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— with international search report (Art. 21(3))

[Continued on next page]

(54) Title: MEDICAL DEVICE COMPRISING AN ARTIFICIAL CONTRACTILE STRUCTURE

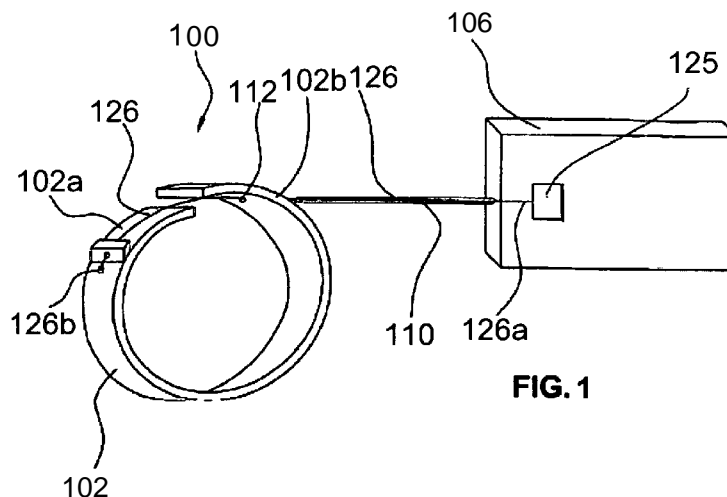


FIG. 1

(57) Abstract: The present invention relates to a medical device comprising an artificial contractile structure which may be advantageously used to assist the functioning of a hollow organ. Said medical device comprises an artificial contractile structure comprising at least one contractile element (100) adapted to contract an organ, in such way that said contractile element (100) is in a resting or in an activated position, at least one actuator designed to activate said contractile structure, and at least one source of energy for powering said actuator. The ratio "current which is needed to maintain the contractile element in its activated position / current which is needed to change the position of the contractile element" is less than 1/500, preferably less than 1/800, and more preferably less than 1/1000.



— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

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**INTERNATIONAL SEARCH REPORT**

International application No  
PCT/EP2011/003286

A. CLASSIFICATION OF SUBJECT MATTER  
 INV. A61F2/00 A61M1/10 A61M1/12  
 ADD.  
 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)  
 A61F A61M A61H

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 162 238 A (KAPLAN AARON V [US] ET AL) 19 December 2000 (2000-12-19)  col umn 3, line 31 - line 67; figures col umn 4, line 66 - col umn 6, line 8 -----	1-8, 10, 11, 13-16, 26,27
X	US 2006/047180 AI (HEGDE ANANT V [US] ET AL) 2 March 2006 (2006-03-02)  paragraphs [0038] , [0044] - [0046] , [0050] ; figures -----	1-8, 10, 13-16, 26,27
X	Wo 2004/066879 AI (POTENCIA MEDICAL AG [CH] ; FORSELL PETER [CH] ) 12 August 2004 (2004-08-12) page 5, line 4 - page 7, line 25; figures page 4, line 15 - line 27 ----- -/- .	1-11 , 13-16, 26,27

Further documents are listed in the continuation of Box C.  See patent family annex.

\* Special categories of cited documents :

"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 document 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	

Date of the actual completion of the international search  28 November 2011	Date of mailing of the international search report  17/02/2012
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer  Neumann , El i sabeth
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## INTERNATIONAL SEARCH REPORT

International application No  
PCT/EP2011/003286

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 2009/259093 A1 (BHAT NIKHIL D [US] ET AL) 15 October 2009 (2009-10-15) paragraphs [0007], [0039], [0049], [0052], [0058] - [0060], [0076], [0084], [0085]; figures -----	1-10, 12-16

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No <b>PCT/EP2011/003286</b>
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6162238	A	19-12-2000	NONE
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US 2006047180	A1	02-03-2006	NONE
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WO 2004066879	A1	12-08-2004	AT 356595 T 15-04-2007
		AU 2003206298 A1	23-08-2004
		DE 60312563 T2	22-11-2007
		EP 1587455 A1	26-10-2005
		HK 1085904 A1	07-12-2007
		US 2006149124 A1	06-07-2006
		US 2008200753 A1	21-08-2008
		WO 2004066879 A1	12-08-2004
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US 2009259093	A1	15-10-2009	NONE
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# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/EP2011/003286

## Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 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.: **37, 38**  
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**  
**Rule 39.1(iv) PCT - Method for treatment of the human or animal body by therapy**
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 No. III Observations where unity of invention is lacking (Continuation of item 3 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 fees, this Authority did not invite payment of additional fees.
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. :  
**1-16, 26, 27**

### Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- 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: 1-16, 26, 27

Medical device comprising an artificial contractile structure comprising at least one contractile element adapted to contract an organ, at least one actuator, at least one source of energy for powering said actuator, characterized by the ratio of the current needed to change the position of the contractile element.

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## 2. claims: 17-25, 28-31

Medical device comprising an artificial contractile structure comprising at least two contractile elements adapted to contract an organ, at least one actuator, at least one source of energy for powering said actuator, whereby said contractile elements are able to be maintained in the same position at the same time.

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## 3. claims: 32-36

Medical device comprising an artificial contractile structure comprising at least one contractile element adapted to contract an organ, at least one actuator, at least one source of energy for powering said actuator, further comprising safety means designed to change automatically the position of the contractile element.

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