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Has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this

United States Patent

Grants to the person(s) having title to this patent the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States of America or importing the invention into the United States of America, and if the invention is a process, of the right to exclude others from using, offering for sale or selling throughout the United States of America, or importing into the United States of America, products made by that process, for the term set forth in 35 U.S.C. 154(a)(2) or (c)(1), subject to the payment of maintenance fees as provided by 35 U.S.C. 41(b). See the Maintenance Fee Notice on the inside of the cover.

Michelle K. Lee

Director of the United States Patent and Trademark Office



(12) **United States Patent**  
Abrams

(10) **Patent No.:** US 9,657,881 B2  
(45) **Date of Patent:** May 23, 2017

(54) **FLUID CONDUIT SAFETY SYSTEM WITH SEPARABLE COUPLING**

USPC ..... 137/67-68.17  
See application file for complete search history.

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(56) **References Cited**

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(\* ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 18 days.

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OTHER PUBLICATIONS

(65) **Prior Publication Data**

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Website for HPF, Inc., Breakaway Couplings, www.hplap.com, HPF, Inc., 13450 Indian Creek, Cleveland, Ohio 44130, Tel: 440-816-2195, 1-800-445-1289, Fax: 440-816-2196, 2 pages, Copyright 2006.

**Related U.S. Application Data**

(63) Continuation of application No. 12/560,758, filed on Sep. 16, 2009, now Pat. No. 8,800,586.

(Continued)

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(52) **U.S. Cl.**  
CPC ..... F16L 55/1007 (2013.01); F16K 17/406 (2013.01); F16L 55/005 (2013.01); Y10T 137/1654 (2015.04); Y10T 137/6525 (2015.04); Y10T 137/87949 (2015.04); Y10T 137/87957 (2015.04)

(57) **ABSTRACT**

The present invention relates to safety mechanisms for high-pressure fluid delivery systems. Particularly, the invention relates to a breakaway device which prevents uncontrolled "whipping" of the conduit ends upon a rupture. A heat dissipating coupling, permitting operation of the conduit system at desired temperatures, is also included, as is a breakaway device provided with such a heat dissipation feature.

(58) **Field of Classification Search**  
CPC ... F16K 17/406; F16L 55/1007; F16L 55/005; Y10T 137/87957; Y10T 137/6525; Y10T 137/1654

4 Claims, 21 Drawing Sheets

