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Declarations under Rule 4.17:

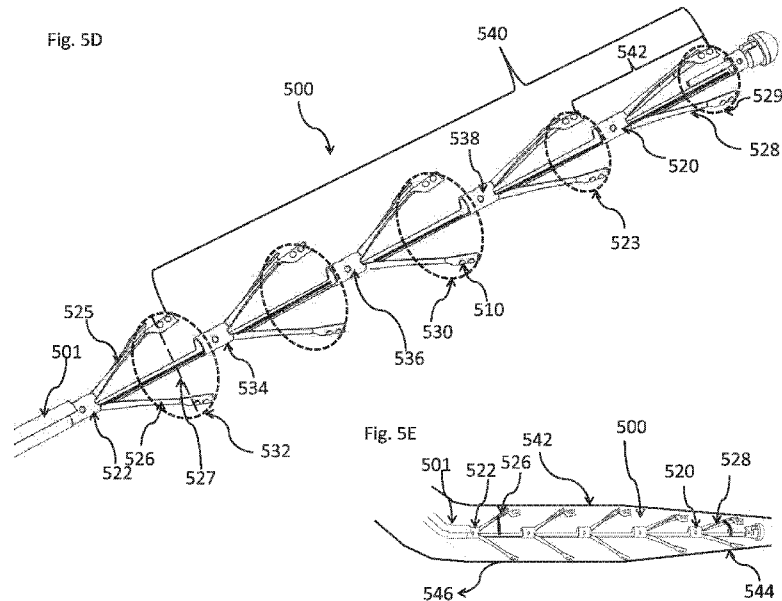
— of inventorship (Rule 4.17(iv))

Published:

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

(88) Date of publication of the international search report:
21 September 2017

(54) Title: CORONARY SINUS ELECTROPHYSIOLOGY MEASUREMENTS DEVICE AND METHODS



(57) Abstract: An electrode array configured to be inserted at least partially into a blood vessel including: a self-expandable array body; at least two axially spaced-apart electrodes connected to said array body; wherein at least part of said array body expands to an open conformation and pushes at least one selected electrode against a blood vessel inner tissue with a force designed not to damage venous tissue.



INTERNATIONAL SEARCH REPORT

International application No.

PCT/IL 17/50020

A. CLASSIFICATION OF SUBJECT MATTER IPC(8) - A61B 5/042 (2017.01) CPC - A61B 5/042, A61B 5/0422, A61B 5/6852, A61B 5/6858, A61B 5/6859, A61B 2562/04, A61B 2562/043, A61B 2562/046, A61B 5/04, A61B 2562/0209, A61B 2562/16		
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) See Search History Document		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched See Search History Document		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) See Search History Document		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X -- Y -- A	US 2008/0228060 A1 (TEGG) 18 September 2008 (18.09.2008) Entire document, especially Abstract, para[0009], para[0019]- para[0021], para[0038], para[0041]-[0043], para[0056] and FIGS. 5-9.	1-7, 12-25, 30-31, 36-39 ----- 26-29, 35 ----- 8-11
X -- Y	US 2004/0242984 A1 (PLAZA) 02 December 2004 (02.12.2004) Entire document, especially Abstract, para[0026]- para[0027], para[0041]- para[0046].	32-34 ----- 35
Y	US 2010/0069733 A1 (KASTELEIN et al.) 18 March 2010 (18.03.2010) Entire document, especially Abstract, para[0040], FIGS. 7-8.	26-29
A	US 5,722,401 A (PIETROSKI et al.) 03 March 1998 (03.03.1998) Entire document, especially Abstract, FIG. 19.	8-11
A	US 2003/0109914 A1 (WESTLUND et al.) 12 June 2003 (12.06.2003) Entire document, especially Abstract, para[0054], para[0071] and FIGS. 1B, 4.	8-11
A	US 5,255,679 A (IMRAN) 26 October 1993 (26.10.1993) Entire document.	1-39
A	US 2004/0243011 A1 (PLAZA) 02 December 2004 (02.12.2004) Entire document.	1-39
A	US 5,342,295 A (IMRAN) 30 August 1994 (30.08.1994) Entire document.	1-39
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> 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 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	
Date of the actual completion of the international search 06 June 2017	Date of mailing of the international search report 20 JUN 2017	
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. 571-273-8300	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774	

INTERNATIONAL SEARCH REPORT

International application No.

PCT/IL 17/50020

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2005/0070887 A1 (TAIMISTO et al.) 31 March 2005 (31.03.2005) Entire document.	1-39
A	US 2001/0007070 A1 (STEWART et al.) 05 July 2001 (05.07.2001) Entire document.	1-39
A	US 2002/0177765 A1 (BOWE et al.) 28 November 2002 (28.11.2002) Entire document.	1-39
A	US 6,514,214 B2 (KOKATE et al.) 04 February 2003 (04.02.2003) Entire document.	1-39

INTERNATIONAL SEARCH REPORT

International application No.

PCT/IL 17/50020

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.:
because they relate to subject matter not required to be searched by this Authority, namely:

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:

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I: claims 1-31, 36-39, drawn to an expandable electrode array.

Group II: claims 32-35, drawn to a method of measuring EP of a blood vessel.

--- see extra 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 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.:

- 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.

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International application No.

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----- Continuation of Box III: Observations where unity of invention is lacking (Continuation of item 3 of first sheet) -----

The inventions listed as Groups I - II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

Group II includes the special technical features of method steps including particular use steps (claim 32) inserting an electrode array into a selected region within said blood vessel; selecting at least one electrode to be used for EP measurements; measuring EP parameters by said selected electrode; (claim 33) determining if said selected electrode is in a desired location. (claim 34) deploying at least one additional electrode, by moving said cylindrical sheath further in said direction to allow said additional electrode to contact a different region of said tissue (claim 35) re-positioning and re-measuring, not required by Group I.

Group I-II are related to an apparatus (Group I) and method of using the apparatus (Group II). These groups therefore share the technical features of the apparatus of claim 1, however, these shared technical features fail to provide a contribution over the prior art of US 2008/0228060 A1 to Tegg. Tegg describes an electrode array configured to be inserted at least partially into a blood vessel (Abstract) comprising: a self-expandable array body (distal end of catheter shaft and electrode fibers, para[0009],[0021]; e.g. see 504/604/etc. FIGS. 5-9, esp FIGS. 7A-7B, para[0056]); at least two axially spaced-apart electrodes connected to said array body (tip electrodes, para[0021]; e.g. see 506/606/etc. FIGS. 5-9, para[0038]); wherein at least part of said array body expands to an open conformation (para[0021]; e.g. see FIGS. 7A-7B, para[0056]) and pushes at least one selected electrode against a blood vessel inner tissue with a force designed not to damage venous tissue (para[0019],[0041]).

Thus, Groups I-II lack unity of invention because they do not share a same or corresponding special technical feature providing a contribution over the prior art.