US005443478A

United States Patent [19]

Purdy

[11] **Patent Number: 5,443,478**

[45] **Date of Patent: Aug. 22, 1995**

[54] **MULTI-ELEMENT INTRAVASCULAR OCCLUSION DEVICE**

[75] Inventor: **Phillip D. Purdy**, Dallas, Tex.

[73] Assignee: **Board of Regents, The University of Texas System**, Austin, Tex.

[21] Appl. No.: **939,296**

[22] Filed: **Sep. 2, 1992**

[51] **Int. Cl.**[6] **A61B 17/00**

[52] **U.S. Cl.** **606/200**; 623/1

[58] **Field of Search** 606/108, 194, 195, 198, 606/200; 128/899; 623/1, 12

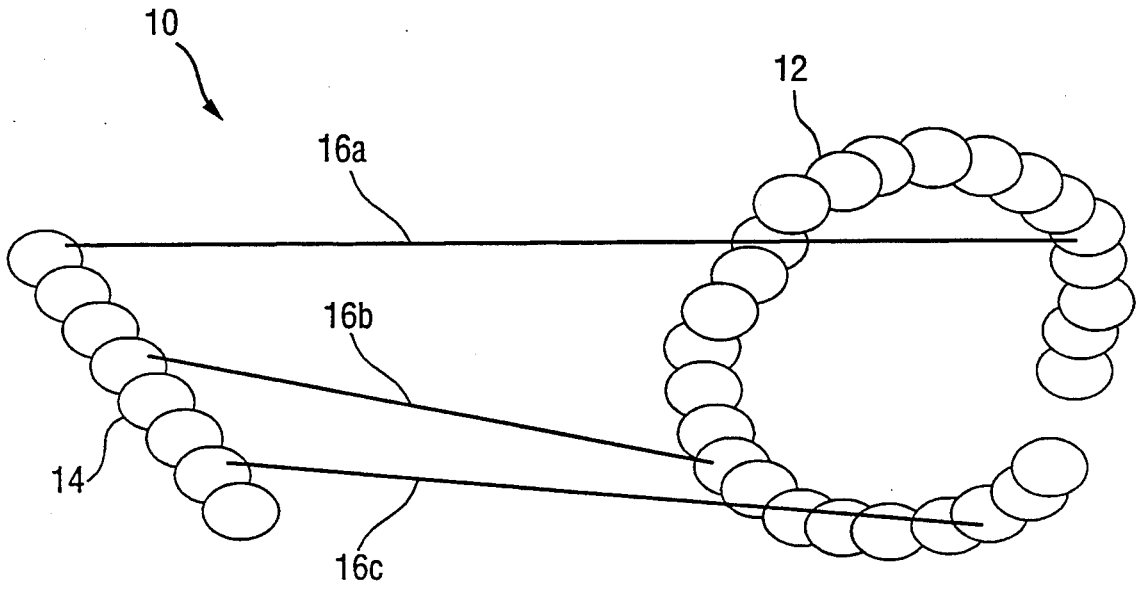
[56] **References Cited**

U.S. PATENT DOCUMENTS

3,540,431	11/1970	Mobin-Uddin .	
3,794,041	2/1974	Frei et al.	606/108
3,868,956	3/1975	Alfidi et al. .	
4,365,632	12/1982	Kortum .	
4,425,908	1/1984	Simon	606/200
4,447,227	5/1984	Kotsanis .	
4,494,531	1/1985	Gianturco .	
4,512,338	4/1985	Balko et al. .	
4,619,246	10/1986	Molgaard-Nielson et al.	606/200
4,638,803	1/1987	Rand .	
4,957,501	9/1990	Lahille et al. .	
4,994,069	2/1991	Ritchart et al. .	
4,997,435	3/1991	Demeter .	
5,053,008	10/1991	Bajaj .	
5,071,407	12/1991	Termin et al. .	
5,104,404	4/1992	Wolff	623/1
5,108,407	4/1992	Geremia et al.	606/108
5,108,419	4/1992	Reger et al. .	
5,256,146	10/1993	Ensminger et al.	606/198

Primary Examiner—Stephen C. Pellegrino
Assistant Examiner—William Lewis
Attorney, Agent, or Firm—Arnold, White & Durkee

[57] **ABSTRACT**

A multi-element occlusion device (**10, 20, 30, 40**) provides an improvement over existing systems by increasing the occupation of a vascular lumen. The device (**10, 20, 30**) comprises an anchoring element (**12, 22, 32**), a lead element (**14, 24, 34**) and at least one fiber (**16, 26, 36**) attaching said elements. The elements and fibers produce a cumulative occlusive effect greater than the sum of the individual elements. When placed in the blood stream, the anchoring element (**12, 22, 32**) lodges against the vessel wall and the lead element (**14, 24, 34**) is carried to a position distal thereto. With the use of multi-element deployment, the device (**10, 20, 30**) decreases the risk of continued canalization and recanalization.

7 Claims, 2 Drawing Sheets