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(71) Applicant (for all designated States except US): **ENDIUS, INC.** [US/US]; 23 West Bacon Street, Plainville, Massachusetts 02762 (US).

(72) Inventors; and

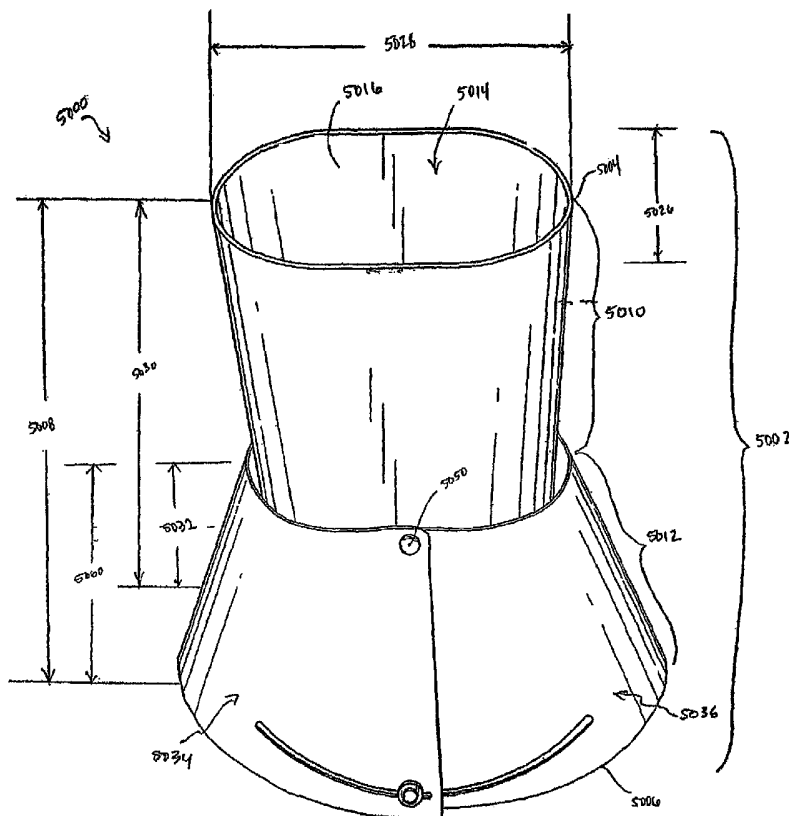
(75) Inventors/Applicants (for US only): **SHLUZAS, Alan, E.** [US/US]; 84 Acorn Street, Millis, Massachusetts 02054 (US). **KIRKI III, Karl, Dallas** [US/US]; 104 Bedford Street, Apt. 3D, New York, New York 10014 (US). **STOECKMANN, Walter** [US/US]; 1100 Grand Street, #510, Hoboken, New Jersey 07030 (US). **VAN ROYEN, Donald** [US/US]; 210 West 70th Street, Apt. 914, New York, New York 10023 (US). **LOWERY, Gary** [US/US]; 4136 E. Hancock Drive, Phoenix, Arizona 85028 (US). **DIPOTO, Gene** [US/US]; 23 Crockett Road, Upton, MA 01568 (US).

(74) Agent: **ALTMAN, Daniel, E.**; 2040 Main Street, Fourteenth Floor, Irvine, California 92614 (US).

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[Continued on next page]

(54) Title: ACCESS SYSTEMS AND METHODS FOR MINIMALLY INVASIVE SURGERY



(57) Abstract: In one embodiment a device (5000) for retracting tissue provides access to a spinal location within a patient. The device has an elongate body (5002) that has a proximal end and a distal end. The elongate body has a length between the proximal and distal ends such that the distal end can be positioned inside the patient adjacent the spinal location. The elongate body has a generally oval shaped proximal portion (5010) and an expandable distal portion (5012). A passage (5014) extends through the elongate body between the proximal and distal ends. The passage is defined by a smooth metal inner surface extending substantially entirely around the perimeter of the passage between the proximal and distal ends. The elongate body is expandable between a first configuration (5052, 5054) sized for insertion into the patient and a second configuration (5056, 5058) wherein the cross-sectional area of the passage at the distal end is greater than the cross-sectional area of the passage at the proximal end.



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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER IPC 7 A61B17/02 A61B17/17 A61B17/34				
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) IPC 7 A61B				
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 2003/073998 A1 (UNGER JOHN D ET AL) 17 April 2003 (2003-04-17) paragraph [0198] - paragraph [0201] figures 35-45	1-3,6, 11-21, 23-29		
A	EP 0 807 415 A (OLYMPUS OPTICAL CO) 19 November 1997 (1997-11-19) column 48, line 38 - column 54, line 59 figures 57-70	1-3,6, 11-21, 23-29		
☐ Further documents are listed in the continuation of box C. ☒ Patent family members are listed in annex.				
* Special categories of cited documents : <table border="0"> <tr> <td> "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 "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 </td> <td> "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 </td> </tr> </table>			"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 "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
"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 "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 17 January 2005		Date of mailing of the international search report 12. 04. 2005		
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016		Authorized officer Storer, J		

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2004/027761

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.:
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 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.:

1-30

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International Application No. PCT/ US2004/ 027761

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

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

1. claims: 1-30

A device for retracting tissue to provide access to a spinal location within a patient, said device comprising an elongate body having a proximal end and a distal end, and an inner surface, said inner surface defining a passage extending through the elongate body and through which surgical instruments can be inserted to the surgical location, said elongate body being expandable from a first configuration to a second configuration when located within the patient such that in the second configuration the cross-sectional area of said passage at a first location is greater than the cross-sectional area of said passage at a second location, wherein the first location is distal to the second location, said passage being capable of having a generally oval shaped cross section between the second location and the proximal end.

2. claims: 31-38

A device for providing access to a surgical location within a patient, said device comprising an elongate body having a proximal end, a distal end and an inner surface, said inner surface defining a passage extending through the elongate body and through which surgical instruments can be inserted to the surgical location, said elongate body capable of having a configuration when located within the patient wherein the cross-sectional area of said passage at a first location is greater than the cross-sectional area of said passage at a second location, wherein the first location is distal to the second location, said passage being capable of having a cross section between the second location and the proximal end wherein the cross section is defined by first and second generally parallel opposing side portions and first and second generally arcuate opposing side portions.

3. claims: 39-48

INTERNATIONAL SEARCH REPORT

International Application No. PCT/ US2004/ 027761

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

A device for providing access to a surgical location within a patient, said device comprising an elongate body having a proximal end, a distal end and an inner surface, said inner surface defining a passage extending through the elongate body and through which surgical instruments can be inserted to the surgical location, said elongate body capable of having a configuration when located within the patient wherein the cross-sectional area of said passage at a first location is greater than the cross-sectional area of said passage at a second location, wherein the first location is distal to the second location, and a lighting element is coupled with said elongate body to provide light to the surgical location.

4. claims: 49-51

A device for providing access to a surgical location within a patient, said device comprising an elongate body having a proximal portion, a distal portion, a first slot segment, and a second slot segment that is angled relative to said first slot segment, said elongate body defining a passage for accessing the surgical location with surgical instruments, said elongate body capable of having a contracted configuration for insertion into the patient and an expanded configuration for providing access to the surgical location, wherein the cross-sectional area of said passage at a first location is greater than the cross-sectional area of said passage at a second location of the elongate body, and a movable tab is configured to extend into said second slot segment when said elongate body is in the expanded configuration to retain said elongate body in the expanded configuration.

5. claims: 52-70

A device for providing access to a surgical location within a patient, said device comprising an elongate body having a proximal portion, a distal portion, and an inner surface defining a passage extending through the elongate body, said passage capable of providing access for surgical instruments to be inserted to the surgical location, said elongate body capable of having a configuration wherein the cross-sectional area of said passage at a first location is greater than the cross-sectional area of said passage at a second location, the first location being distal to the second location, and a lock is coupled with the elongate body, the lock being actuatable to maintain the elongate body in said configuration.

6. claims: 71-76

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

A device for providing access to a surgical location within a patient, said device comprising an elongate body having a proximal portion, a distal portion coupled with said proximal portion, and an inner surface defining a passage extending through the elongate body and through which surgical instruments can be inserted to the surgical location, said elongate body capable of being expandable from a contracted configuration to an expanded configuration wherein the cross-sectional area of said passage at a first location in the distal portion is greater than the cross-sectional area of said passage at a second location in the proximal portion, said passage having an oblong shaped cross-section at the second location, wherein said elongate body is capable of resisting actuation from the expanded configuration to the contracted configuration when deployed.

7. claims: 77-90

A retractor comprising, an elongate body having an outer surface, an inner surface partially defining a passage, a first longitudinal edge, and a second longitudinal edge, said elongate body capable of having an enlarged configuration when inserted within the patient wherein the first longitudinal edge is spaced apart from the second longitudinal edge, and an expandable shroud configured to extend from the first longitudinal edge to the second longitudinal edge when the first and second edges are spaced apart, the shroud partially defining the passage, wherein the cross-sectional area of said passage at a first location is greater than the cross-sectional area of said passage at a second location, wherein the first location is distal to the second location.

8. claims: 91-100

A device for retracting tissue to provide access to a spinal location within a patient, said device comprising an elongate body having a proximal portion and a distal portion, the elongate body defining a length between the proximal and the distal portions along a longitudinal axis such that the distal portion can be positioned inside the patient adjacent the spinal location while the proximal portion is accessible, a transverse cross-section of the elongate body in the proximal portion comprising a first dimension that is longer than a second dimension, the first dimension being perpendicular to the second dimension, and a passageway extending through the elongate body between the proximal and distal portions, wherein the elongate body is configured such that the proximal portion may be tilted relative to the distal portion in a first direction generally aligned with the first dimension and in a second direction generally aligned with the second dimension.

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FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

9. claims: 101-103

A device for retracting tissue to provide access to a spinal location within a patient, said device comprising a proximal portion partially defining a passage through which surgical instruments can be inserted to the surgical location, a distal portion partially defining the passage, a first joint located on a first side of the passage and a second joint located on a second side of the passage opposite the first joint; wherein said proximal portion is capable of being moved relative to said distal portion about a first axis extending through the first and second joints and about a second axis perpendicular to the first axis.

INTERNATIONAL SEARCH REPORT

Information on patent family members

Internati

Application No

PCT/US2004/027761

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