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Tudor

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(54) **ENVIRONMENTALLY SEALED SYSTEM FOR FRACTURING SUBTERRANEAN FORMATIONS**

2006/0231254	A1	10/2006	Peskunowicz et al.
2010/0027371	A1	2/2010	Lucas et al.
2010/0155066	A1	6/2010	Fordyce
2012/0247776	A1	10/2012	Leshchyshyn et al.
2015/0086307	A1*	3/2015	Stefan B65D 88/005 414/304
2016/0045841	A1*	2/2016	Kaplan B01J 19/0093 429/49

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* cited by examiner

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(58) **Field of Classification Search**
CPC E21B 43/267
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

8,276,659	B2	10/2012	Fordyce et al.
8,408,289	B2	4/2013	Loree

(57) **ABSTRACT**

An environmentally sealed system for fracturing subterranean systems including a fracturing fluid source, a proppant source, a proppant hopper comprising a variable proppant regulator, a blender comprising a blender inlet and a blender outlet, a high pressure pump comprising a high pressure pump inlet and a high pressure pump outlet, and a well head; wherein the fracturing fluid source is connected to the blender inlet through a fracturing fluid supply connection and a fracturing vapor recovery connection, the proppant source is connected with the proppant hopper through a proppant supply connection and a proppant vapor recovery connection, the proppant hopper is connected to the blender inlet through a proppant transfer connection, the blender outlet is connected to the high pressure pump inlet, and the high pressure pump is outlet connected to the well head.

19 Claims, 8 Drawing Sheets

