362B2

(12) **United States Patent**
Adamek

(10) **Patent No.:** **US 8,783,362 B2**

(45) **Date of Patent:** ***Jul. 22, 2014**

(54) **BELLOWS TYPE ADJUSTABLE CASING**

(75) Inventor: **Frank C. Adamek**, Spring, TX (US)

(73) Assignee: **Vetco Gray 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 360 days.

This patent is subject to a terminal disclaimer.

4,176,863 A	12/1979	Wetmore	
4,195,865 A	4/1980	Martin	
4,278,277 A *	7/1981	Krijgsman	285/93
4,548,273 A	10/1985	Leicht et al.	
4,598,936 A	7/1986	Doll et al.	
4,753,554 A *	6/1988	Jeter	405/224.2
4,761,023 A	8/1988	Troxell, Jr.	
4,819,967 A	4/1989	Calder et al.	
5,240,081 A *	8/1993	Milberger et al.	175/8
5,363,920 A *	11/1994	Alexander et al.	166/350
6,513,837 B2	2/2003	Fujikawa et al.	
2010/0147530 A1	6/2010	Adamek et al.	

(21) Appl. No.: **12/957,163**

(22) Filed: **Nov. 30, 2010**

(65) **Prior Publication Data**

US 2011/0067880 A1 Mar. 24, 2011

Related U.S. Application Data

(63) Continuation-in-part of application No. 12/332,817, filed on Dec. 11, 2008, now Pat. No. 8,387,707.

(51) **Int. Cl.**
E21B 17/01 (2006.01)

(52) **U.S. Cl.**
USPC **166/367**; 166/338; 166/355; 166/346

(58) **Field of Classification Search**
USPC 166/339, 345, 346, 350-355, 367, 166/384-385; 405/224.2-224.5
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,459,259 A *	8/1969	Matthews	166/358
3,612,176 A *	10/1971	Bauer et al.	166/359

FOREIGN PATENT DOCUMENTS

CN	101333917 A	12/2008	
EP	2180133 A1 *	4/2010	F16L 51/02

OTHER PUBLICATIONS

GB Search Report dated Feb. 2, 2012 from corresponding Application No. GB1120136.5.

* cited by examiner

Primary Examiner — James Sayre

(74) *Attorney, Agent, or Firm* — Bracewell & Giuliani LLP

(57) **ABSTRACT**

A subsea assembly for producing fluids from a well having a casing string in the well supported with a hanger on an upper end. Cement is in a portion of an annulus between the casing string and walls of the well, thereby leaving segment of the casing string unsupported in the well. A motion compensating element is coaxially provided in the unsupported segment of the casing string to absorb axial expansion and/or contraction that may occur in the unsupported segment of the casing string.

12 Claims, 5 Drawing Sheets

