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## Body Limb Movement Limiter

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(12) **United States Patent**  
Allen

(10) **Patent No.:** US 7,789,844 B1  
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(54) **BODY LIMB MOVEMENT LIMITER**

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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 208 days.

(21) Appl. No.: **12/220,205**

(22) Filed: **Jul. 22, 2008**

**Related U.S. Application Data**

(60) Division of application No. 11/099,381, filed on Apr. 4, 2005, now Pat. No. 7,402,147, which is a continuation-in-part of application No. 09/992,611, filed on Nov. 19, 2001, now abandoned.

(60) Provisional application No. 60/249,312, filed on Nov. 17, 2000.

(51) **Int. Cl.**  
*A61F 5/00* (2006.01)

(52) **U.S. Cl.** ..... 602/20; 602/5; 602/19

(58) **Field of Classification Search** ..... 602/5, 602/19, 20, 23; 473/50; 128/873-876, 869, 128/878; 273/317.2

See application file for complete search history.

(56) **References Cited**

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(57) **ABSTRACT**

A body limb movement limiter restrains the movement of a person's arm so as to protect the person's shoulder or restrains the movement of a person's lower leg with respect to the upper leg so as to protect the person's knee. The device uses a housing having a reel disposed therein with a tether attached thereto and a shear thickening non-Newtonian fluid disposed within the housing so that the fluid acts on the reel during a payout procedure of the tether. The housing is attached to a strap secured about the torso of the person while the free end of the tether is secured about the person's arm. Alternately, a pair of arms are pivotally secured to each other within a housing having the non-Newtonian fluid therein for limiting movement of one arm with respect to the other.

**9 Claims, 7 Drawing Sheets**

