



(12) **United States Patent**
De Paulis

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(54) **PROSTHETIC TUBULAR AORTIC CONDUIT AND METHOD FOR MANUFACTURING THE SAME**

EP 0 666 066 B1 6/1999
GB 2 312 485 A 10/1997

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- (75) Inventor: **Ruggero De Paulis**, Rome (IT)
- (73) Assignee: **Sulzer Vascutek Limited**, Inchinnan (GB)
- (*) Notice: This patent issued on a continued prosecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C. 154(a)(2).

David et al., "An aortic valve-sparing operation for patients with aortic incompetence . . .", from The Journal of Thoracic & Cardiovascular Surgery, vol. 103, No. 4, Apr. 1992, pp. 617-622.

Thubrikar et al., "Stress Sharing Between the Sinus and Leaflets of Canine Aortic Valve", from The Annals of Thoracic Surgery, vol. 42, No. 4, Oct. 1986, pp. 434-440.

(List continued on next page.)

Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/301,839**

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(22) Filed: **Apr. 29, 1999**

(57) **ABSTRACT**

Related U.S. Application Data

- (60) Provisional application No. 60/084,710, filed on May 8, 1998.
- (51) **Int. Cl.**⁷ **A61F 2/06**; A61F 2/24
- (52) **U.S. Cl.** **623/1.26**; 623/1.29; 623/1.28; 623/1.24
- (58) **Field of Search** 623/1.15, 1.16, 623/1.24, 1.26, 1.3, 23.64, 23.68, 1.28, 1.29, 1.1, 1.6

A prosthetic aortic conduit for replacing a root portion of an aorta is provided. The conduit comprises a first tubular portion and a second tubular portion which are connected together along a substantially common axis. The second tubular portion does not substantially deform in a longitudinal direction and has resilient means which allow said second portion to be expandable in a lateral direction. This second portion is able to deform laterally to mimic the function of the sinuses of Valsalva. The method of manufacturing such a conduit comprises the steps of: a) providing a first tubular conduit suitable for use in heart surgery and having a longitudinal axis and first resilient means allowing some expansion in the longitudinal direction only;

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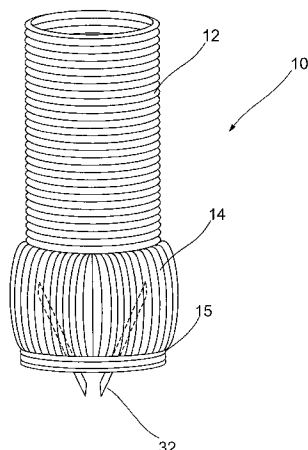
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b) securing to one of the ends of this first conduit a second tubular conduit suitable for use in heart surgery, this second conduit having second resilient means which allows some expansion in the lateral direction only.

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12 Claims, 6 Drawing Sheets



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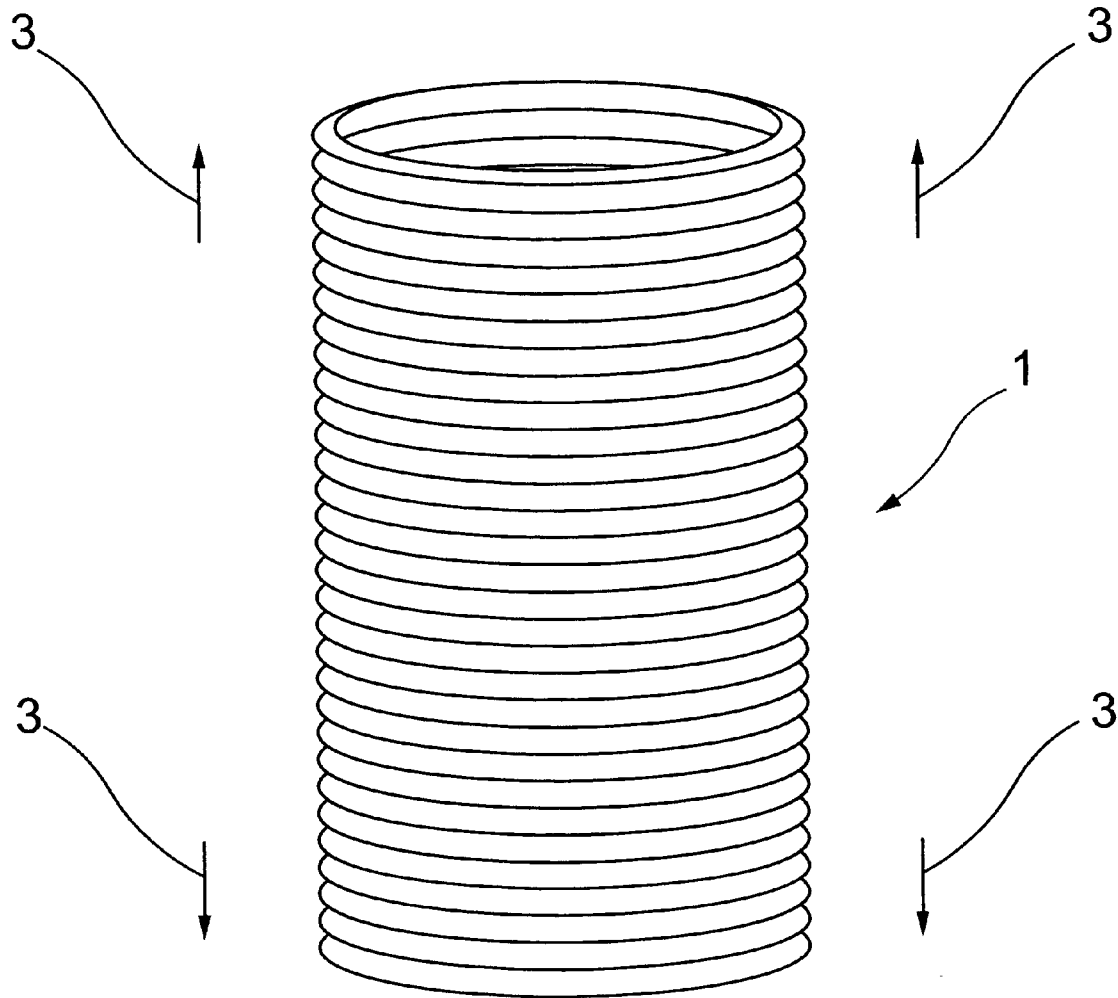


Fig. 1 (Prior Art)

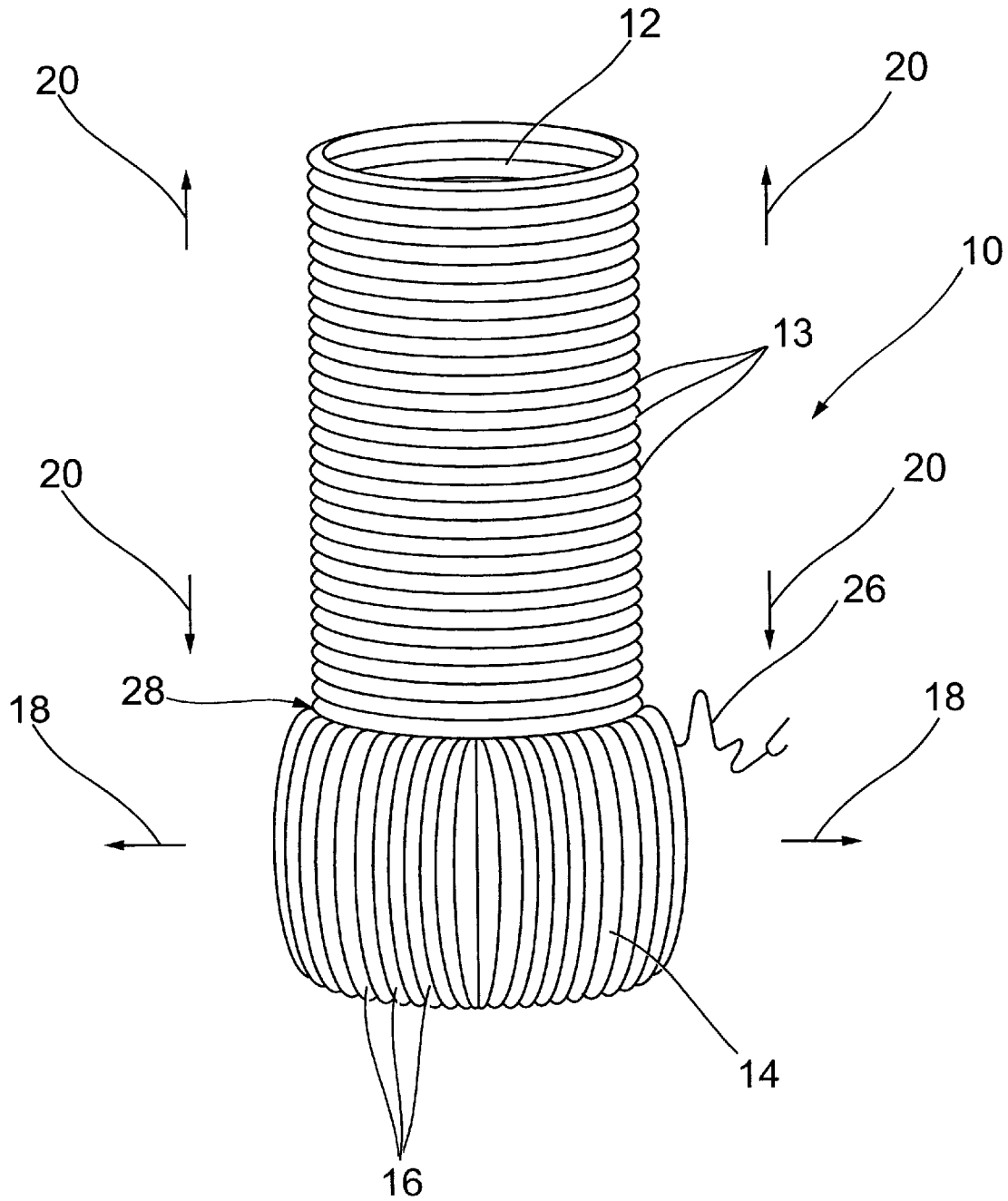


Fig. 2

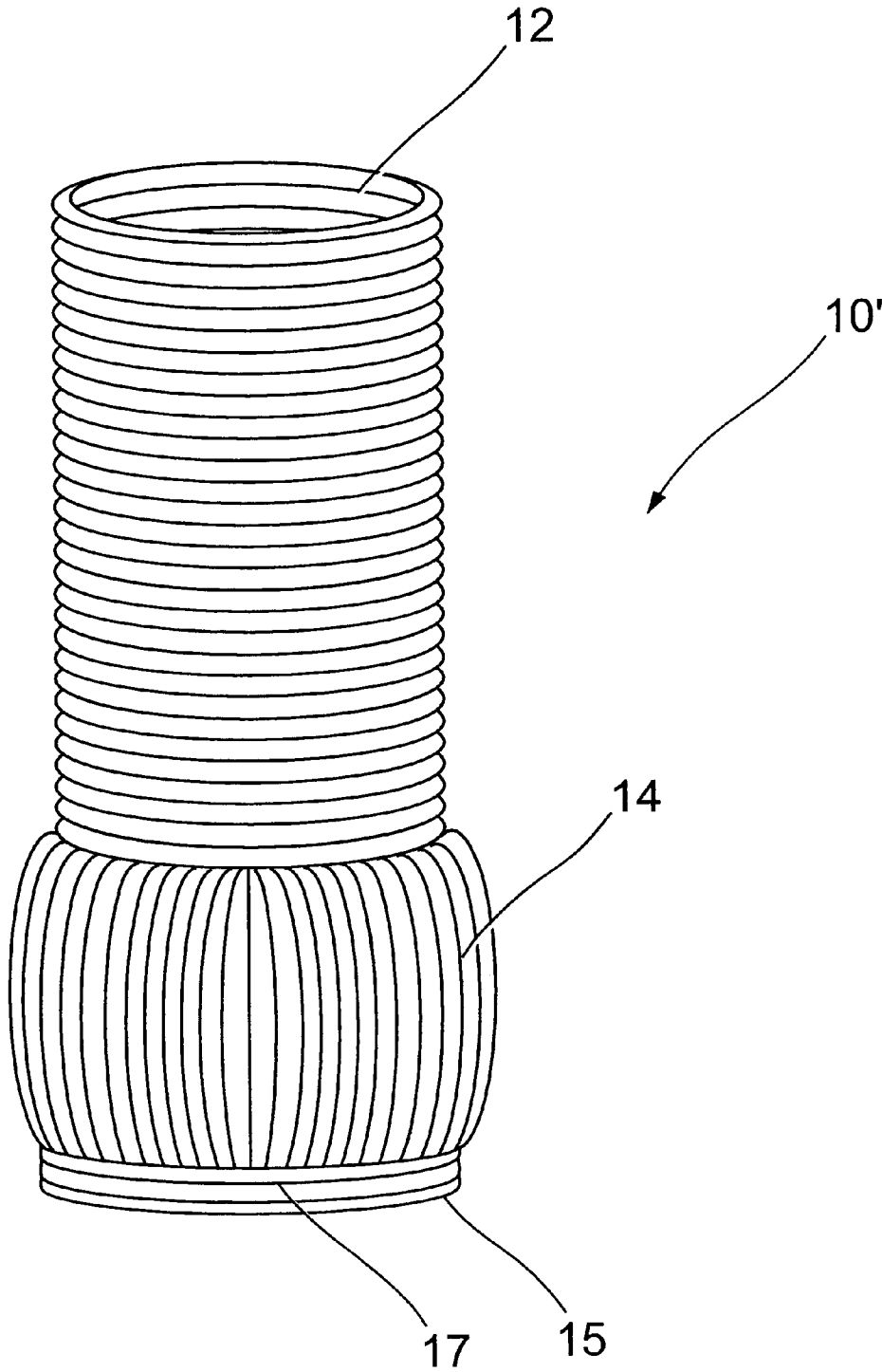


Fig. 2a

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