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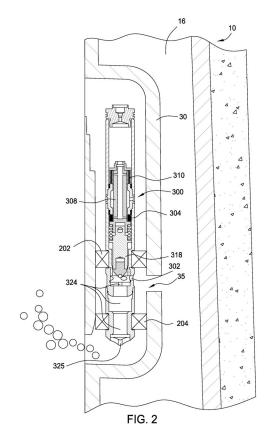
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- (54) Gas lift valve with ball-orifice closing mechanism and fully compressible dual edge-welded bellows
- (57) A valve for performing gas lift operations is provided that incorporates two edge-welded bellows and a ball-orifice closing mechanism. The gas lift valve incorporates features enabling enhanced compression of one of the bellows, beyond an initial closure point of the valve. For example, a stem with the sealing ball is divided into two components, wherein one of the stem components is configured to continue moving in relation to the other stem component with the ball, which is fixed in position when the ball seals the orifice and initially closes the valve. This continued movement allows one of the bellows to be fully compressed in the ultimately closed valve position, thereby protecting the bellows from high pressures and potential failure that could occur to bellows in a partially compressed state.



EP 2 666 957 A3



EUROPEAN SEARCH REPORT

Application Number EP 13 16 8990

		DOCUMENTS CONSID	ERED TO BE RELEVANT			
	Category		ndication, where appropriate,	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)	
	Х,Р	EP 2 554 787 A2 (WE 6 February 2013 (20	TATHERFORD LAMB [US]) 13-02-06)	1-3, INV. 9-12,14, E21B43/12		
		* paragraphs [0082] claim 9; figures 8, * figures 3-7 * * the whole documen				
	Х	US 2004/182437 A1 (23 September 2004 (* the whole documen		1,2,10, 11,14,15		
	A	US 3 363 581 A (KOR 16 January 1968 (19 * the whole documen	68-01-16)	3-8,12, 13		
	A	COMPANY A [NO]; KLE	PETROLEUM TECHNOLOGY PPA ERLING [NO]; STOKKA r 2009 (2009-09-17) t *	1		
					TECHNICAL FIELDS SEARCHED (IPC)	
					E21B	
1		The present search report has been drawn up for all claims				
		Place of search	Date of completion of the search		Examiner	
		The Hague	26 March 2015	26 March 2015 van Berlo, André 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		
PO FORM 1503 03 82 (P04CO1)	X : part Y : part doci A : tech	ATEGORY OF CITED DOCUMENTS icularly relevant if taken alone icularly relevant if combined with another and the same category inological background.	E : earlier patent door after the filling date ner D : document cited in L : document cited fo			
09.0	O : non P : inte	n-written disclosure rmediate document		 a: member of the same patent family, corresponding document 		

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

EP 13 16 8990

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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.

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	Patent document cited in search report		Publication date	Patent family Publication member(s) date
15	EP 2554787	A2	06-02-2013	BR 102012019522 A2 06-08-2013 EP 2554787 A2 06-02-2013 US 2013032226 A1 07-02-2013
20	US 2004182437	A1	23-09-2004	BR PI0401943 A 14-12-2004 CA 2461485 A1 21-09-2004 CA 2700296 A1 21-09-2004 CA 2700640 A1 21-09-2004 CA 2700642 A1 21-09-2004 CA 2700661 A1 21-09-2004 GB 2400412 A 13-10-2004 NO 20041144 A 22-09-2004 US 2004182437 A1 23-09-2004
25	US 3363581	Α	16-01-1968	NONE
30	WO 2009113875	A2	17-09-2009	CA 2718215 A1 17-09-2009 EP 2265794 A2 29-12-2010 NO 328257 B1 18-01-2010 US 2011067879 A1 24-03-2011 WO 2009113875 A2 17-09-2009
35				

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