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United States Patent [19]
Berg et al.

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- [54] **GUIDE CATHETER HAVING SELECTED FLEXURAL MODULUS SEGMENTS**
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- [73] Assignee: **SciMed Life Systems, Inc.**, Maple Grove, Minn.
- [*] Notice: This patent is subject to a terminal disclaimer.

5,176,660	1/1993	Truckai	604/282
5,221,270	6/1993	Parker	604/282
5,222,949	6/1993	Kaldany	604/282
5,234,416	8/1993	Macaulay et al.	604/282
5,254,107	10/1993	Soltesz	604/280
5,279,596	1/1994	Castaneda et al.	604/282
5,308,342	5/1994	Sepetka et al.	604/282
5,423,773	6/1995	Jimenez	604/282
5,445,624	8/1995	Jimenez	604/264
5,545,151	8/1996	O'Connor et al.	604/282
5,569,218	10/1996	Berg	604/264
5,658,263	8/1997	Dang et al.	604/282
5,676,659	10/1997	McGurk	604/282

- [21] Appl. No.: **08/800,927**
- [22] Filed: **Feb. 13, 1997**

Related U.S. Application Data

- [63] Continuation-in-part of application No. 08/703,635, Aug. 27, 1996, which is a continuation-in-part of application No. 08/195,222, Feb. 14, 1994, Pat. No. 5,569,218.
- [51] **Int. Cl.**⁶ **A61M 25/00**
- [52] **U.S. Cl.** **604/525; 604/527; 138/125**
- [58] **Field of Search** 604/264, 280, 604/281, 282; 600/433-435; 138/130-132, 125, 129, 144

[56] **References Cited**

U.S. PATENT DOCUMENTS

3,416,531	12/1968	Edwards .	
3,485,234	12/1969	Stevens .	
4,385,635	5/1983	Ruiz .	
4,563,181	1/1986	Wijayarathna et al.	604/280
4,636,346	1/1987	Gold et al. .	
4,690,175	9/1987	Ouchi et al. .	
4,735,620	4/1988	Ruiz	604/281
4,838,879	6/1989	Tanabe et al.	604/280
4,863,442	9/1989	DeMello et al.	604/282
4,899,787	2/1990	Ouchi et al.	604/282

FOREIGN PATENT DOCUMENTS

0 180 348	5/1986	European Pat. Off. .
0 555 088	8/1993	European Pat. Off. .
92/15356	9/1992	WIPO .
9215356	9/1992	WIPO .

Primary Examiner—Ronald Stright, Jr.
Attorney, Agent, or Firm—Crompton, Seager & Tufte, LLC

[57] **ABSTRACT**

A guiding catheter for use in coronary angioplasty and other cardiovascular interventions which incorporates a plurality of segment of selected flexural modulus in the shaft of the device. The segments which have a different flexibility than the sections immediately proximal and distal to them, creating zones in the catheter shaft which are either more or less flexible than other zones of the shaft. The flexibility and length of the shaft in a given zone is then matched to its clinical function and role. A mid-shaft zone is significantly softer than a proximal shaft or distal secondary curve to better traverse the aortic arch shape without storing too much energy. A secondary zone section is designed to have maximum stiffness to provide optimum backup support and stability.

26 Claims, 15 Drawing Sheets

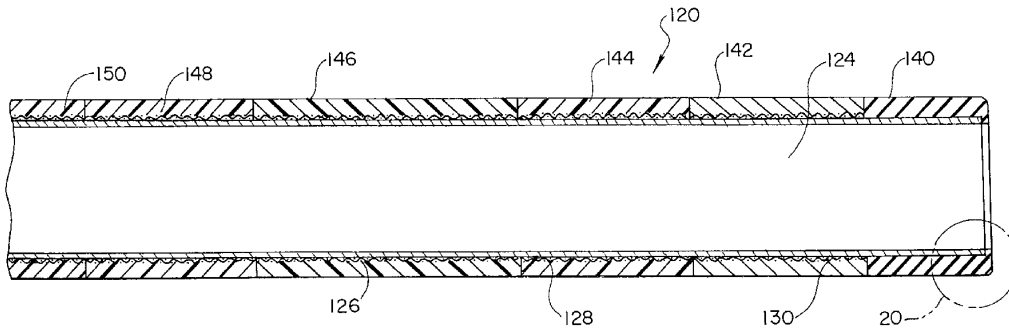


Fig. 1

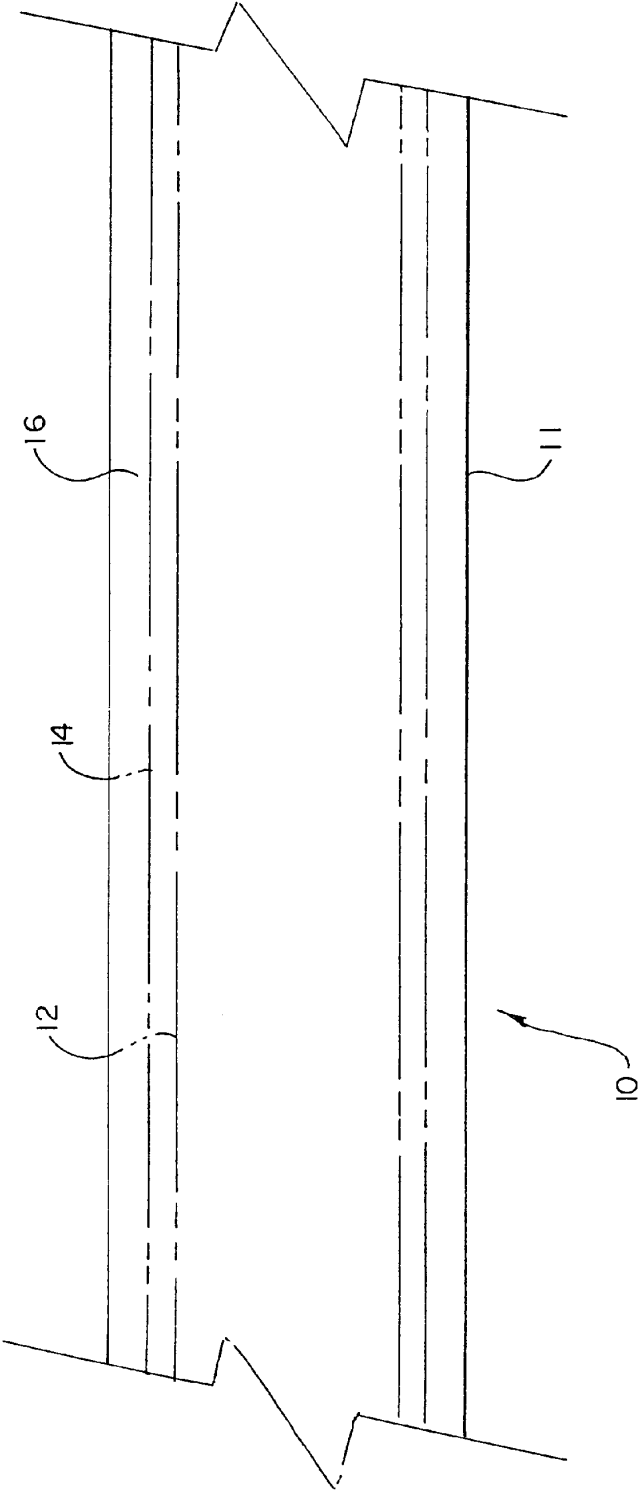


Fig. 2

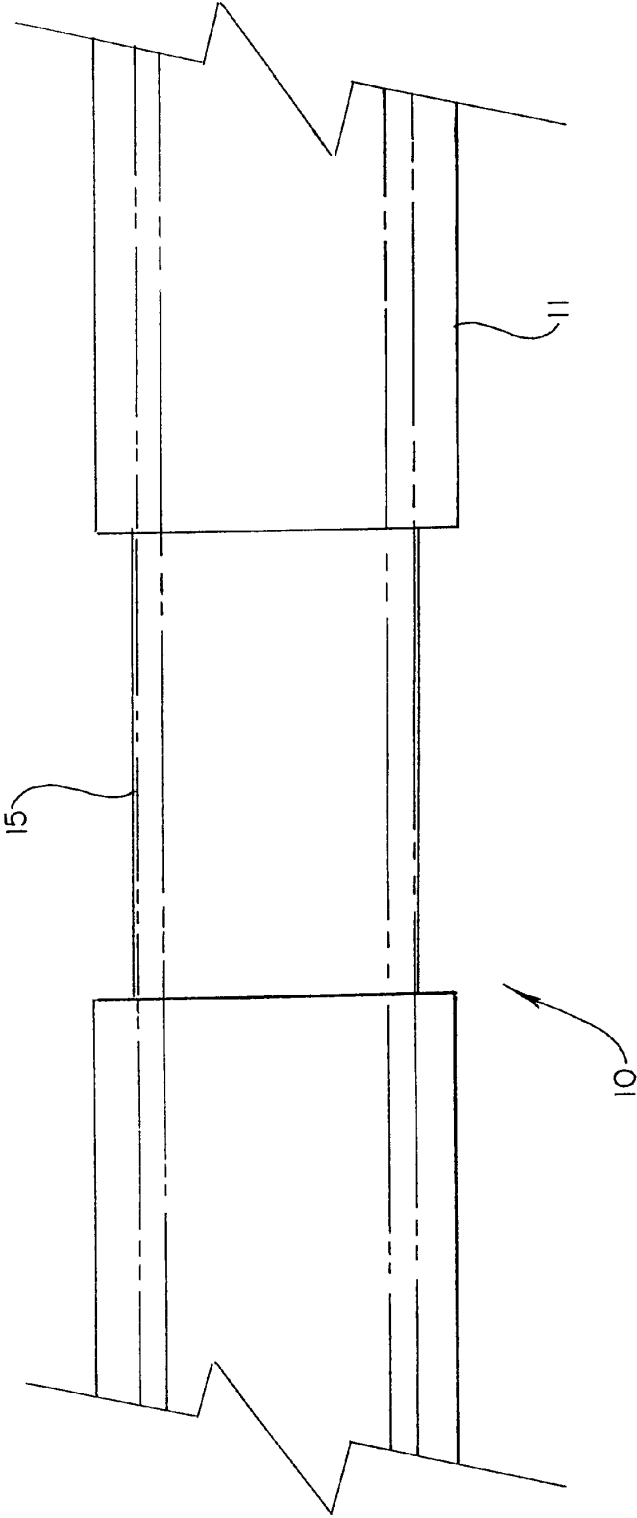
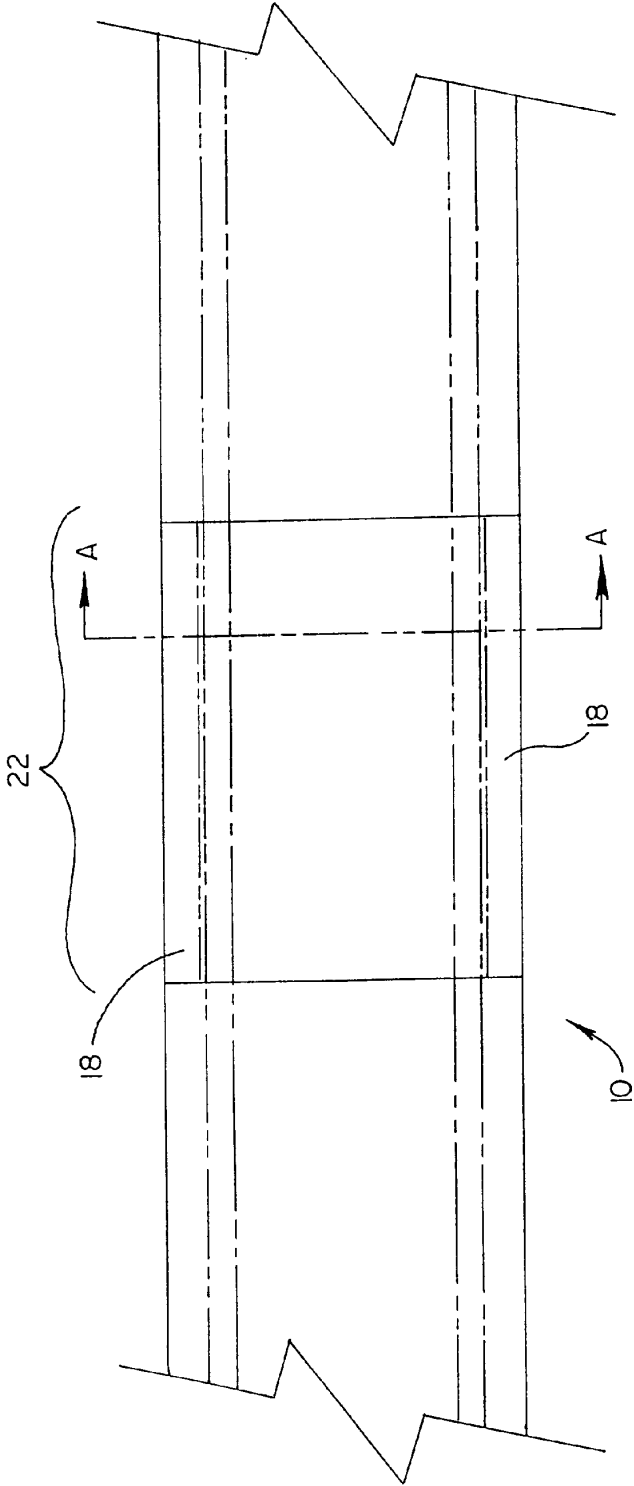
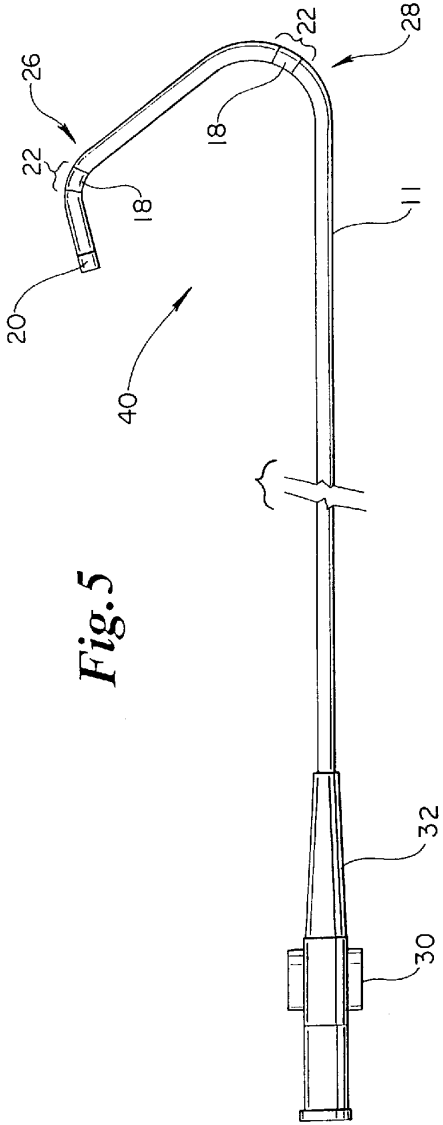
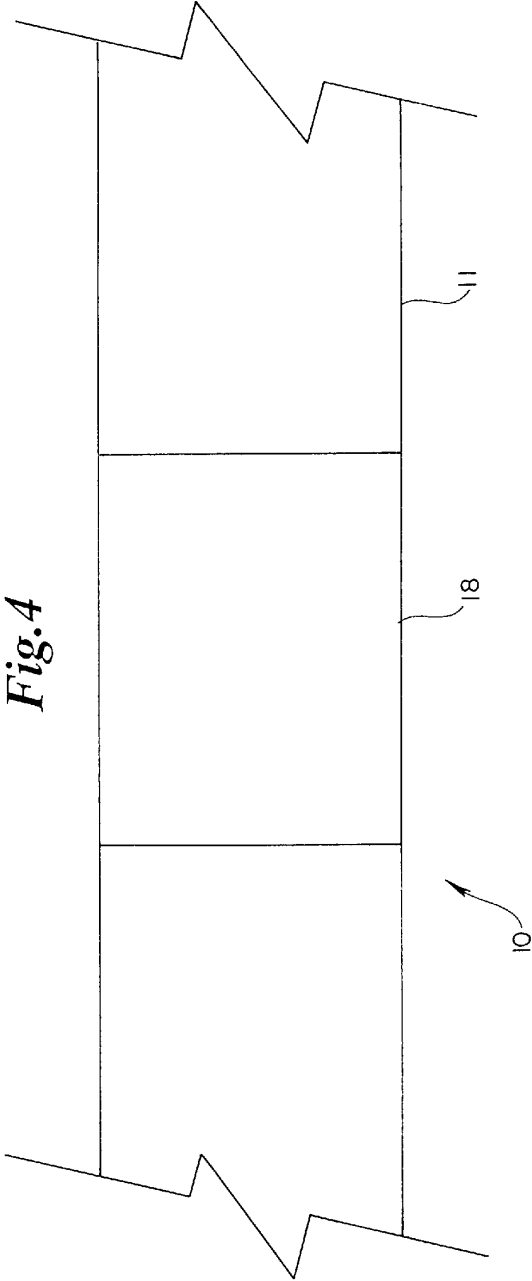


Fig. 3





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