US005443498A

United States Patent [19]

Fontaine

[11] **Patent Number: 5,443,498**

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

[54] **VASCULAR STENT AND METHOD OF MAKING AND IMPLANTING A VACSULAR STENT**

[75] Inventor: **Arthur B. Fontaine**, Fresno, Calif.

[73] Assignee: **Cook Incorporated**, Bloomington, Ind.

[21] Appl. No.: **162,825**

[22] Filed: **Dec. 6, 1993**

Related U.S. Application Data

[63] Continuation of Ser. No. 874,347, Apr. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 858,304, Mar. 25, 1992, abandoned, which is a continuation-in-part of Ser. No. 769,216, Oct. 19, 1991, Pat. No. 5,314,472.

[51] **Int. Cl.**[6] **A61F 2/06**; A61M 29/02

[52] **U.S. Cl.** **623/1**; 623/12; 606/195

[58] **Field of Search** 623/1, 11, 12; 600/36, 600/194, 195

[56] **References Cited**

U.S. PATENT DOCUMENTS

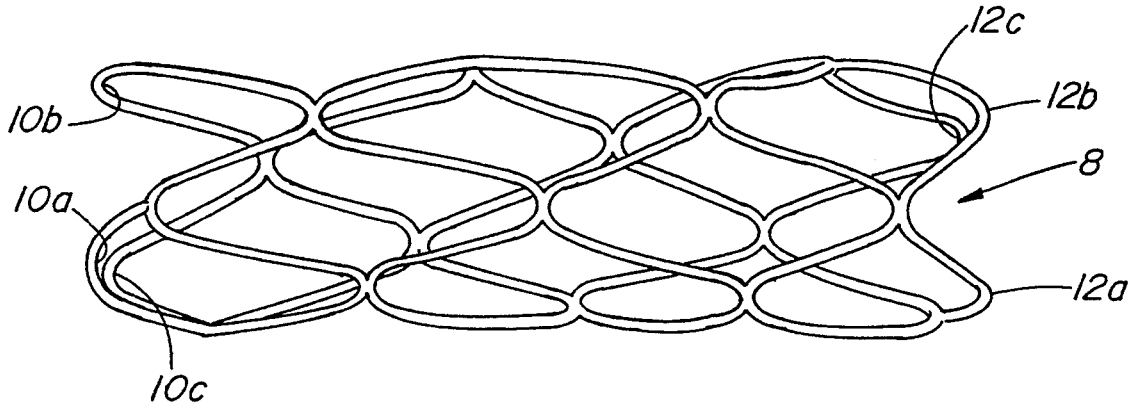
4,512,338	4/1985	Balko et al.	128/1 R
4,553,545	11/1985	Maass et al. .	
4,580,568	4/1986	Gianturco	128/345
4,649,922	3/1987	Wiktor	128/344
4,655,771	4/1987	Wallsten .	
4,665,918	5/1987	Garza et al.	128/343
4,733,665	3/1988	Palmaz .	
4,739,762	4/1988	Palmaz .	
4,776,337	10/1988	Palmaz	623/1
4,787,899	11/1988	Lazarus .	
4,795,458	1/1989	Regan .	
4,800,882	1/1989	Gianturco	128/343
4,820,298	4/1989	Leveen et al.	623/1
4,830,003	5/1989	Wolff et al. .	
4,856,516	8/1989	Hillstead .	
4,878,906	11/1989	Lindemann et al. .	
4,886,062	12/1989	Wiktor .	
4,893,623	12/1989	Rosenbluth .	
4,922,905	5/1990	Strecker .	
4,950,227	8/1991	Savin et al.	623/10
4,954,126	9/1990	Wallsten .	
4,969,458	11/1990	Wiktor	606/194
4,969,890	11/1990	Sugita et al. .	
5,015,253	5/1991	MacGregor	623/1
5,019,090	5/1991	Pinchuk	606/194
5,035,706	7/1991	Gianturco	606/198
5,041,126	8/1991	Gianturco	606/195
5,133,732	7/1992	Wiktor	606/195
5,135,536	8/1992	Hillstead	623/1
5,197,978	3/1993	Hess	623/1
5,217,483	6/1993	Tower	673/1
5,224,953	6/1993	Morgentaler	623/12

FOREIGN PATENT DOCUMENTS

183372	2/1986	European Pat. Off.	A61M 29/00

Primary Examiner—David Isabella
Assistant Examiner—Debra S. Brittingham
Attorney, Agent, or Firm—Richard J. Godlewski

[57] **ABSTRACT**

A vascular stent includes a continuous wire which is formed into a substantially tubular body having a plurality of oblong, open cells which are staggered around the circumference of the tube. When the body is formed in its unexpanded state, the long sides of each oblong cell are arranged substantially parallel to the longitudinal axis of the tubular body. Adjoining cells may then be bonded together at a point between adjacent parallel sides on a cell. When the body is expanded, the adjacent sides of each cell extend oblique to the longitudinal axis of the body.

21 Claims, 6 Drawing Sheets