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(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). **MONROE, Emily H.**; 11 Bradnor Place, Cincinnati, Ohio 45218 (US). **MARCOTTE, Amy L.**; 3877 Lost Willow Drive, Mason, Ohio 45040 (US). **WEED, John A., III**; 35 Ridge Wood

Drive, Monroe, Ohio 45050 (US). **GEE, Jacob S.**; 5060 Lord Alfred Court, Cincinnati, Ohio 45241 (US). **FELDER, Kevin D.**; 2460 Downing Drive, Cincinnati, Ohio 45208 (US). **WEISENBURGH, William B., II**; 974 Airy-meadows Drive, Maineville, Ohio 45039 (US). **PRICE, Daniel W.**; 185 Overlook Drive, Loveland, Ohio 45140 (US). **WILLIS, John W.**; 5098 Palermo Road, Cincinnati, Ohio 45244 (US). **SCOGGINS, Patrick J.**; 10088 Bentcreek Drive, Loveland, Ohio 45140 (US). **FALLER, Craig N.**; 5960 E. Day Circle, Milford, Ohio 45150-2360 (US). **LAIRD, Robert J.**; 3407 Gray Fox Trail, Morrow, Ohio 45152 (US). **KEYT, Brian E.**; 6263 Lindsey Road, China Township, Michigan 48054 (US). **SCHULTE, John B.**; 6769 Timberwood Drive, West Chester, Ohio 45069 (US). **CZARNECKI, Jarema S.**; 7324 Cold Water Court, Centerville, Ohio 45459 (US). **STORM, Thor J.**; 8747 B. Harper Point Drive, Cincinnati, Ohio 45249 (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,

[Continued on nextpage]

(54) Title: ULTRASONIC AND ELECTROSURGICAL DEVICES

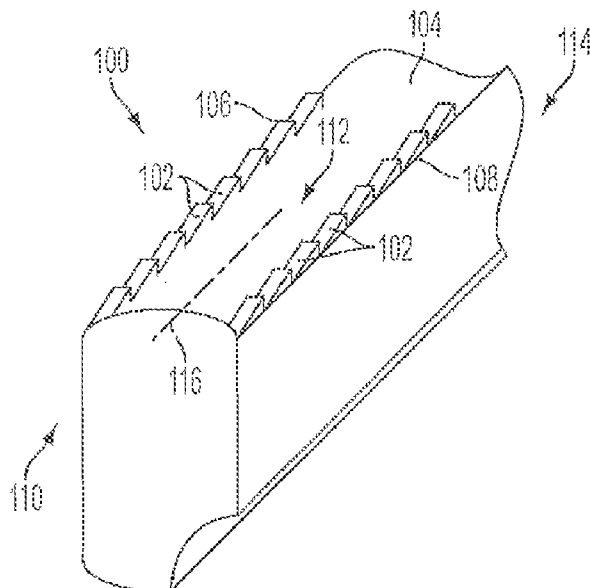


FIG. 1

(57) Abstract: Disclosed are ultrasonic and electrosurgical devices. The disclosed embodiments include ultrasonic blades comprising various grasping features, devices configured to prevent ingress of surgical matter, e.g., fluid and tissue, in the space between an ultrasonic blade and an inner or outer tube distal of the distal seal, alternate closure mechanisms for ultrasonic devices, ultrasonic transducer rotation limiters to limit the rotation of an ultrasonic transducer, ultrasonic transducer rotation systems to provide unlimited continuous rotation of an ultrasonic device, integrated ultrasonic instrument electrically connected to provide RF spot coagulation with an ultrasonic (RF) generator, and coated ultrasonic/RF blades.

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(h))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(in))

Published:

- with international search report (Art. 21(5))
- 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))

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16 October 2014

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2013/07Q12O

A. CLASSIFICATION OF SUBJECT MATTER

INV. A61B17/32 A61B18/14 A61B18/00 A61B17/29 A61B19/00
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

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X	us 6 436 114 BI (NOVAK PAVEL [CH] ET AL) 20 August 2002 (2002-08-20)	38-43
Y	figures 7-9 -----	1-9, 11
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Y	us 5 935 144 A (ESTABROOK BRIAN [US]) 10 August 1999 (1999-08-10) figures 1-7 column 5, line 11 - line 50 ----- -/--	1-5,8,9, 11

☒ 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

8 September 2014

Date of mailing of the international search report

17/09/2014

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

Cornel i ssen , P

INTERNATIONAL SEARCH REPORT

International application No

PCT/US2013/070120

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Y	EP 2 106 758 A1 (TYCO HEALTHCARE [US]) 7 October 2009 (2009-10-07) figure 6a -----	25,26,29
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INTERNATIONAL SEARCH REPORT

International application No

PCT/US2013/07Q 120

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
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INTERNATIONAL SEARCH REPORT

International application No
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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
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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.
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US20 13/07Q 120

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: 1-16

ultrasonic instrument with a tissue accumulation impedance mechanism

2. claims: 17-29

ultrasonic surgical instrument with a tissue retention feature

3. claims: 30-35

ultrasonic surgical instrument with a rotation shroud and rotation stop mechanism

4. claim: 36

ultrasonic surgical instrument with a counter deflection element

5. claim: 37

ultrasonic surgical instrument with signal source having an electrosurgical signal and a sealing button

6. claims: 38-41

ultrasonic surgical instrument with a cam surface

7. claims: 42, 43

ultrasonic surgical instrument with a four bar linkage

8. claims: 44-61

ultrasonic surgical instrument with the end effector coated with a thermally and electrically insulative material

9. claims: 62-66

ultrasonic surgical instrument with a heat shield

10. claims: 67-70

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

integrated Rf/ul trasound surgi cal i nstrument with a jack
connector and a sl i dabl e female mati ng pl ug

11. cl aims: 71-73

a rongeur devi ce with a pi vot

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2013/07Q120

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International application No

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