



[54] **TECHNIQUE FOR AORTIC VALVE REPLACEMENT WITH SIMULTANEOUS AORTIC ARCH GRAFT INSERTION AND APPARATUS THEREFOR**

5,571,172 11/1996 Chin ..... 623/1

Primary Examiner—David H. Willse  
Attorney, Agent, or Firm—Lieberman & Nowak, LLP

[76] Inventor: Syde A. Taheri, 268 Dan Troy, Williamsville, N.Y. 14221

[57] **ABSTRACT**

[21] Appl. No.: 752,336

Transfemoral aortic valve replacement with the simultaneous insertion of an aortic arch graft, referred to as "TAVAG", is effected with a device comprising the following components: a U-shaped collapsible nitinol ring which is attached to a bioprosthetic valve, a thin walled predetermined graft with branches, a perforated self-expandable carrier capsule having a large slit therein, diamond shaped guide wires, and a ring to control opening and closing of the carrier capsule. The graft and valve are pulled up from the left femoral artery toward the aortic arch by pulling on the guide wires which are threaded through catheters inserted in each of the bilateral carotid and subclavian arteries toward the left femoral artery. Cerebral circulation is also maintained from the right femoral artery through a novel balloon catheter placed inside the carotid artery.

[22] Filed: Nov. 19, 1996

**Related U.S. Application Data**

[63] Continuation-in-part of Ser. No. 435,851, May 5, 1995, abandoned.

[51] Int. Cl.<sup>6</sup> ..... A61F 2/06; A61F 2/24

[52] U.S. Cl. .... 623/2; 623/1; 606/108

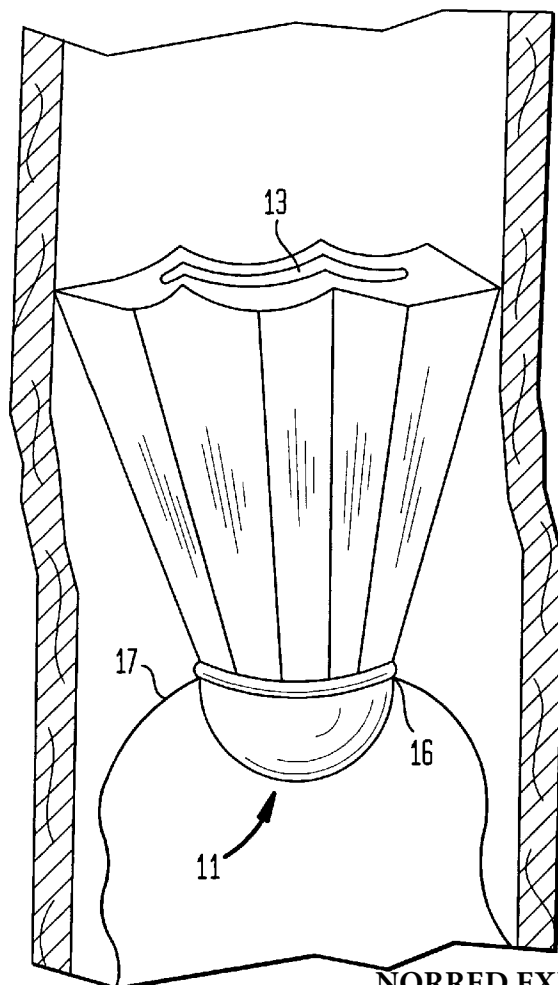
[58] Field of Search ..... 623/2, 1, 12; 600/36; 606/108, 198

[56] **References Cited**

**U.S. PATENT DOCUMENTS**

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**7 Claims, 6 Drawing Sheets**



**NORRED EXHIBIT 2118 - Page 1  
Medtronic, Inc., Medtronic Vascular, Inc.,**

FIG. 1B

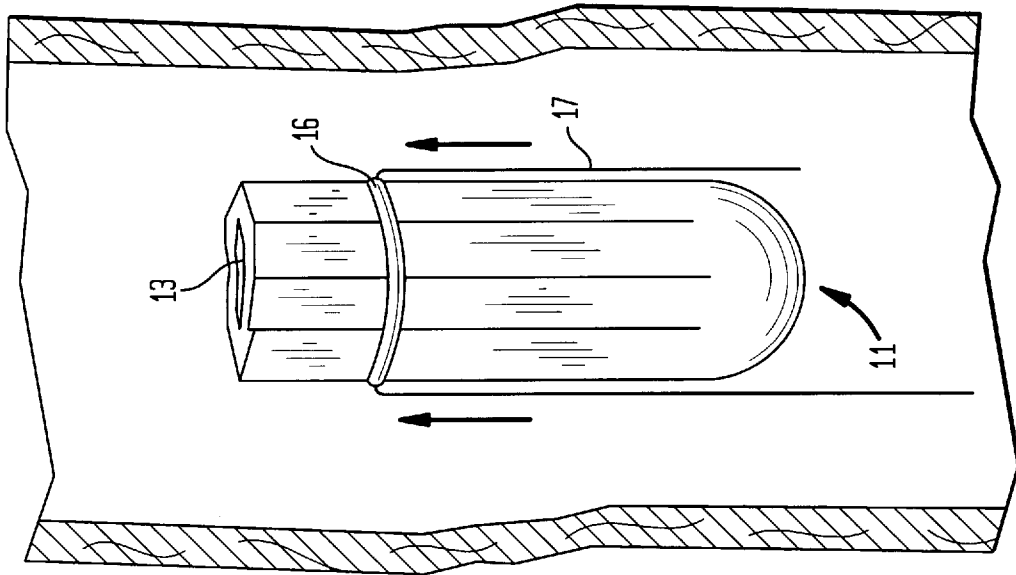


FIG. 1A

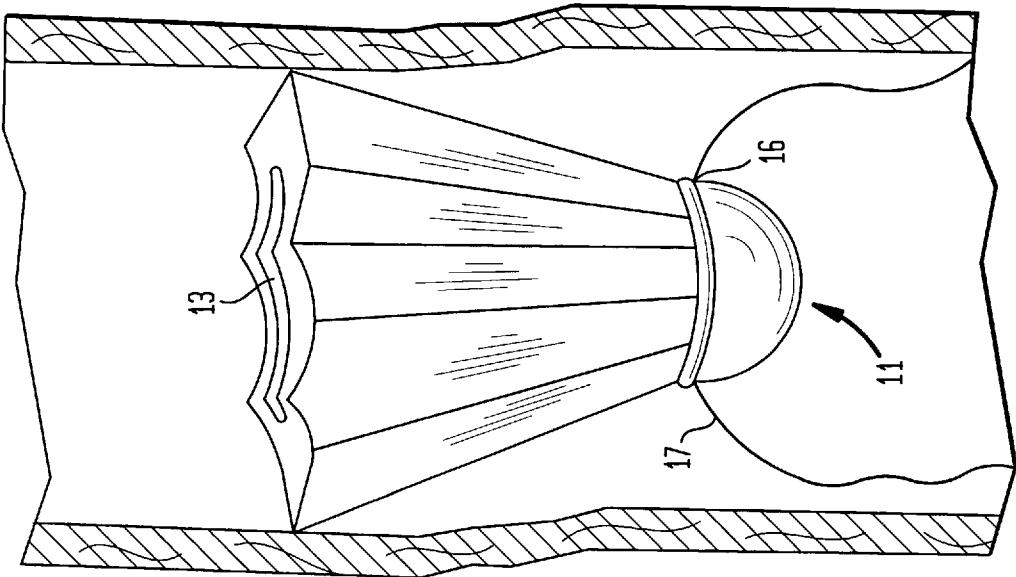


FIG. 2A

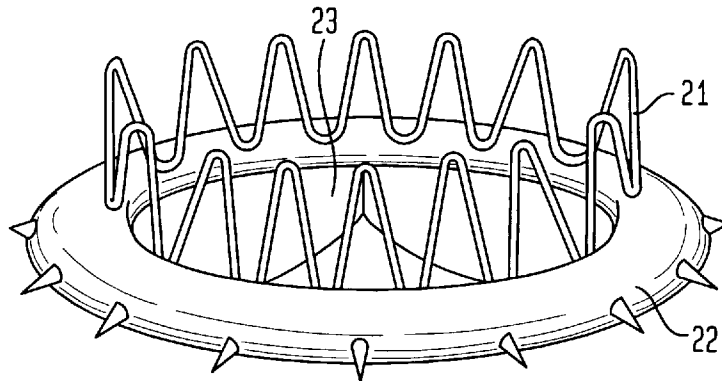


FIG. 2B

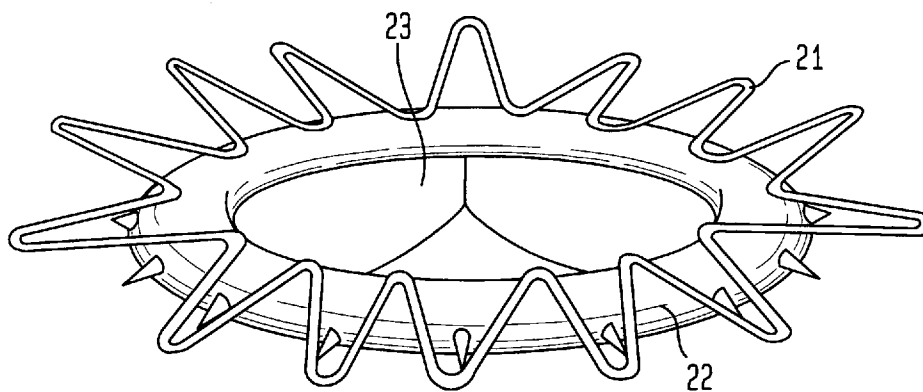


FIG. 3

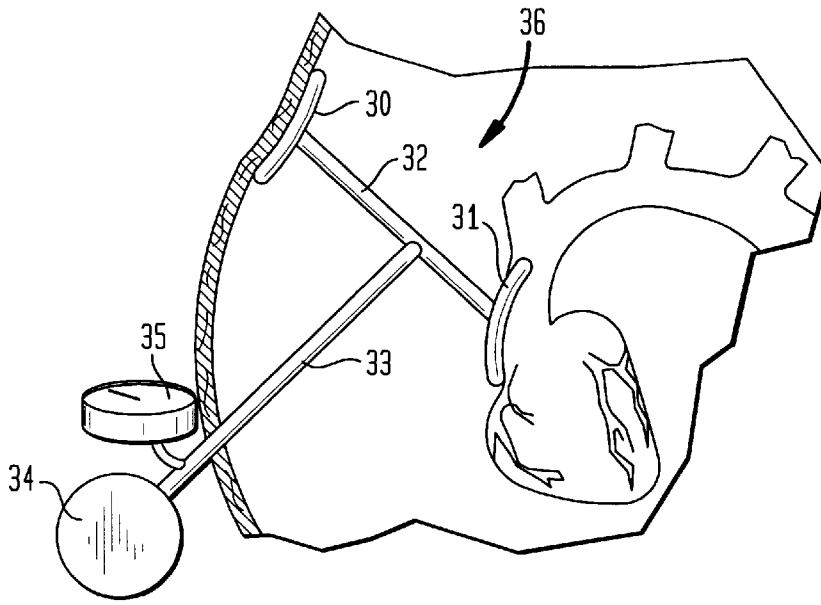


FIG. 5

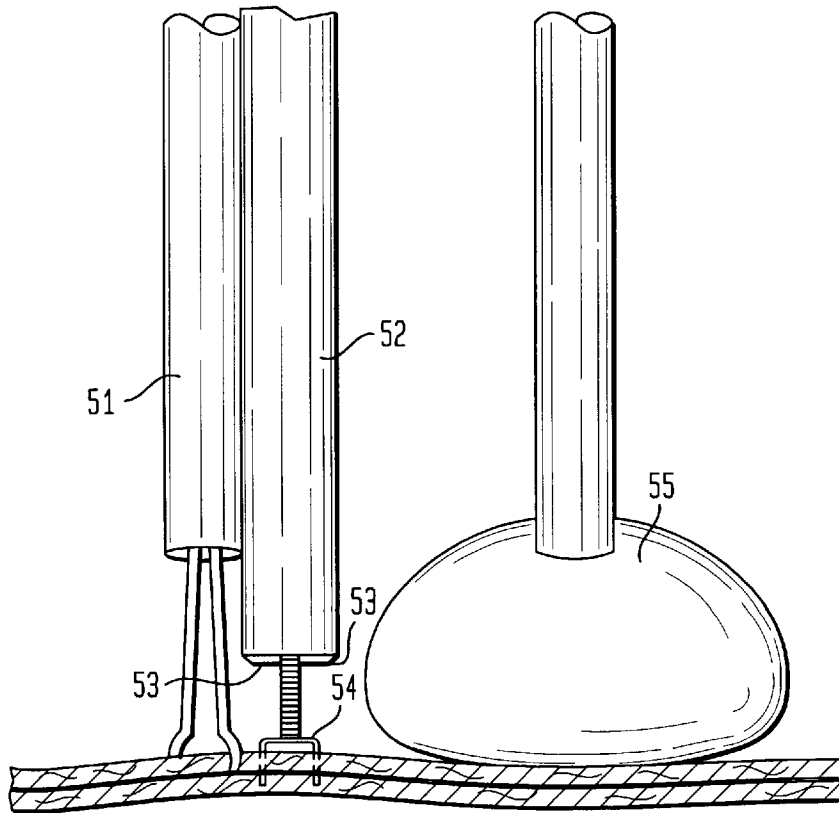


FIG. 4A

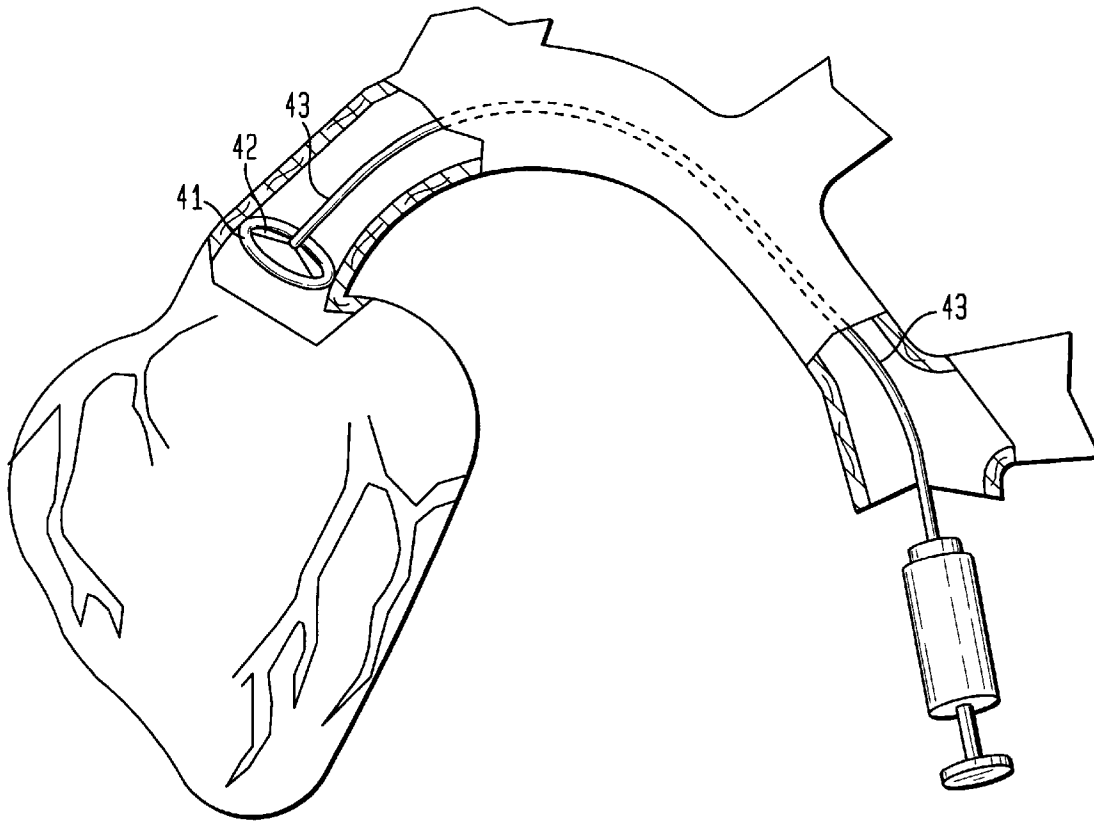
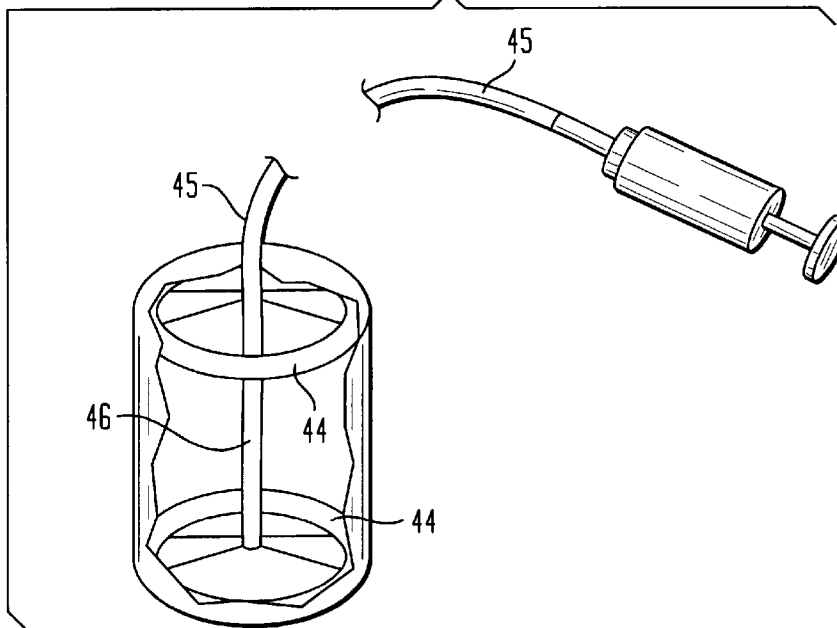


FIG. 4B



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