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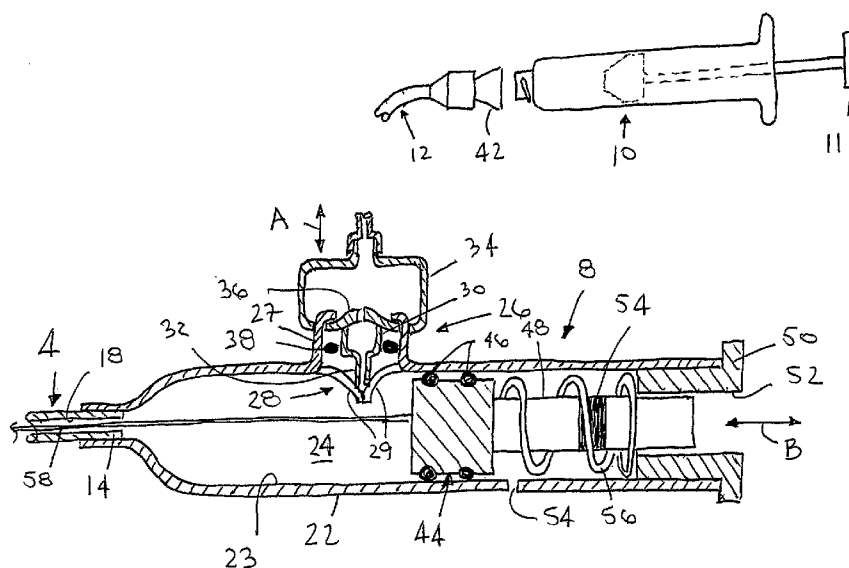
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[Continued on next page]

(54) Title: APPARATUS AND METHODS FOR SEALING A PUNCTURE IN TISSUE



(57) Abstract: An apparatus for sealing a puncture through tissue includes an elongate member having a lumen extending between proximal and distal ends thereof, and a balloon carried on the distal end. In one embodiment, a housing on the proximal end includes an interior communicating with the lumen, and a valve assembly, e.g., with a one-way valve allowing access into the interior upon applying a pressure differential across the valve, and a plunger for overriding and opening the valve. In another embodiment, a port adjacent the proximal end communicates with the lumen, and a fluid source is connectable to the elongate member for delivering fluid via the port into the lumen for expanding the balloon. A piston is movable axially within the elongate member to deliver fluid into the lumen, to isolate the lumen, and/or to deliver fluid within the lumen into the balloon to expand the balloon.

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RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA,  
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*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

# INTERNATIONAL SEARCH REPORT

International application No  
PCT/US2006/014562

## A. CLASSIFICATION OF SUBJECT MATTER

INV. A61B17/00 A61M25/10 F16K15/14 A61B17/34  
ADD. A61M39/22 A61M39/24 A61B19/00

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 F16K

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)

EP0-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.
Y	US 2004/249342 A1 (KHOSRAVI FARHAD ET AL) 9 December 2004 (2004-12-09) paragraph [045-] - paragraph [0057] paragraph [0065] paragraphs [0069], [0070] -----	1-17
Y	WO 95/33510 A (WILLIS, ALLAN) 14 December 1995 (1995-12-14) page 4, line 27 - line 33 -----	1-17
Y	US 4 948 092 A (KASPER ET AL) 14 August 1990 (1990-08-14) column 4, line 46 - column 5, line 15 -----	2-17
A	US 5 085 249 A (DRAGAN ET AL) 4 February 1992 (1992-02-04) column 3, line 10 - column 4, line 18 ----- -/--	2-11, 13-17

☒ 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 document but published on or after the international filing date

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"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

14 August 2006

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## INTERNATIONAL SEARCH REPORT

International application No

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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 4 598 707 A (AGDANOWSKI ET AL) 8 July 1986 (1986-07-08) column 5, line 8 - line 29 -----	12

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US2006/014562

## Box 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.: **18-20, 43-45**  
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**
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 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 fee, this Authority did not invite payment of any additional fee.
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.
- ☐ 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: 1-17

An apparatus for providing hemostasis directed to valve assembly for overriding and opening said valve to allow access to the housing interior.

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2. claims: 21-42

An occlusion device for sealing a puncture through tissue, directed to an elongate piston member movable within the lumen of a tubular member for delivering fluid.

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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US 5085249	A	04-02-1992	NONE
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US 4598707	A	08-07-1986	NONE
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