



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

(21) International Application Number:
PCT/US2015/048864

(22) International Filing Date:
8 September 2015 (08.09.2015)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
14/498,087 26 September 2014 (26.09.2014) US

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

(72) Inventors: HARRIS, Jason L.; 4545 Creek Road, Cincinnati, Ohio 45242 (US). MORGAN, Jerome R.; 4545 Creek Road, Cincinnati, Ohio 45242 (US). ZEINER, Mark S.; 4545 Creek Road, Cincinnati, Ohio 45242 (US). SHELTON, IV, Frederick E.; 4545 Creek Road, Cincinnati, Ohio 45242 (US).

(74) Agents: PLANTZ, Bernard F. 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, 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, ST, 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))

[Continued on next page]

(54) Title: SURGICAL STAPLE AND DRIVER ARRANGEMENTS FOR STAPLE CARTRIDGES

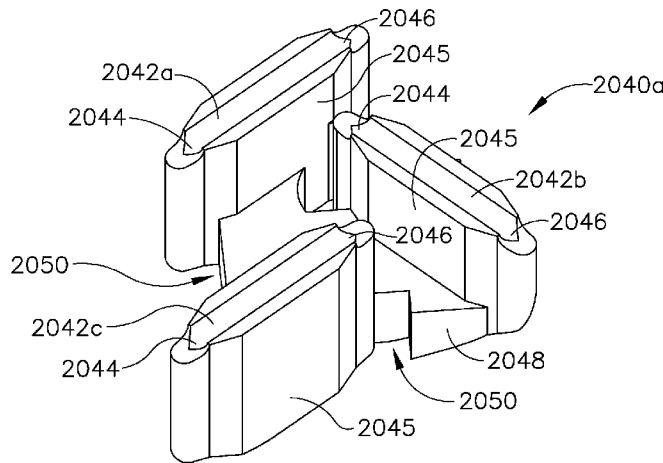


FIG. 8

(57) Abstract: A staple cartridge that includes a multi-staple driver is disclosed. The multi-staple driver is configured to drive multiple staples from the staple cartridge. The staples are arranged in a staple array in which at least one staple is angularly-oriented relative to the longitudinal axis of the staple cartridge. The multi-staple driver can drive staples at various angular orientations and/or from multiple rows of staple cavities. A driverless staple cartridge is also disclosed. A sled in the driverless cartridge is configured to directly engage and drive staples. The staples are arranged in a staple array in which at least one staple is angularly-oriented relative to the longitudinal axis of the driverless staple cartridge.

WO 2016/048645 A3



— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))* — *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))*

Published:

— *with international search report (Art. 21(3))*

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

12 May 2016

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2015/048864

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 2010/072258 A1 (FARASCIONI DAVID [US] ET AL) 25 March 2010 (2010-03-25) paragraphs [0046], [0050]; figure 21	1-7, 9-11, 13-21
X	EP 0 623 311 A2 (ETHICON INC [US]) 9 November 1994 (1994-11-09) column 5, line 20 - line 48	1-4, 8-10,12
X	US 2013/172929 A1 (HESS CHRISTOPHER J [US] ET AL) 4 July 2013 (2013-07-04) paragraphs [0452], [0453]; figures 174,175	23,24, 26,28-30
A	EP 2 116 197 A2 (TYCO HEALTHCARE [US]) 11 November 2009 (2009-11-11) paragraph [0072]	1
	----- -/--	

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 23 March 2016	Date of mailing of the international search report 31/03/2016
--	--

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 Angeli, Markus
--	--

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2015/048864

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 2008/023522 A1 (OLSON LEE A [US] ET AL)	1-3
A	31 January 2008 (2008-01-31) paragraph [0170] -----	20

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/US2015/048864

Patent document cited in search report	Publication date	Patent family member(s)	Publication date	
US 2010072258	A1	25-03-2010	AU 2010212398 A1	17-03-2011
			CA 2713615 A1	03-03-2011
			EP 2292155 A2	09-03-2011
			JP 5638321 B2	10-12-2014
			JP 2011050744 A	17-03-2011
			US 2010072258 A1	25-03-2010
			US 2011264137 A1	27-10-2011
			US 2012325891 A1	27-12-2012
			US 2014183242 A1	03-07-2014
EP 0623311	A2	09-11-1994	CA 2122773 A1	06-11-1994
			EP 0623311 A2	09-11-1994
			GR 1002619 B	21-02-1997
			US 5364003 A	15-11-1994
			US 5417361 A	23-05-1995
US 2013172929	A1	04-07-2013	NONE	
EP 2116197	A2	11-11-2009	AU 2009201771 A1	26-11-2009
			CA 2665065 A1	09-11-2009
			EP 2116197 A2	11-11-2009
			JP 5612273 B2	22-10-2014
			JP 2009268910 A	19-11-2009
			JP 2014061394 A	10-04-2014
			US 2009277948 A1	12-11-2009
			US 2015157318 A1	11-06-2015
US 2008023522	A1	31-01-2008	AU 2008203263 A1	19-03-2009
			CA 2638156 A1	28-02-2009
			CA 2897953 A1	28-02-2009
			CN 101502429 A	12-08-2009
			CN 102319095 A	18-01-2012
			CN 102512220 A	27-06-2012
			EP 2042106 A1	01-04-2009
			EP 2343015 A1	13-07-2011
			EP 2433572 A1	28-03-2012
			ES 2366064 T3	14-10-2011
			ES 2448395 T3	13-03-2014
			JP 5275724 B2	28-08-2013
			JP 5628369 B2	19-11-2014
			JP 2009056310 A	19-03-2009
			JP 2013172983 A	05-09-2013
			JP 2013176610 A	09-09-2013
			US 2008023522 A1	31-01-2008
			US 2010072255 A1	25-03-2010
			US 2010127043 A1	27-05-2010
			US 2012055971 A1	08-03-2012
US 2013087602 A1	11-04-2013			

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

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

1. claims: 1-22

A staple cartridge directed to a special driver for grouping staples.

2. claims: 23-30

A staple cartridge directed to a special staple for directly engaging a sled.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2015/048864

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.