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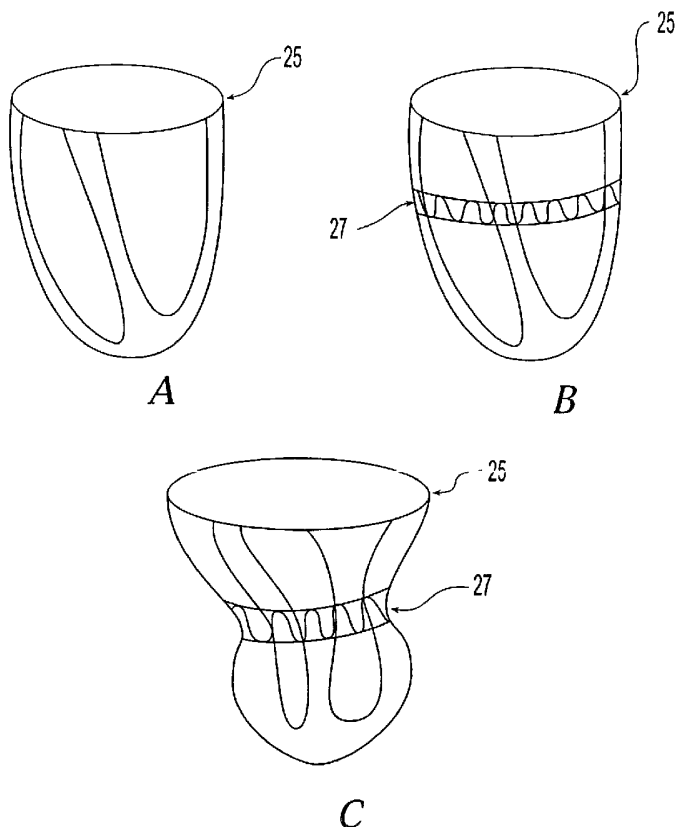
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(54) Title: MODIFICATION OF PROPERTIES AND GEOMETRY OF HEART TISSUE TO INFLUENCE HEART FUNCTION



(57) Abstract: Materials, devices and methods for the treatment of congestive heart failure are disclosed. In these methods, the volume of the left ventricle is reduced, thereby increasing the efficiency of the pumping action of the heart. Volume reduction is accomplished by introduction of biocompatible materials into the wall of the left ventricle, or into the ventricle itself. Suitable biocompatible materials include those that undergo a phase transition within the ventricle or within the wall of the ventricle, and are thereby converted from a substantially liquid state to a substantially solid state. Such materials also include those which increase in volume during the transition from the liquid state to the solid state. Also disclosed is a method for ventricular geometry reduction wherein flexible, elastic bands are attached to the external surface of the heart to effect a decrease in the volume of the left ventricle. Finally, disclosed are devices including catheters and elastic bands that are usable in these treatments.

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*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 02/36929

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A61B17/12

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A61B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 957 916 A (SMITH CRAIG R ET AL) 28 September 1999 (1999-09-28) column 4, line 45 -column 5, line 6; figures 2A,2B	1-3,8
X	--- WO 99 49926 A (CARDIOGENESIS CORP) 7 October 1999 (1999-10-07) page 23, line 4 - line 21 page 27, line 12 - line 17; figures 8,9,15	1-3,8
X	--- WO 00 72909 A (DEEM MARK ;DIECK MARTIN (US); GIFFORD HANSON (US); SEPETKA IVAN (U) 7 December 2000 (2000-12-07) page 8, line 25 -page 9, line 27; figures 5-8 --- -/--	1,5-8

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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"&amp;" document member of the same patent family

Date of the actual completion of the international search

4 March 2003

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International Application No

PCT/US 02/36929

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 152 144 A (VAN DER BURG ERIK J ET AL) 28 November 2000 (2000-11-28) column 10, line 30 -column 46 column 12, line 24 - line 50 column 13, line 13 - line 20; figures 11,17,21 ---	1,5-8
X	WO 97 13471 A (TRANSVASCULAR INC) 17 April 1997 (1997-04-17) page 13, line 14 -page 14, line 13; figure 13 -----	1-4

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US 02/36929

### Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.: 9-20  
because they relate to subject matter not required to be searched by this Authority, namely:  
Rule 39.1(iv) PCT - Method for treatment of the human or animal body by surgery
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

### Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:  
1-8

#### Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-8

Catheter with lumen and reversible attachment means

2. Claims: 21-30

device comprising a band made of a biocompatible component

3. Claims: 31-39

apparatus including an apex anchor

## INTERNATIONAL SEARCH REPORT

International Application No

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