



(51) International Patent Classification:
A61B 17/072 (2006.01)

(21) International Application Number:
PCT/US2014/020614

(22) International Filing Date:
5 March 2014 (05.03.2014)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
13/851,693 27 March 2013 (27.03.2013) US

(71) Applicant: **ETHICON ENDO-SURGERY, INC.**
[US/US]; 4545 Creek Road, Cincinnati, OH 45242 (US).

(72) Inventors: **WEANER, Lauren, S.**; 7985 Quebec Court, Cincinnati, OH 45241 (US). **ARONHALT, Taylor, W.**; 306 Beech Road, Loveland, OH 45140 (US). **VENDELY, Michael, J.**; 1505 Shaker Run Blvd., Lebanon, OH 45036 (US). **SCHELLIN, Emily, A.**; 11919 Snider Road, Cin-

cinnati, OH 45249 (US). **SHELTON, Frederick, E., IV**; 245 East Main Street, Hillsboro, OH 45133 (US).

(74) Agents: **JOHNSON, Philip, S.** et al.; Johnson & Johnson, One Johnson & Johnson Plaza, New Brunswick, NJ 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,

[Continued on next page]

(54) Title: FASTENER CARTRIDGE ASSEMBLIES

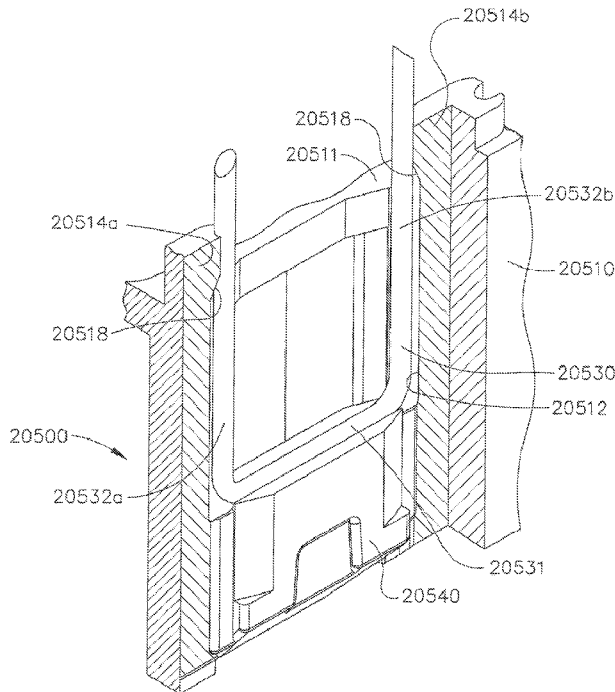
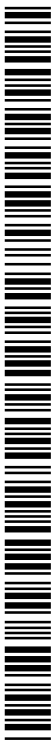


FIG. 396

(57) Abstract: A fastener cartridge assembly. The fastener cartridge assembly can comprise a fastener (20530), a cartridge body, and a tissue thickness compensator. The fastener can comprise a base, a first leg extending from the base, and a second leg extending from the base. The cartridge body can comprise a fastener cavity (20512) for receiving the fastener and a trajectory control (20514) for controlling the trajectory of the first and second legs of the fastener. The fastener can be removable from the fastener cavity along a fastener axis. The trajectory control can extend inwardly toward the fastener axis and can bias the first leg and the second leg toward alignment with the fastener axis when the fastener is positioned in the fastener cavity.





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).

— *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))*

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))*

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

5 February 2015

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2014/020614

A. CLASSIFICATION OF SUBJECT MATTER
INV. A61B17/072
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 2012/080493 A1 (SHELTON IV FREDERICK E [US] ET AL) 5 April 2012 (2012-04-05) cited in the application	1,2,4,5, 12-19
A	figures 245,246,251 paragraphs [0573] - [0576], [0579]	3,6-11
X,P	US 2013/256375 A1 (SHELTON IV FREDERICK E [US] ET AL) 3 October 2013 (2013-10-03)	1,3, 6-12,16, 17
L	figures 283-285 paragraph [0903]	1-22
A	WO 2013/036409 A1 (ETHICON ENDO SURGERY INC [US]; SWENSGARD BRETT E [US]) 14 March 2013 (2013-03-14) figures 13,14	20-22

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

7 November 2014

Date of mailing of the international search report

20/11/2014

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

Schießl, Werner

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2014/020614

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: 1-19

A fastener cartridge assembly wherein the trajectory control defines a second width that is less than a first width defined by the fastener cavity (claim 3) or wherein the staple stressor defines a stressor length between its first and second guide, the stressor length being less than the cavity length (claim 6). Thereby, a gap between the fastener / staple legs biased by the trajectory control / staple stressor and the cavity wall is achieved so that there is less friction when ejecting the fastener / staple (see para. 726).

2. claim: 20

A fastener cartridge assembly wherein a second set of control nodes is provided, which comprise a set of release points positioned below said deck (claim 20), which results in additional release points with respect to the fastener axis. Such cooperating release points prevent skewing and/or torquing of the fastener during deployment (see para. 732).

3. claim: 21

A fastener cartridge assembly wherein the set of control nodes releases said first leg and said second leg prior to deformation of the fastener (claim 21) in order to allow full splaying, i. e. span, of the fastener legs before any deformation.

4. claim: 22

A fastener cartridge assembly wherein the set of control nodes releases said first leg and said second leg after at least partial deformation of the fastener (claim 22) in order to prevent any temporary outward splay of the fastener legs before the deformation (see para. 731).

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/US2014/020614

Patent document cited in search report	Publication date	Patent family member(s)	Publication date	
US 2012080493	A1	05-04-2012	CN 103945778 A	23-07-2014
			EP 2757971 A2	30-07-2014
			US 2012080493 A1	05-04-2012
			WO 2013043721 A2	28-03-2013

US 2013256375	A1	03-10-2013	NONE	

WO 2013036409	A1	14-03-2013	US 2013056518 A1	07-03-2013
			US 2013056520 A1	07-03-2013
			US 2013056521 A1	07-03-2013
			WO 2013036408 A1	14-03-2013
			WO 2013036409 A1	14-03-2013
			WO 2013036410 A1	14-03-2013
			WO 2013036411 A1	14-03-2013
