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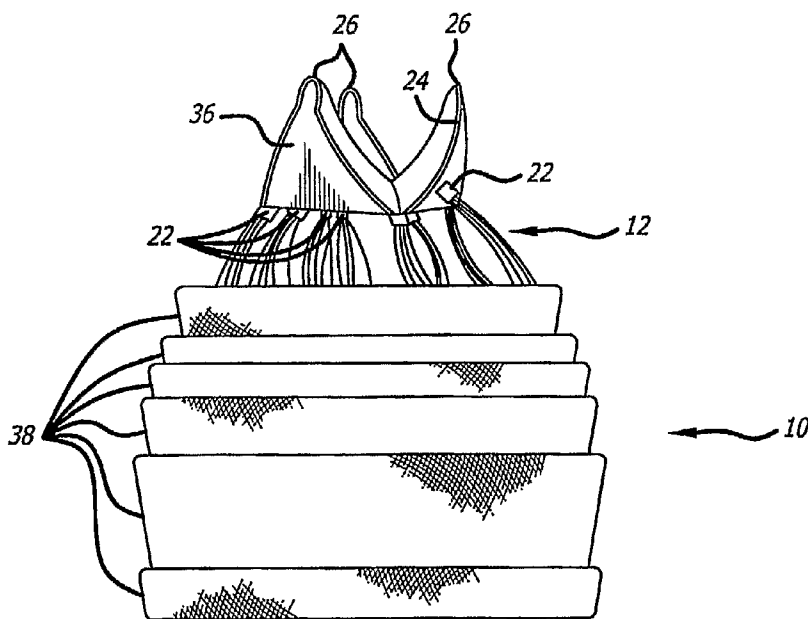
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A61F 2/06 (2006.01)      A61F 2/24 (2006.01)      M. [US/US]; 1490 Sunnybrook Drive, Minnetrista, MN 55364 (US).
- (21) **International Application Number:**  
PCT/US2006/021021      (74) **Agent:** INSKEEP, James, W.; INSKEEP INTELLECTUAL PROPERTY GROUP, INC., 2281 W. 190th Street, Ste. 200, Torrance, CA 90504 (US).
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- (30) **Priority Data:**  
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60/709,595      18 August 2005 (18.08.2005)      US
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[Continued on next page]

(54) **Title:** STENTLESS SUPPORT STRUCTURE



(57) **Abstract:** A stentless support structure capable of being at least partly assembled in situ. The support structure comprises a braided tube that is very flexible and, when elongated, becomes very long and very small in diameter, thereby being capable of placement within a small diameter catheter. The support structure is preferably constructed of one or more thin strands of a super-elastic or shape memory material such as Nitinol. When released from the catheter, the support structure folds itself into a longitudinally compact configuration. The support structure thus gains significant strength as the number of folds increase. This radial strength obviates the need for a support stent. The support structure may include attachment points for a prosthetic valve.

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INTERNATIONAL SEARCH REPORT

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PCT/US 06/21021

<p>A. CLASSIFICATION OF SUBJECT MATTER                  IPC(8):A61F 2/06 (2007.01); A61F 2/24 (2007.01)                  USPC: 623/1.23; 623/1.28, 623/1.53, 623/2.38                  According to International Patent Classification (IPC) or to both national classification and IPC</p>														
<p>B. FIELDS SEARCHED</p> <p>Minimum documentation searched (classification system followed by classification symbols)                  USPC: 623/1.23; 623/1.28, 623/1.53, 623/2.38</p> <p>Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched                  623/1.1, 1.23, 1.28, 1.29, 2.1, 2.38-2.41 test limited</p> <p>Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)                  Electronic data base: USPTO, Google/Patents, Scholar.Google, WEST (PGPGB, USPT, EPAB, JPAB)                  Search Terms Used: stent, unbraided, monofilament, 2 ply single ply, fold, commissural, lining, cuff, braided, nitinol</p>														
<p>C. DOCUMENTS CONSIDERED TO BE RELEVANT</p> <table border="1"> <thead> <tr> <th>Category*</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>X</td> <td>US 6,592,614 B2 (Lenker et al.) 15 July 2003 (15.07.2003) fig. 1, 6, 8A-B, 11B, 12A-D, col. 1, ln. 20-35, col. 4, ln 53-63, col. 11, ln. 13-39, col. 13, ln 13-38, col. 15, ln 13-41</td> <td>1-29</td> </tr> <tr> <td>A</td> <td>2004/0073293 A1 (Thompson) 15 April 2004 (15.04.2004) para [0004]-[0006], [0026]-[0027],</td> <td>1-29</td> </tr> <tr> <td>A</td> <td>US 6,524,339 B1 (Adams) 25 February 2003 (25.02.2003) col. 10, ln 22-50</td> <td>8-11</td> </tr> </tbody> </table>			Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	X	US 6,592,614 B2 (Lenker et al.) 15 July 2003 (15.07.2003) fig. 1, 6, 8A-B, 11B, 12A-D, col. 1, ln. 20-35, col. 4, ln 53-63, col. 11, ln. 13-39, col. 13, ln 13-38, col. 15, ln 13-41	1-29	A	2004/0073293 A1 (Thompson) 15 April 2004 (15.04.2004) para [0004]-[0006], [0026]-[0027],	1-29	A	US 6,524,339 B1 (Adams) 25 February 2003 (25.02.2003) col. 10, ln 22-50	8-11
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<p><input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/></p>														
<p>* Special categories of cited documents:</p> <table border="0"> <tr> <td>"A" document defining the general state of the art which is not considered to be of particular relevance</td> <td>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</td> </tr> <tr> <td>"E" earlier application or patent but published on or after the international filing date</td> <td>"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</td> </tr> <tr> <td>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</td> <td>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</td> </tr> <tr> <td>"O" document referring to an oral disclosure, use, exhibition or other means</td> <td>"&amp;" document member of the same patent family</td> </tr> <tr> <td>"P" document published prior to the international filing date but later than the priority date claimed</td> <td></td> </tr> </table>			"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention	"E" earlier application or patent but published on or after the international filing date	"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	"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art	"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family	"P" document published prior to the international filing date but later than the priority date claimed			
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"P" document published prior to the international filing date but later than the priority date claimed														
<p>Date of the actual completion of the international search 12 May 2006 (12.05.2006)</p>		<p>Date of mailing of the international search report <b>05 SEP 2007</b></p>												
<p>Name and mailing address of the ISA/US                  Mail Stop PCT, Attn: ISA/US, Commissioner for Patents                  P.O. Box 1450, Alexandria, Virginia 22313-1450                  Facsimile No. 571-273-3201</p>		<p>Authorized officer:                  Lee W. Young                  PCT Helpdesk: 571-272-4300                  PCT OSP: 571-272-7774</p>												