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United States Patent [19]

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Dinh et al.

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[54] **CATHETER REINFORCING BRAIDS**

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5,403,292	4/1995	Ju .	
5,451,209	9/1995	Ainsworth et al.	604/96
5,496,291	3/1996	Spencer	604/280
5,514,236	5/1996	Avellanet et al. .	
5,522,832	6/1996	Kugo et al. .	
5,527,325	6/1996	Conley et al. .	

(List continued on next page.)

FOREIGN PATENT DOCUMENTS

0520692A1	12/1992	European Pat. Off. .
93/08986	5/1993	WIPO .
9601664	1/1996	WIPO .
9737713	10/1997	WIPO .

OTHER PUBLICATIONS

Definition of polytetrafluoroethylene from Hawley's Condensed Chemical Dictionary, Twelfth Edition, Revised by Richard J. Lewis, Sr., p. 942, 1993.

Search Report dated Sep. 29, 1997 in corresponding European Patent Application No. 97201366.8, together with Communication, Supplementary Sheet B (1 page), and two-page Annex.

"Declaration of Thomas E. Eibs in Support of Supplemental Information Disclosure Statement," dated Sep. 9, 1996. (The original Declaration is on file in parent application serial No. 08/645,381.)

Search Report dated Jan. 16, 1998 in corresponding European Patent Application No. 97201366.8, together with Communication and two-page Annex.

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[57] **ABSTRACT**

An intravascular catheter having an elongated tubular body with a proximal portion, a distal portion and a lumen extending therebetween. The tubular body is formed with polymeric materials, preferably containing no radiopaque filler, and metallic reinforcing braiding configured to provide the catheter with radiopaque properties and/or kink resistance.

19 Claims, 8 Drawing Sheets

[73] Assignee: **Schneider (USA) Inc.**, Maple Grove, Minn.

[*] Notice: This patent is subject to a terminal disclaimer.

[21] Appl. No.: **08/833,639**

[22] Filed: **Apr. 8, 1997**

Related U.S. Application Data

[63] Continuation-in-part of application No. 08/645,381, May 13, 1996, abandoned.

[51] **Int. Cl.**⁷ **A61M 25/00**

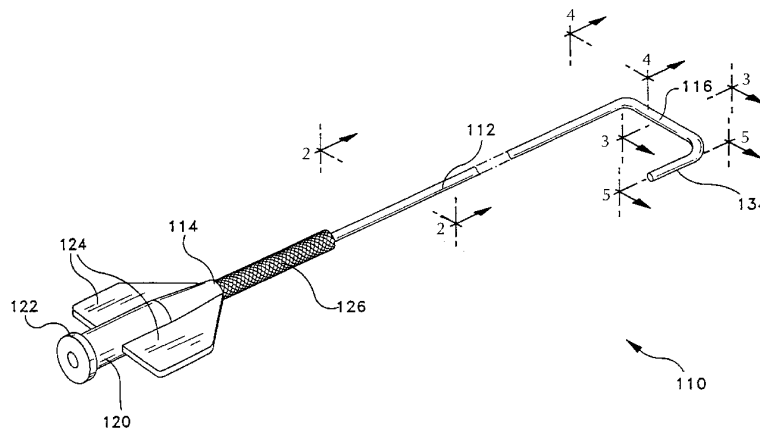
[52] **U.S. Cl.** **604/527; 604/524**

[58] **Field of Search** 604/280, 282, 604/264, 265, 524, 526, 527, 529, 532

[56] **References Cited**

U.S. PATENT DOCUMENTS

4,531,943	7/1985	Van Tassel et al.	604/280
4,646,742	3/1987	Packard et al.	128/344
4,898,591	2/1990	Jang et al.	604/282
4,994,032	2/1991	Sugiyama et al. .	
4,998,923	3/1991	Samson et al.	606/194
5,035,694	7/1991	Kasprzyk et al.	606/27
5,176,661	1/1993	Evard et al.	604/282
5,180,376	1/1993	Fischell .	
5,201,757	4/1993	Heyn et al.	606/198
5,221,270	6/1993	Parker	604/282
5,248,305	9/1993	Zdrahala .	
5,256,144	10/1993	Kraus et al.	604/96
5,312,356	5/1994	Engelson et al.	604/164
5,342,383	8/1994	Thomas .	
5,357,955	10/1994	Wolf et al.	128/634
5,387,199	2/1995	Siman et al.	604/282



U.S. PATENT DOCUMENTS

5,531,719	7/1996	Takahashi .		5,573,520	11/1996	Schwartz et al. .	
5,533,987	7/1996	Pray et al. .		5,573,522	11/1996	Houser et al.	604/282
5,538,513	7/1996	Okajima .		5,599,325	2/1997	Ju et al. .	
5,545,151	8/1996	O'Connor et al. .		5,695,468	12/1997	Lafontaine et al. .	
5,565,523	10/1996	Chen et al. .		5,725,513	3/1998	Ju et al.	604/280
5,569,200	10/1996	Umeno et al.	604/96	5,728,063	3/1998	Preissman et al. .	
5,569,220	10/1996	Webster, Jr.	604/282	5,741,333	4/1998	Frid	623/12
5,569,221	10/1996	Houser et al.	604/282	5,755,704	5/1998	Lunn	604/282-

FIG. 1

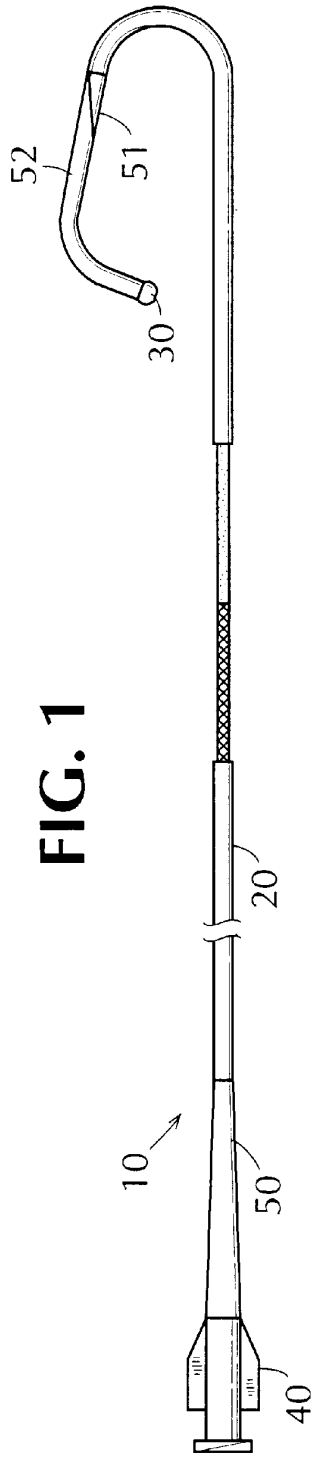
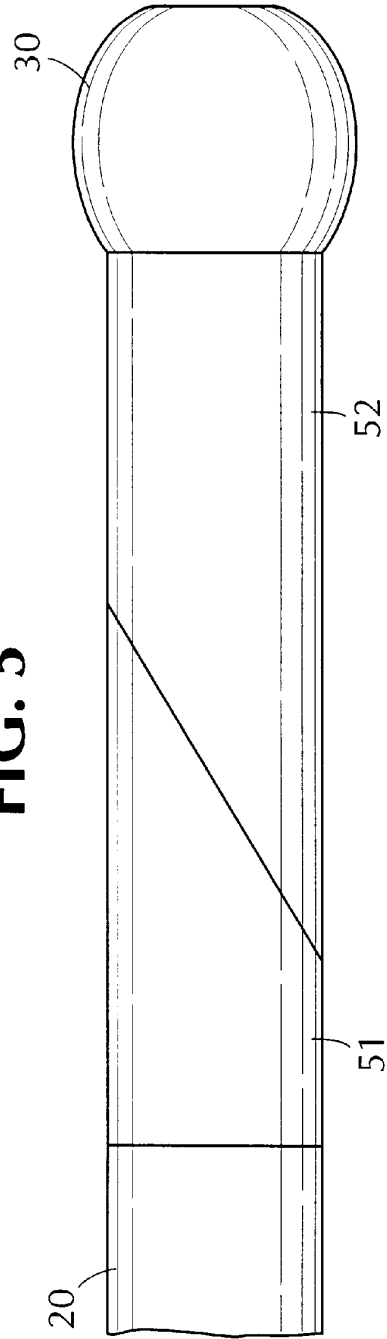


FIG. 5



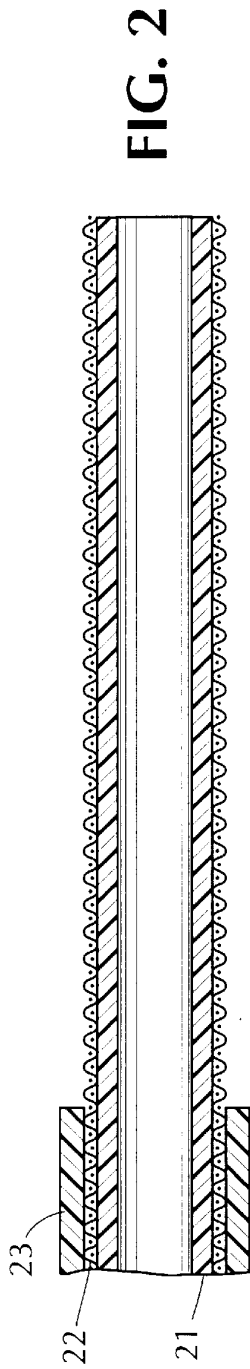


FIG. 2

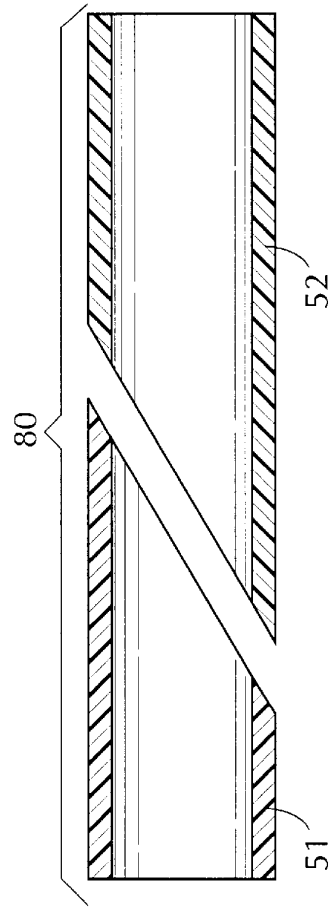


FIG. 3

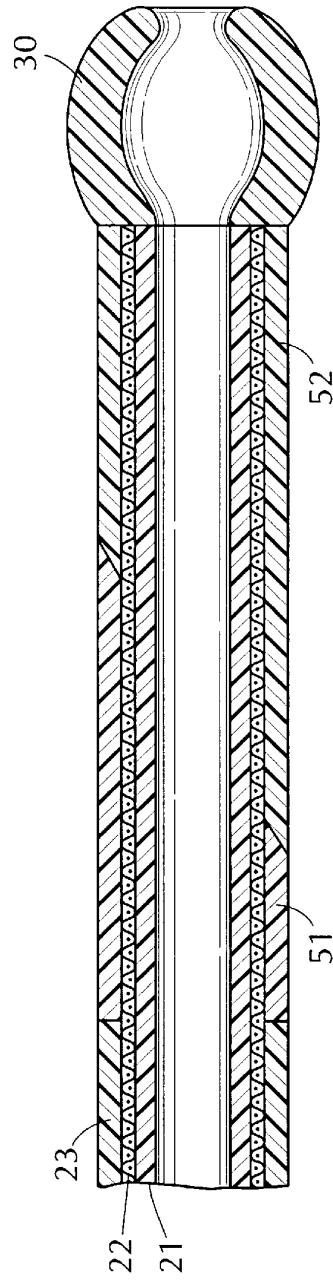
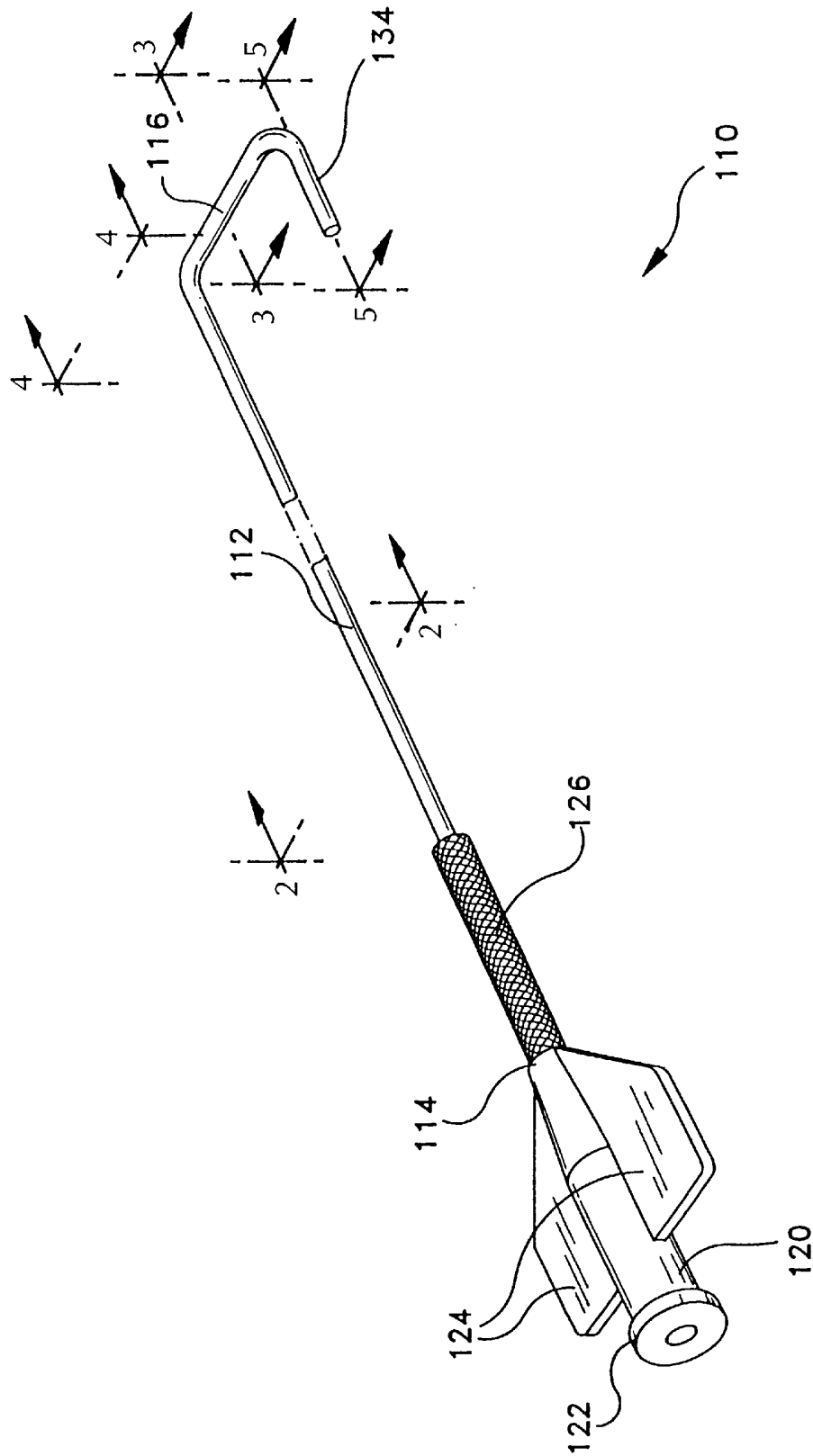


FIG. 4

FIG. 6



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