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**Wright et al.**

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(54) **APPARATUS AND METHODS FOR  
MANIPULATING DEFORMABLE FLUID  
VESSELS**

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See application file for complete search history.

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(\*) Notice: Subject to any disclaimer, the term of this  
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(51) **Int. Cl.**  
**B65D 35/28** (2006.01)  
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(Continued)

(57) **ABSTRACT**

An apparatus for processing a fluid module, including a col-  
lapsible vessel supported on a planar substrate, comprises a  
first actuator component configured to be movable in a first  
direction is generally parallel to the plane of the substrate, a  
second actuator component configured to be movable in a  
second direction having a component that is normal to the  
plane of the substrate, and a motion conversion mechanism  
coupling the first actuator component with the second actua-  
tor component and configured to convert movement of the  
first actuator component in the first direction into movement  
of the second actuator component in the second direction.

(52) **U.S. Cl.**  
CPC . **F17D 1/08** (2013.01); **B01L 3/502** (2013.01);  
**B01L 3/505** (2013.01); **B01L 3/523** (2013.01);  
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(58) **Field of Classification Search**  
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**23 Claims, 17 Drawing Sheets**

