



US005411552A

United States Patent [19]

Andersen et al.

[11] **Patent Number:** **5,411,552**[45] **Date of Patent:** **May 2, 1995**

[54] **VALVE PROTHESIS FOR IMPLANTATION
IN THE BODY AND A CATHETER FOR
IMPLANTING SUCH VALVE PROTHESIS**

[76] **Inventors:** **Henning R. Andersen**, Dalvangen
37A, DK-8270 Hoejbjerg; **John M.
Hasenkam**, Aprilvej 8, DK-8210
Aarhus V; **Lars L. Knudsen**,
RudolfWulffsgade 6,4.mf., DK-8000
Aarhus C, all of Denmark

[21] **Appl. No.:** **261,235**

[22] **Filed:** **Jun. 14, 1994**

Related U.S. Application Data

[63] Continuation of Ser. No. 961,891, Jan. 11, 1993, abandoned.

[30] Foreign Application Priority Data

May 18, 1990 [DK] Denmark 1246/90

[51] **Int. Cl.⁶** **A61F 2/24**

[52] **U.S. Cl.** **623/2; 623/900;**
137/343; 137/844; 251/358

[58] **Field of Search** **623/2, 900; 137/343,**
137/844, 316; 251/358; 606/108

[56] References Cited**U.S. PATENT DOCUMENTS**

3,671,979	6/1972	Moulopoulos .	
4,038,703	8/1977	Bokros	623/2
4,056,854	11/1977	Boretos et al.	623/2
4,106,129	8/1978	Carpentier et al.	623/2
4,297,749	11/1981	Davis et al.	623/2
4,343,048	8/1982	Ross .	
4,733,665	3/1988	Palmaz	606/108
4,856,516	8/1989	Hillstead	604/194
5,037,434	8/1991	Lane	623/2
5,163,953	11/1992	Vince	623/2

FOREIGN PATENT DOCUMENTS

0357003	3/1990	European Pat. Off.	623/900
1271508	11/1986	U.S.S.R.	623/2
1371701	2/1988	U.S.S.R.	623/2

OTHER PUBLICATIONS

Derwent Abstract No. 87-190867/27 (1987), SU
1271508 (Gorkii Kirov Medical Ins.).

Primary Examiner—David H. Willse

Attorney, Agent, or Firm—Watson, Cole, Grindle &
Watson

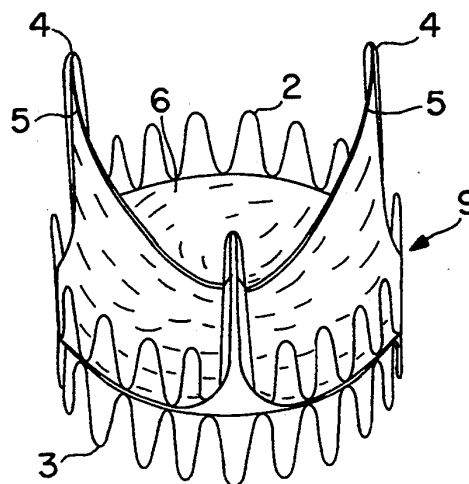
[57]

ABSTRACT

A valve prosthesis (9) for implantation in the body by use of catheter (11) comprises a stent made from an expandable cylinder-shaped thread structure (2,3) comprising several spaced apices (4). The elastically collapsible valve (6) is mounted on the stent as the commissural points (5) of the valve (6) are secured to the projecting apices (4).

The valve prosthesis (9) can be compressed around the balloon means (13) of the balloon catheter (11) and be inserted in a channel, for instance in the aorta (10). When the valve prosthesis is placed correctly the balloon means (13) is inflated thereby expanding the stent and wedging it against the wall of aorta. The balloon means is provided with beads (14) to ensure a steady fastening of the valve prosthesis on the balloon means during insertion and expansion.

The valve prosthesis (9) and the balloon catheter (11) make it possible to insert a cardiac valve prosthesis without a surgical operation comprising opening the thoracic cavity.

8 Claims, 4 Drawing Sheets

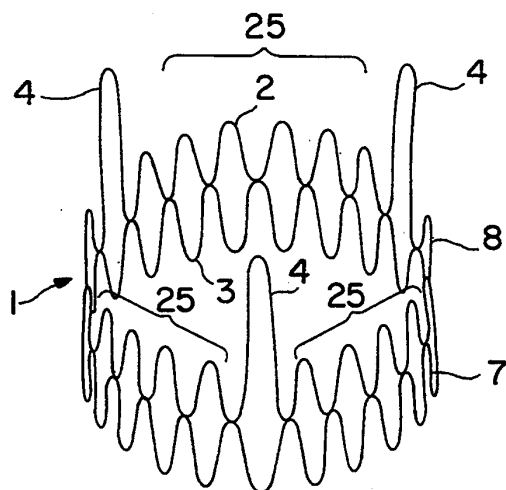


FIG. 1

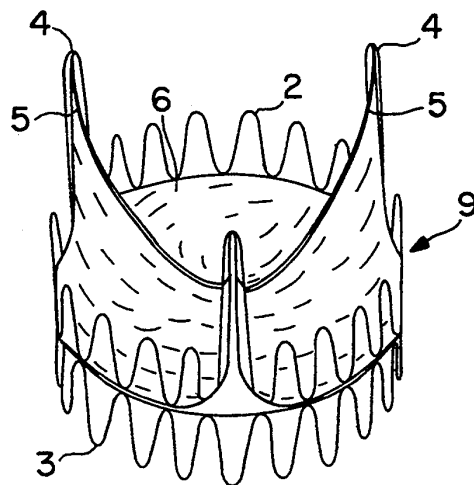
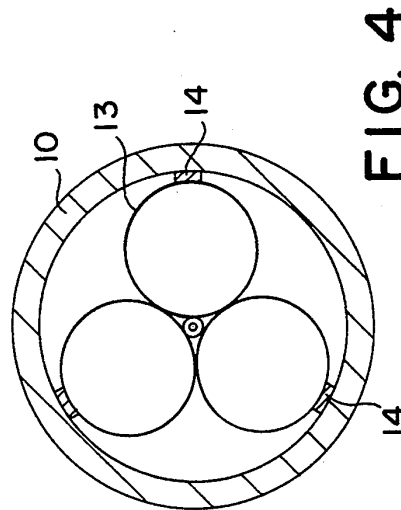
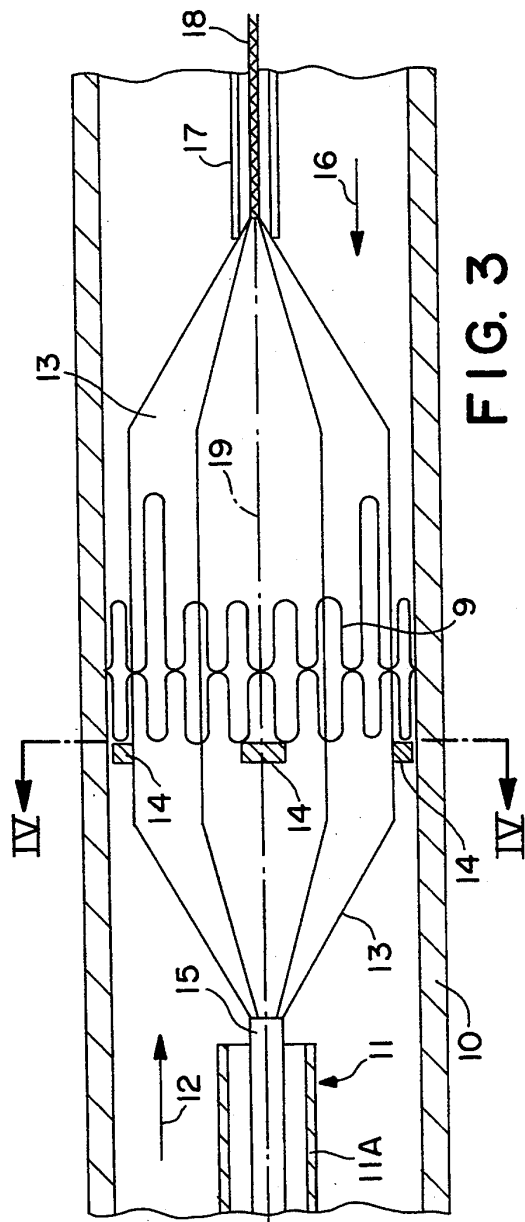


FIG. 2



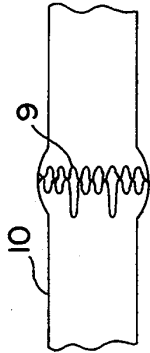


FIG. 7

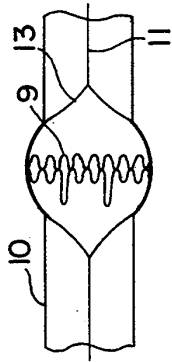


FIG. 6

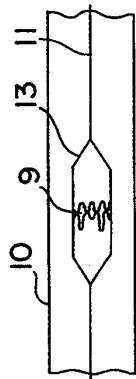


FIG. 5

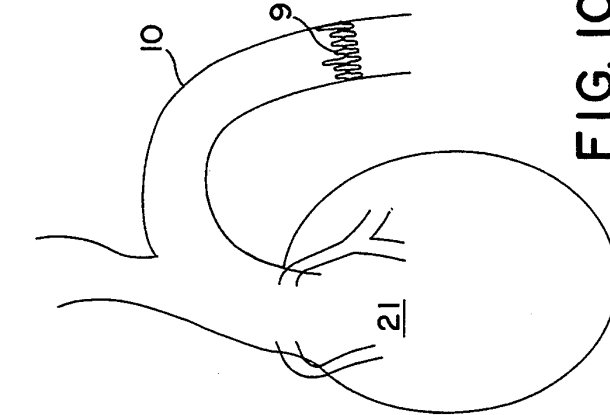


FIG. 10

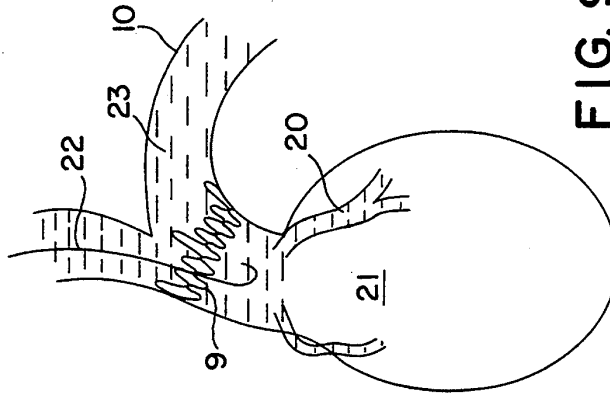


FIG. 9

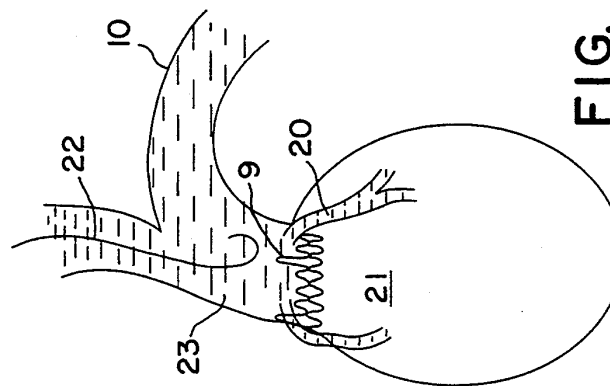
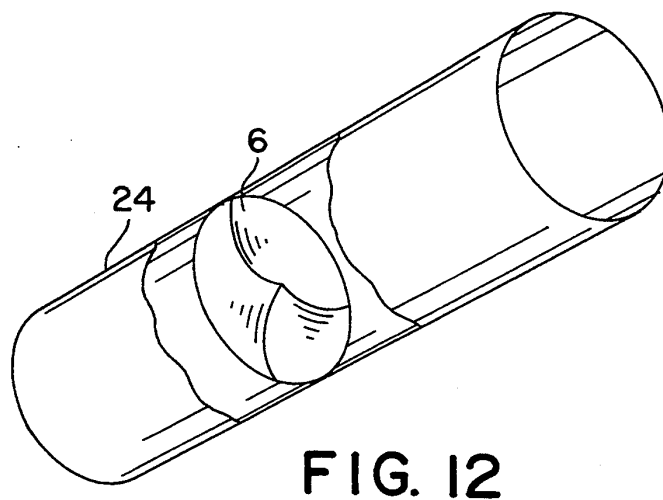
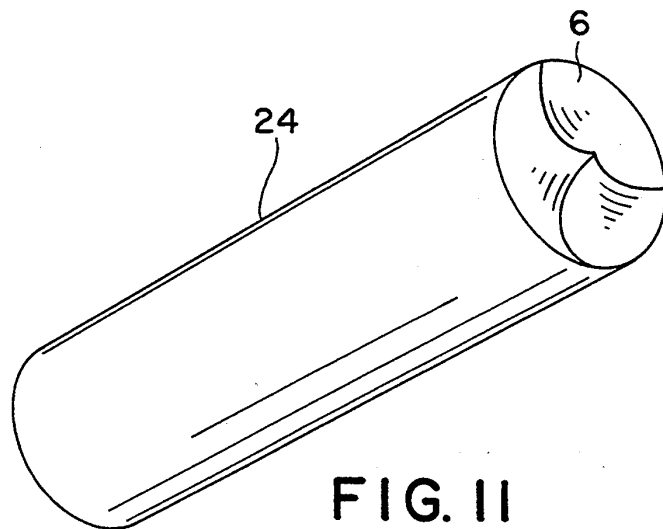


FIG. 8



Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.