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**Farley et al.**

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(54) **METHOD AND APPARATUS FOR TREATING VENOUS INSUFFICIENCY USING DIRECTIONALLY APPLIED ENERGY**

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**Related U.S. Application Data**

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**A61B 19/00** (2006.01)

(52) **U.S. Cl.** ..... **128/898**; 606/7; 606/15; 607/96

(58) **Field of Classification Search** ..... **128/898**;  
606/7, 15; 607/88, 89, 96

See application file for complete search history.

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(57) **ABSTRACT**

A catheter introduces electrodes in a vein for a minimally invasive treatment of venous insufficiency by the application of energy to cause selective heating of the vein. The catheter is positioned within the vein to be treated, and the electrodes on the catheter are moved toward one side of the vein. RF energy is applied in a directional manner from the electrodes at the working end of the catheter to cause localized heating and corresponding shrinkage of the adjacent venous tissue, which may include commissures, leaflets and ostia. Fluoroscopy or ultrasound may be used to detect shrinkage of the vein. After treating one section of the vein, the catheter can be repositioned to place the electrodes to treat different sections of the vein until all desired venous valves are repaired and rendered functionally competent.

**10 Claims, 8 Drawing Sheets**

