(19) World Intellectual Property Organization International Bureau



- | 1888 | 1888 | 1888 | 1884 | 1884 | 1884 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 | 1885 |

(43) International Publication Date 29 November 2007 (29.11.2007)

(10) International Publication Number WO 2007/136853 A3

(51) International Patent Classification: *A61B 17/28* (2006.01)

(21) International Application Number:

PCT/US2007/012174

(22) International Filing Date: 21 May 2007 (21.05.2007)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

60/747,793 20 May 2006 (20.05.2006) US

(71) Applicant and

(72) Inventor: HARTWICK, Darrell [US/US]; 145 Washington St., Newton, MA 02458 (US).

(74) Agents: RIKKERS, David, J. et al.; Foley & Lardner LLP, 111 Huntington Avenue, Boston, MA 02199 (US).

(81) Designated States (unless otherwise indicated, for every

kind of national protection available): AE, AG, AL, AM,

AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

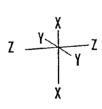
Published:

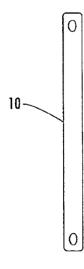
with international search report

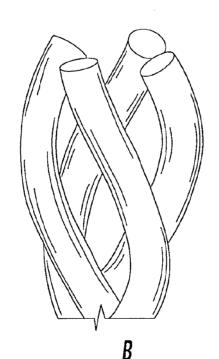
20

(88) Date of publication of the international search report: 24 December 2008

(54) Title: MEDICAL DEVICE USING BEAM CONSTRUCTION AND METHODS









(57) Abstract: A medical device is provided with a flexible shaft having a first beam element with a first elongated cross section and a second beam element having a second elongated cross section. An end effector is located at a distal end of the flexible shaft and actuated by relative movement between the first beam element and the second beam element. In another example, a handle is located at a proximate end of the flexible shaft. A first control is mounted on the handle and is directly coupled to the first beam element for placing the first beam element in tension relative to the second beam element to thereby cause bending of at least a portion of the flexible shaft toward the first beam element.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US07/12174

A. CLASSIFICATION OF SUBJECT MATTER				
IPC: A61B 17/28(2006.01)				
USPC: 606/170-184,205-210 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. : 606/170-184,205-210				
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched				
botamentation scareful differ than minimum documentation to the extent differentiation and morated in the fields scareful				
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 ap	propriate.	of the relevant passages	Relevant to claim No.
X	US 4,674,501 A (GREENBERG) 23 June 1987, figur			1-5, 8-9, 11-14, 17-21
			,	•
			·	
			*	
				·
	·			
· .	·			
	·		·	
	<u> </u>			
Further documents are listed in the continuation of Box C. See patent family annex.				
Special categories of cited documents: "T			later document published after the inter date and not in conflict with the applica	ation but cited to understand the
	t defining the general state of the art which is not considered to be of relevance		principle or theory underlying the inver	ntion
"E" earlier ap	plication or patent published on or after the international filing date	"X"	document of particular relevance; the c considered novel or cannot be consider	
	t which may throw doubts on priority claim(s) or which is cited to		when the document is taken alone	
	the publication date of another citation or other special reason (as	"Y" .	document of particular relevance; the considered to involve an inventive step	
	t referring to an oral disclosure, use, exhibition or other means		combined with one or more other such being obvious to a person skilled in the	documents, such combination
	,	"&"		
"P" document published prior to the international filing date but later than the priority date claimed		α	"&" document member of the same patent family	
Date of the actual completion of the international search		Date of mailing of the international search report		
17 August 2008 (17.08.2008)		03 001 2000		
Mail Stop PCT Attn: IS A/LIS			Authorized officer	
Commissioner for Patents		Kevin T. Truong		
P.O. Box 1450 Alexandria, Virginia 22313-1450		Kevin T. Truong Telephone No. 571-272-3700		
Facsimile No. (571) 273-3201				94

Form PCT/ISA/210 (second sheet) (April 2007)