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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.

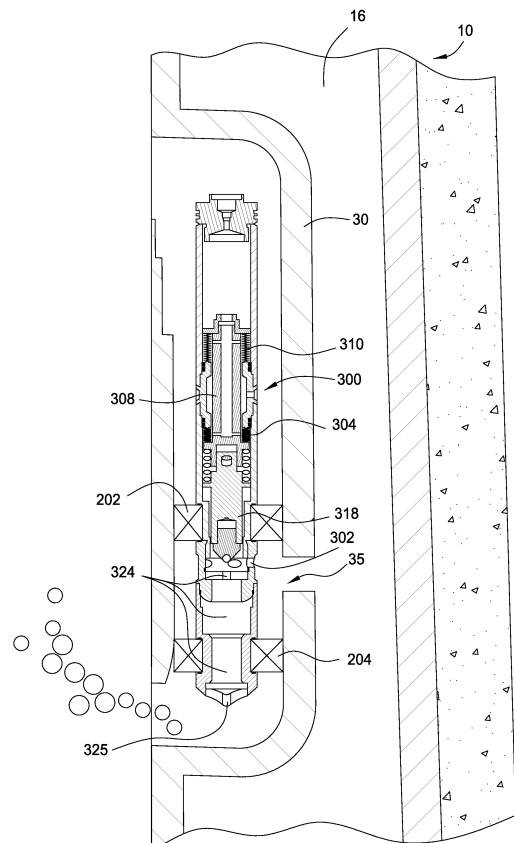


FIG. 2

EP 2 666 957 A3



EUROPEAN SEARCH REPORT

Application Number
EP 13 16 8990

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X,P	EP 2 554 787 A2 (WEATHERFORD LAMB [US]) 6 February 2013 (2013-02-06) * paragraphs [0082], [0094] - [0111]; claim 9; figures 8,9 * * figures 3-7 * * the whole document *	1-3, 9-12,14, 15	INV. E21B43/12
X	US 2004/182437 A1 (MESSICK TYSON R [US]) 23 September 2004 (2004-09-23) * the whole document *	1,2,10, 11,14,15	
A	US 3 363 581 A (KORK KELLEY ET AL) 16 January 1968 (1968-01-16) * the whole document *	3-8,12, 13	
A	WO 2009/113875 A2 (PETROLEUM TECHNOLOGY COMPANY A [NO]; KLEPPA ERLING [NO]; STOKKA OEYVIN) 17 September 2009 (2009-09-17) * the whole document *	1	
			TECHNICAL FIELDS SEARCHED (IPC)
			E21B
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	van Berlo, André
CATEGORY OF CITED DOCUMENTS		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	
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			

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**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
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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 2554787	A2	06-02-2013	BR 102012019522 A2	06-08-2013
			EP 2554787 A2	06-02-2013
			US 2013032226 A1	07-02-2013

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

US 3363581	A	16-01-1968	NONE	

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
