



(43) International Publication Date
25 September 2014 (25.09.2014)

- (51) International Patent Classification:
A61B 17/32 (2006.01)
- (21) International Application Number:
PCT/US2014/022462
- (22) International Filing Date:
10 March 2014 (10.03.2014)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
13/834,248 15 March 2013 (15.03.2013) US
- (71) Applicant: **ETHICON ENDO-SURGERY, INC.**
[US/US]; 4545 Creek Road, Cincinnati, Ohio 45242 (US).
- (72) Inventors: **MESSERLY, Jeffrey D.**; 6757 Treeridge Drive, Cincinnati, Ohio 45244 (US). **WITT, David A.**; 1187 Chaucer Place, Maineville, Ohio 45039 (US). **STULEN, Foster B.**; 6245 Bridgewater Court, Mason, Ohio 45040 (US). **PAPA, Christopher A.**; 9868 Bolingbroke Drive, Cincinnati, Ohio 45241 (US). **BATTAGLIA, Vincent P, Jr.**; 277 Ludlow Court, Lebanon, Ohio 45036 (US).
- (74) Agents: **JOHNSON, Philip S.** et al.; Johnson & Johnson, One Johnson & Johnson Plaza, New Brunswick, New Jersey 08933 (US).
- (81) Designated States (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY,

BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

- (84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- as to the identity of the inventor (Rule 4.17(i))
- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

Published:

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

[Continued on next page]

(54) Title: ULTRASONIC SURGICAL SHEARS WITH CLAMPING FEATURE

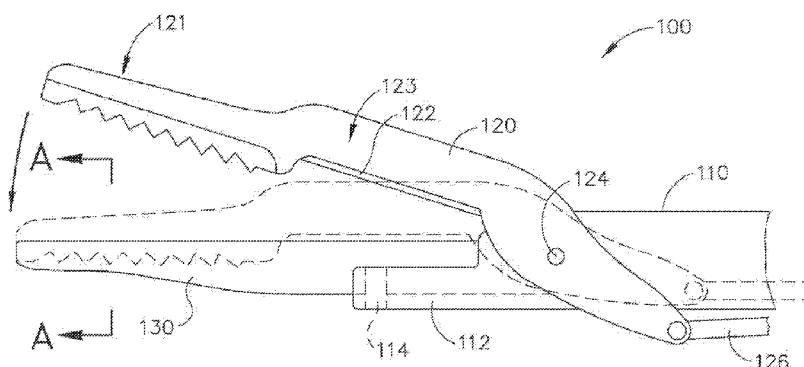


Fig. 2

(57) Abstract: An apparatus for operating on tissue comprises a shaft, an acoustic waveguide, and an end effector. The acoustic waveguide extends along the shaft and is configured to transmit ultrasonic vibration. The end effector comprises an ultrasonic blade and a clamp arm. The ultrasonic blade is in acoustic communication with the acoustic waveguide. The clamp arm is pivotable toward the ultrasonic blade. The end effector defines a first longitudinal region and a second longitudinal region. The end effector is configured to clamp tissue between the clamp arm and the ultrasonic blade in the first longitudinal region. The end effector is configured to sever tissue with the ultrasonic blade in the second longitudinal region.





-
- *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))* (88) **Date of publication of the international search report:**
18 December 2014

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2014/022462

A. CLASSIFICATION OF SUBJECT MATTER
INV. A61B17/32
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

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 6 569 178 B1 (MIYAWAKI MAKOTO [JP] ET AL) 27 May 2003 (2003-05-27)	1-6,13,17,20
Y	column 27, line 60 - column 29, line 56; figures 34-37,46	7-11,14-16
X	US 2009/143806 A1 (WITT DAVID A [US] ET AL) 4 June 2009 (2009-06-04) paragraphs [0032], [0065]; figures 15,16	1-4,6,13,17
X	US 5 322 055 A (DAVISON THOMAS W [US] ET AL) 21 June 1994 (1994-06-21) column 13, line 3 - line 19; figures 8k-8o,9,10	1,6,12,13,17
A	US 2007/198005 A1 (ICHIHASHI HIROSHI [JP] ET AL) 23 August 2007 (2007-08-23) figures 7-15	3,5,20
	-/--	



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

20 October 2014

Date of mailing of the international search report

27/10/2014

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

Mayer-Martenson, E

INTERNATIONAL SEARCH REPORT

International application No

PCT/US2014/022462

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 2009/030311 A1 (STULEN FOSTER B [US] ET AL) 29 January 2009 (2009-01-29)	18,19
Y	paragraphs [0091], [0131] - [0136], [0144], [0147]; figures 3b,14-16,22-25 -----	7-11, 14-16
A	US 2009/099582 A1 (ISAACS KAREN K [US] ET AL) 16 April 2009 (2009-04-16) paragraphs [0116] - [0119]; figure 10C -----	18,19

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2014/022462

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:

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.:

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: 2-6, 12, 17, 20(completely); 1(partially)

apparatus with clamp arm, first clamping region and second severing region

2. claims: 7-11, 14-16(completely); 1(partially)

apparatus with clamp arm and additional outer tube with blade support

3. claims: 18, 19

apparatus with clamp arm and different clamp pads

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2014/022462

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6569178	B1	27-05-2003	NONE
US 2009143806	A1	04-06-2009	AU 2008331567 A1 11-06-2009 CA 2707223 A1 11-06-2009 CN 101883530 A 10-11-2010 EP 2227155 A2 15-09-2010 JP 2011505198 A 24-02-2011 US 2009143806 A1 04-06-2009 WO 2009073402 A2 11-06-2009
US 5322055	A	21-06-1994	CA 2153155 A1 04-08-1994 DE 69432741 D1 03-07-2003 DE 69432741 T2 25-03-2004 DE 69433704 D1 13-05-2004 DE 69433704 T2 28-04-2005 DE 69434776 T2 28-06-2007 EP 0681457 A1 15-11-1995 EP 1125555 A1 22-08-2001 EP 1433425 A1 30-06-2004 JP H08505801 A 25-06-1996 US 5322055 A 21-06-1994 WO 9416631 A1 04-08-1994
US 2007198005	A1	23-08-2007	CN 101370440 A 18-02-2009 EP 1987793 A1 05-11-2008 JP 4879966 B2 22-02-2012 US 2007198005 A1 23-08-2007 WO 2007097330 A1 30-08-2007
US 2009030311	A1	29-01-2009	AU 2008282457 A1 05-02-2009 CA 2694652 A1 05-02-2009 CN 101765495 A 30-06-2010 EP 2185348 A2 19-05-2010 JP 5551071 B2 16-07-2014 JP 2010534525 A 11-11-2010 US 2009030311 A1 29-01-2009 US 2013226207 A1 29-08-2013 WO 2009018083 A2 05-02-2009
US 2009099582	A1	16-04-2009	AU 2008310869 A1 16-04-2009 CA 2702075 A1 16-04-2009 CN 101820825 A 01-09-2010 EP 2242434 A1 27-10-2010 JP 5587191 B2 10-09-2014 JP 2011500161 A 06-01-2011 US 2009099582 A1 16-04-2009 WO 2009049016 A1 16-04-2009