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Declarations under Rule 4.17:

— of inventorship (Rule 4.17(iv))

Published:

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

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(88) Date of publication of the international search report:

2 March 2017

(54) Title: VESSEL CANNULATION DEVICE AND METHOD OF USE

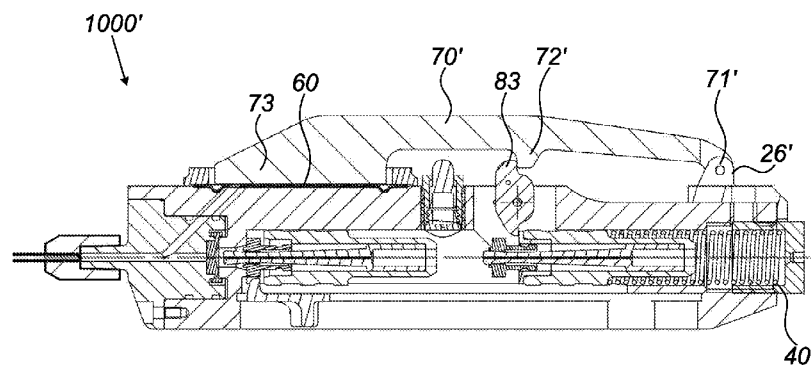


Figure 2E

(57) Abstract: Devices and methods are provided for automatic vascular access. An automatic vessel cannulation device, mechanical or electronic, has a sensor configured to detect a physiologic parameter of a needle tip, and a blunting device advancing member released in response to the sensor. The sensor may measure pressure or any other physiological parameter. A processor is configured to analyze data sent by the sensor and is pre-set to identify parameters unique to arteries, veins, or other body cavities or organs. A method may include comparing a physiologic parameter with pre-determined parameters to deploy a blunting element if the physiologic parameter is within a range of the pre-determined parameters. An expandable sheath may be included. A device can be provided having a motor controlling the cannulation device orientation to scan tissue with the tip of the needle by moving the cannulation device through the ultrasound transducer.



INTERNATIONAL SEARCH REPORT

International application No  
PCT/IB2016/001013

A. CLASSIFICATION OF SUBJECT MATTER  
INV. A61B5/153 A61M5/32 A61M25/06  
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)  
A61B A61M

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)  
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2013/281787 A1 (AVNERI ITZHAK [IL] ET AL) 24 October 2013 (2013-10-24)	1-10, 17-24, 26-41
Y	paragraphs [0149] - [0152], [0156] - [0164], [0184]; figures 2a-2f, 3a-3c paragraphs [0217] - [0225]; figures 40d,42 -----	11-16,25
X	US 5 312 361 A (ZADINI FILIBERTO P [US] ET AL) 17 May 1994 (1994-05-17) column 5, lines 4-44; figures 1,2 column 15, line 34 - column 16, line 66; claims 6,53,80; figure 58 -----	1-41
Y	WO 2014/006403 A1 (UNIV HOSPITALS OF LEICESTER NHS TRUST [GB]) 9 January 2014 (2014-01-09) page 13, lines 20-32 ----- -/--	11-16,25

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

"E" earlier application or patent but published on or after the international filing date

"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)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"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

"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

"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

"&" document member of the same patent family

Date of the actual completion of the international search  21 November 2016	Date of mailing of the international search report  24/01/2017
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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  Kronberger, Raphael
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## INTERNATIONAL SEARCH REPORT

International application No  
PCT/IB2016/001013

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 2014/378867 A1 (BELSON AMIR [US]) 25 December 2014 (2014-12-25) paragraphs [0074], [0084] - [0087], [0098] - [0101]; figures 4-8 -----	1,11-16, 26

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/IB2016/001013

## 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.: 56-70  
because they relate to subject matter not required to be searched by this Authority, namely:  
Rule 39.1(iv) PCT  
Claims 56-70 relate to a method for treatment of the human or animal body by surgery.
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.:

1-41

### 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.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/IB2016/001013
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2013281787	A1	24-10-2013	NONE
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		US 2016022963 A1	28-01-2016
		WO 2008137956 A2	13-11-2008

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-41

an automatic vessel cannulation device comprising a needle having a needle tip, a sensor being configured to detect a physiologic parameter at the needle tip, and a blunting device advancing member operably coupled to the sensor and configured to automatically advance a blunting device when the sensor detects that the physiologic parameter within a pre-determined range.

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2. claims: 42-55

An expandable sheath comprising longitudinal beams and an inner layer; and an expandable sheath wherein in a crimped state, the sheath inner diameter is in a tight fit with a needle, and wherein in the expanded state, the sheath inner diameter is at least double the sheath inner diameter in the crimped state.

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