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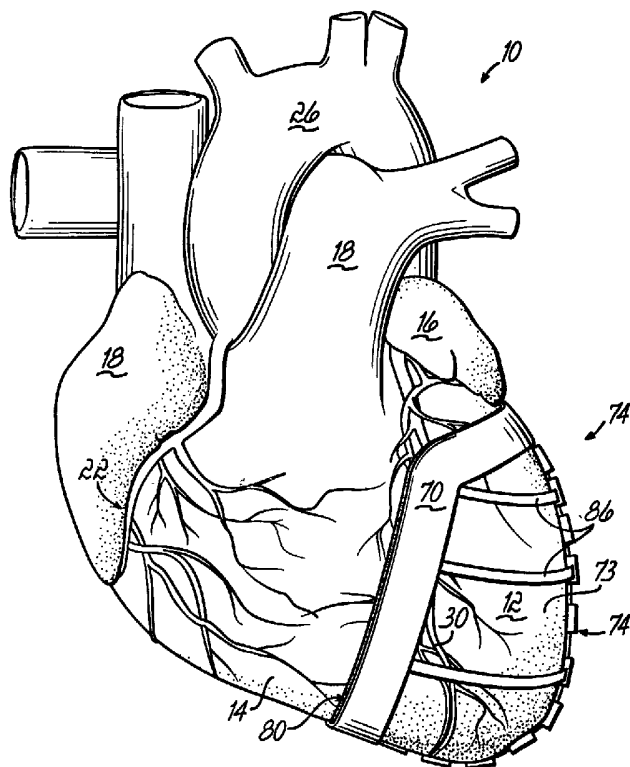
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[Continued on next page]

(54) Title: HEART WALL ACTUATION SYSTEM FOR THE NATURAL HEART WITH SHAPE LIMITING ELEMENTS



(57) Abstract: An actuation system (72) for assisting the operation of the natural heart includes an actuator element (74) adapted to be positioned proximate a portion of a heart wall. The actuator element (74) is operable for acting on the heart wall portion to effect a change in the shape of the heart. A shape-limiting element (86) is configured for being positioned proximate a heart wall. The shape-limiting element (86) is operable for flexing to assume a curvature no greater than a predetermined curvature when the heart wall is acted upon and maintaining that predetermined curvature to control the shape of the actuated heart.

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# INTERNATIONAL SEARCH REPORT

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**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(7) : A61M 1/10  
 US CL : 600/16, 17, 37; 601/153

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)  
 U.S. : 600/16, 17, 37; 601/153

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 practicable, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No.                                     |
|------------|--|---|
| X          | US 5,957,977 A (MELVIN) 28 September 1999, figures 5A and 5B; col. 6, lines 11-42  | 1-42, 21, 38, 39  |
| Y          | US 5,383,840 A (HEILMAN et al ) 24 January 1995, figures 4C; figure 6 -No. 114.    | 5-8, 12-16, 18-20, 22-24, 28-31, 33-37, 40-41, 45, 47, 48 |
| Y          | US 6,019,722 A (SPENCE et al) 1 February 2000, figure 7A.                          | 5-17, 22-32, 40-46  |
| Y          | US 5,709,695 A (NORTHRUP,III) 20 January 1998, figures 12 and 13                   | 10, 26, 43  |
| Y          | US 6,375,611 B (VOSS et al) 23 April 2002, figure 7 -No. 44.                       | 18, 19, 34, 35  |

Further documents are listed in the continuation of Box C.

See patent family annex.

| * Special categories of cited documents:  |  |
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