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# United States Patent [19]

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Pavcnik et al.

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- [54] **PROSTHETIC VALVE FOR PERCUTANEOUS INSERTION**
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- [21] Appl. No.: **699,195**
- [22] Filed: **May 13, 1991**
- [51] Int. Cl.<sup>6</sup> ..... **A61F 2/02; A61F 2/24**
- [52] U.S. Cl. .... **623/11; 623/2; 623/3; 623/1; 623/900**
- [58] Field of Search ..... **623/1, 11, 2, 3, 900**

[56] **References Cited**

**U.S. PATENT DOCUMENTS**

3,130,419	4/1964	Edwards	623/2
3,143,742	8/1964	Cromie	623/2
3,571,815	3/1971	Somyk	
3,574,865	4/1971	Hamaker	
3,626,518	12/1971	Leibinsohn	
3,911,502	10/1975	Boretos	
4,580,568	4/1986	Gianturco	
4,648,383	3/1987	Angelchik	

**OTHER PUBLICATIONS**

Gregorio Rabago, *A Worldwide Overview of Valve Usage*, Chapter 1 of *Heart Valve Replacement: Current Status and Future Trends*, Futura Publishing Company, Inc., Mount Kisko, N.Y. (G. Rabago, D. Cooley ed. 1987) (citing Hufnagel C. A. Harvey W. P. Rabil P. J. Mc-

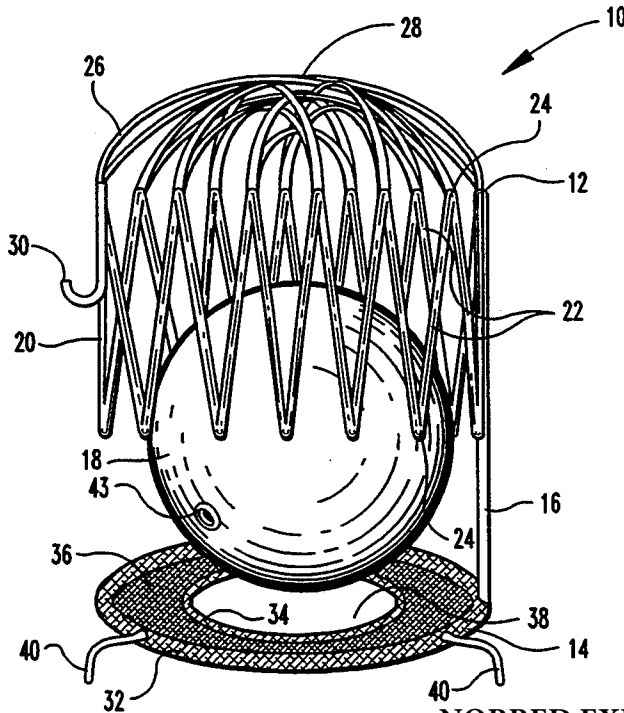
Dermott R. F.: *Surgical Correction of Aortic Insufficiency*, *Surgery*, 35:673, 1954).  
Cary W. Akins, Mortimer J. Buckley, Wm. M. Daggett, W. Gerald Austen, Alan D. Hilgenberg, and Marshall L. Jacobs, *Ten-Year Follow-Up of the Starr-Edwards Prosthesis*, Chapter 10 of *Heart Valve Replacement: Current Status and Future Trends*, Futura Publishing Company, Inc., Mount Kisko, N.Y. (G. Rabago, D. Cooley ed. 1987).  
David J. Mehlman, *Radiographic and Cineradiographic Evaluation of Heart Valve Prostheses*, Chapter 11 of *Heart Valve Replacement: Current Status and Future Trends*, Futura Publishing Company, Inc., Mount Kisko, N.Y. (G. Rabago, D. Cooley ed. 1987).

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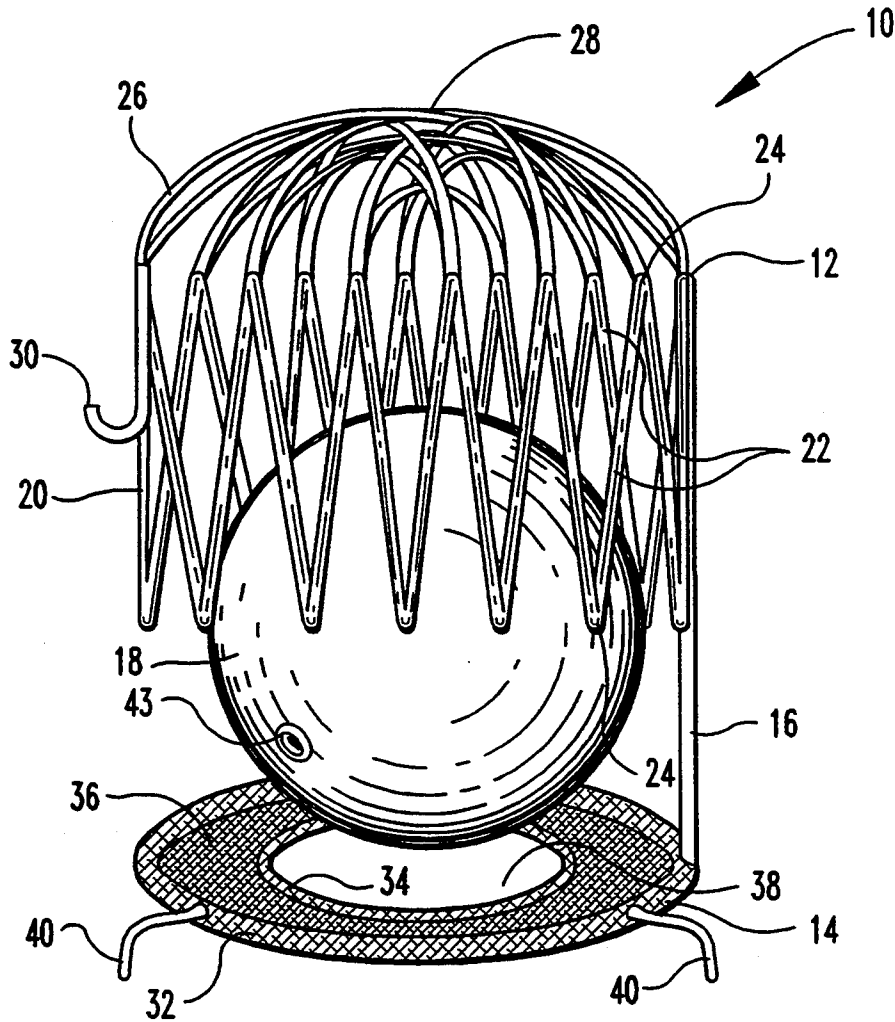
[57] **ABSTRACT**

A prosthetic valve comprises a poppet, a seat and a restraining element. The poppet, seat and restraining element include an insertion form for percutaneously inserting into a fluid passageway within a living body and an operational form for operating within the fluid passageway. The valve is self-expanding so that upon insertion the valve automatically assumes the operational form. In the operational form the poppet is movably restrained between the valve seat and restraining element. The poppet seals against the valve seat to prevent fluid flow through the valve and unseats from the valve seat to permit fluid flow through the valve.

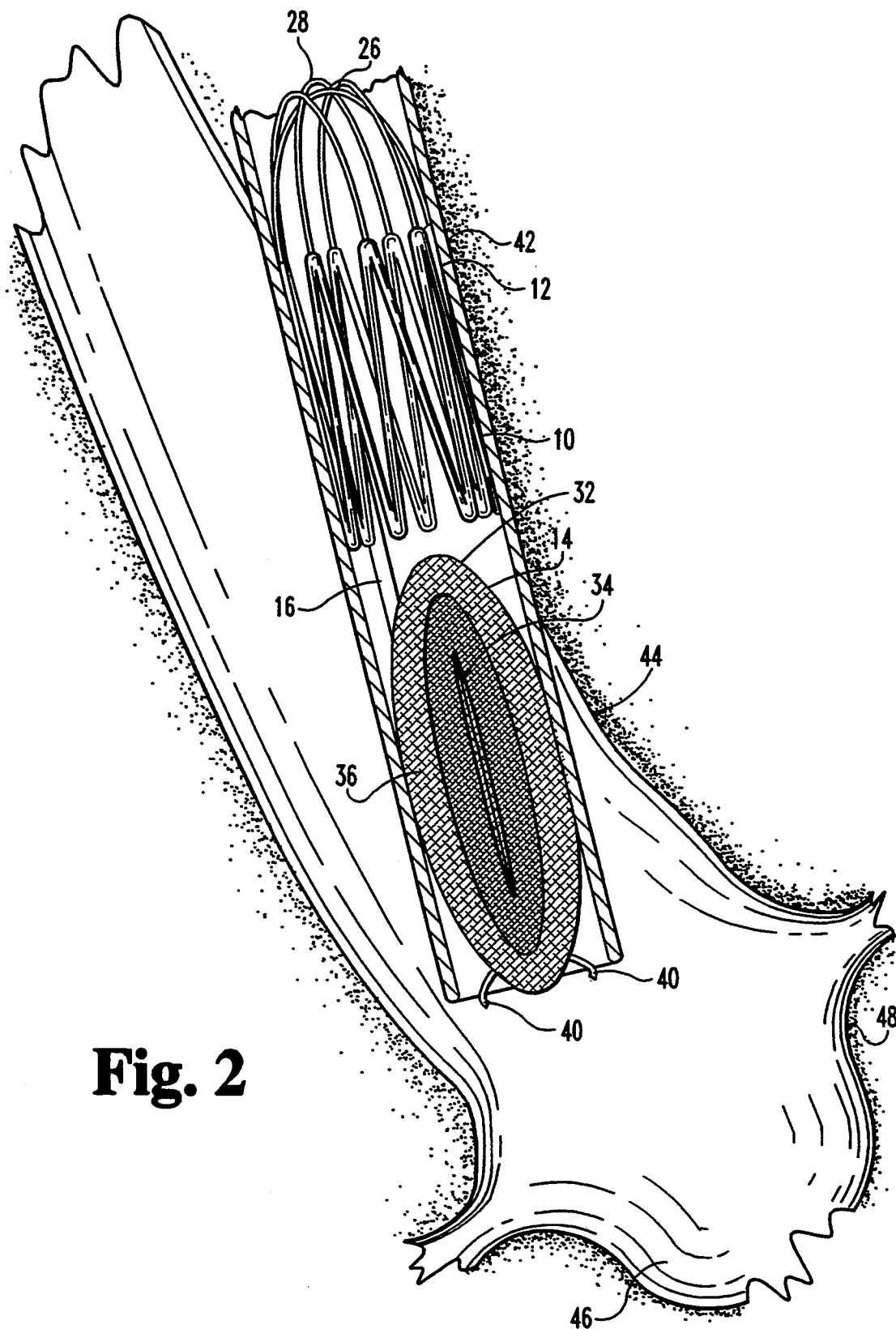
**16 Claims, 6 Drawing Sheets**



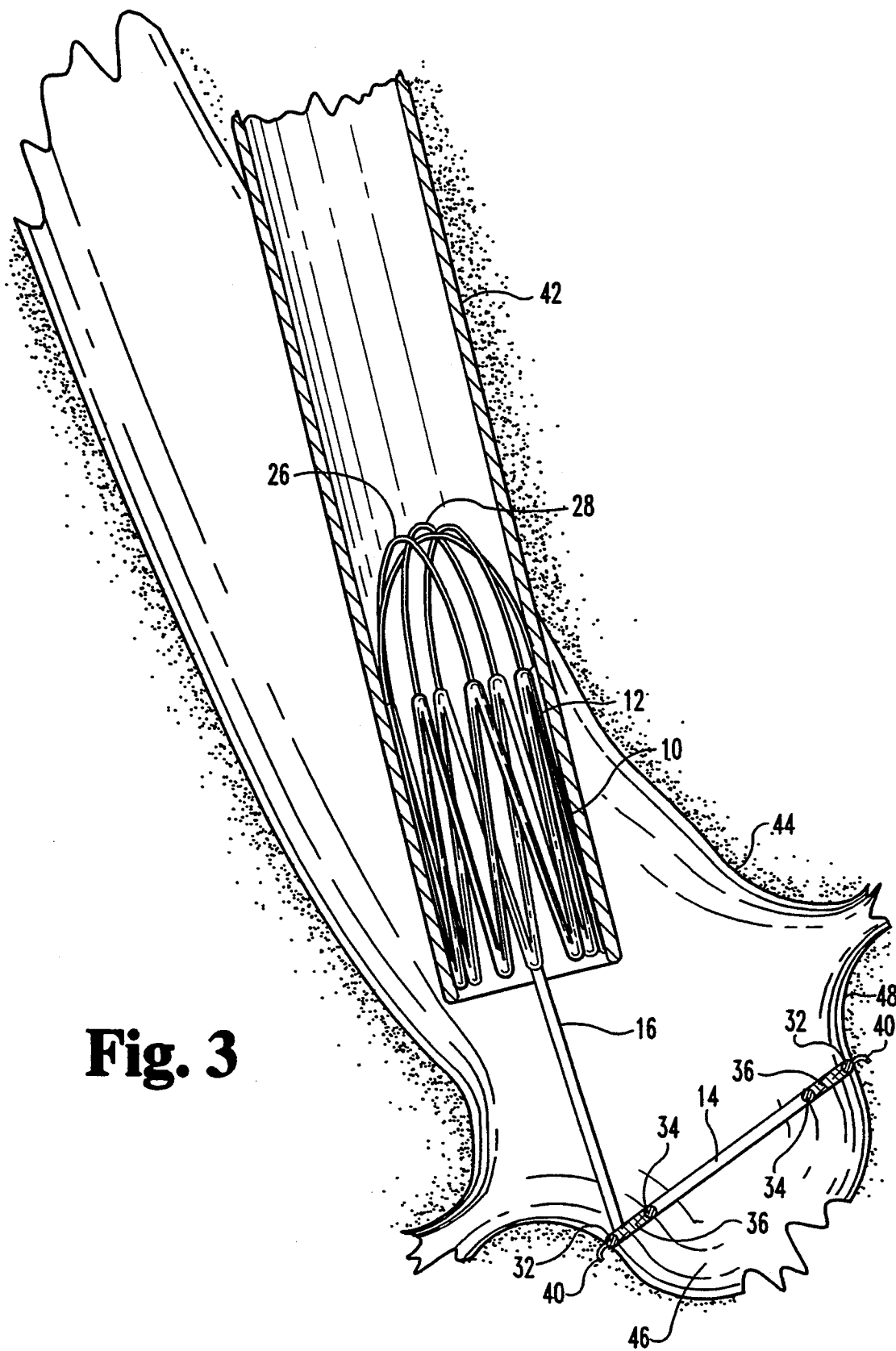
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Medtronic, Inc., Medtronic Vascular, Inc.,  
& Medtronic Corevalve, LLC



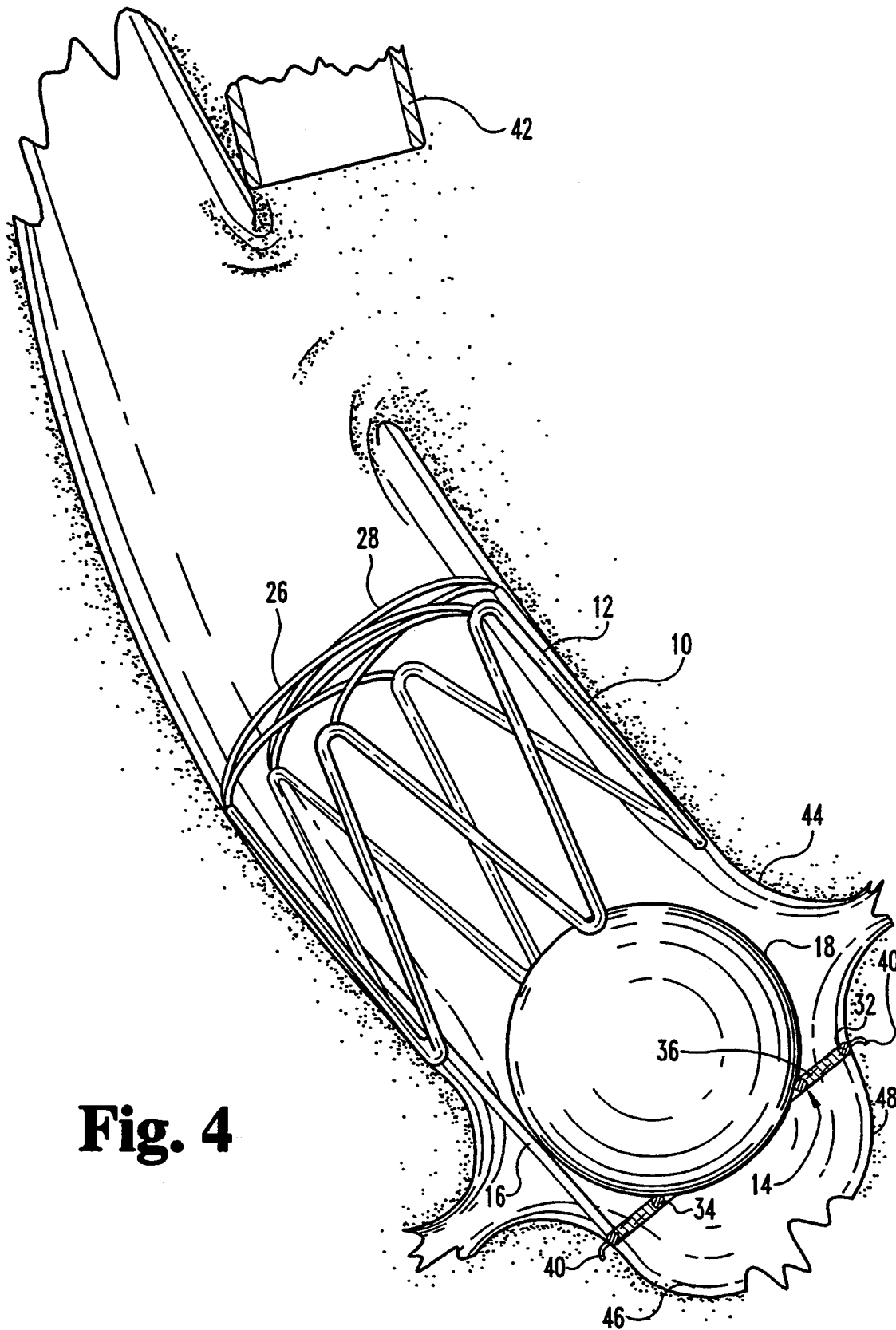
**Fig. 1**



**Fig. 2**



**Fig. 3**



**Fig. 4**

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