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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))

[Continued on next page]

(54) Title: CURVED END EFFECTOR FOR A STAPLING INSTRUMENT

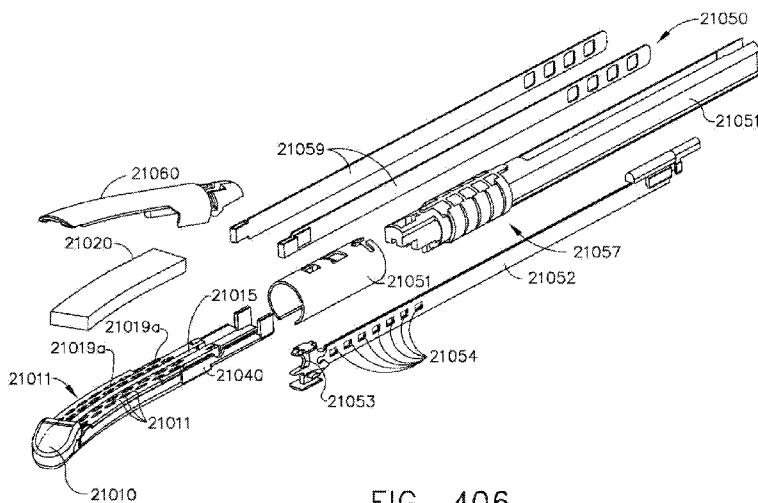


FIG. 406

(57) **Abstract:** A staple cartridge for use with a surgical stapler can comprise a cartridge deck and a plurality of staples at least partially positioned within the cartridge deck. In various embodiments, the staples can be supported by a support jaw of the surgical stapler and can comprise legs which can extend upwardly through apertures defined in the cartridge deck. The support jaw can comprise stationary staple drivers (20043) which can support the staples in curved rows as the staples are deformed by an anvil of the surgical stapler. In certain embodiments, the staple cartridge can further comprise a plurality of staple drivers which can be configured to support and eject the staples along curved staple rows.

Published:

- *with international search report (Art. 21(3))*
- *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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INTERNATIONAL SEARCH REPORT

International application No
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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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 1 943 962 A2 (ETHICON ENDO SURGERY INC [US]) 16 July 2008 (2008-07-16) paragraphs [0040], [0041], [0064]; figures 13,14,45 -----	1-7
A	EP 2 005 895 A2 (TYCO HEALTHCARE [US]) 24 December 2008 (2008-12-24) figures 3,7,9,12 -----	1-6
X	WO 96/22055 A1 (YOON INBAE [US]) 25 July 1996 (1996-07-25)	7-14
A	page 13; figures 12,31 -----	1-6
A	EP 1 719 461 A2 (TYCO HEALTHCARE [US]) 8 November 2006 (2006-11-08) figures 1,17 -----	1-6
		-/-

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

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"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	Date of mailing of the international search report
5 November 2013	12/11/2013
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 Assion, Jean-Charles

INTERNATIONAL SEARCH REPORT

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.

INTERNATIONAL SEARCH REPORT

International application No PCT/US2012/056119

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A,P	US 2012/080344 A1 (SHELTON IV FREDERICK E [US]) 5 April 2012 (2012-04-05) figures 13A,25 -----	1
A	US 2008/078808 A1 (HESS CHRISTOPHER J [US] ET AL) 3 April 2008 (2008-04-03) figures 23,27,35,37,47 -----	7
A	US 2007/034667 A1 (HOLSTEN HENRY E [US] ET AL HOLSTEN HENRY [US] ET AL) 15 February 2007 (2007-02-15) paragraph [0155]; figure 21A -----	7-10
A	US 6 488 196 B1 (FENTON JR PAUL V [US]) 3 December 2002 (2002-12-03) figures 3,4,11,12 -----	7
A	US 4 585 153 A (FAILLA STEPHEN J [US] ET AL) 29 April 1986 (1986-04-29) figure ,6 -----	7

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application N

PCT/US2012/056119

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2012/056119

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
	CA	2813205 A1	05-04-2012
	CA	2813206 A1	05-04-2012
	CA	2813209 A1	05-04-2012
	CA	2813210 A1	05-04-2012
	CA	2813221 A1	05-04-2012
	CA	2813222 A1	05-04-2012
	CA	2813414 A1	05-04-2012
	CN	103118606 A	22-05-2013
	CN	103124525 A	29-05-2013
	CN	103124527 A	29-05-2013
	CN	103124528 A	29-05-2013
	CN	103140177 A	05-06-2013
	CN	103140179 A	05-06-2013
	CN	103140181 A	05-06-2013
	CN	103140182 A	05-06-2013
	CN	103153202 A	12-06-2013
	CN	103153205 A	12-06-2013
	CN	103153206 A	12-06-2013
	CN	103153207 A	12-06-2013
	CN	103153208 A	12-06-2013
	EP	2621345 A1	07-08-2013
	EP	2621346 A1	07-08-2013
	EP	2621352 A1	07-08-2013
	EP	2621353 A1	07-08-2013
	EP	2621354 A1	07-08-2013
	EP	2621355 A1	07-08-2013
	EP	2621357 A2	07-08-2013
	EP	2621358 A2	07-08-2013
	EP	2621359 A2	07-08-2013
	EP	2621361 A1	07-08-2013
	EP	2621363 A1	07-08-2013
	EP	2621365 A2	07-08-2013
	EP	2621366 A1	07-08-2013
	EP	2621368 A1	07-08-2013
	EP	2621369 A2	07-08-2013
	EP	2621370 A1	07-08-2013
	EP	2621371 A1	07-08-2013
	EP	2621372 A1	07-08-2013
	EP	2621376 A2	07-08-2013
	US	2012080332 A1	05-04-2012
	US	2012080333 A1	05-04-2012
	US	2012080334 A1	05-04-2012
	US	2012080335 A1	05-04-2012
	US	2012080344 A1	05-04-2012
	US	2012080345 A1	05-04-2012
	US	2012080478 A1	05-04-2012
	US	2012080479 A1	05-04-2012
	US	2012080480 A1	05-04-2012
	US	2012080481 A1	05-04-2012
	US	2012080482 A1	05-04-2012
	US	2012080483 A1	05-04-2012
	US	2012080484 A1	05-04-2012
	US	2012080485 A1	05-04-2012
	US	2012080486 A1	05-04-2012
	US	2012080487 A1	05-04-2012
	US	2012080496 A1	05-04-2012
	US	2012080499 A1	05-04-2012
	US	2012080500 A1	05-04-2012

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2012/056119

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
		US	2012080501 A1	05-04-2012
		US	2012080502 A1	05-04-2012
		US	2012080503 A1	05-04-2012
		WO	2012044550 A1	05-04-2012
		WO	2012044551 A1	05-04-2012
		WO	2012044552 A2	05-04-2012
		WO	2012044553 A2	05-04-2012
		WO	2012044554 A1	05-04-2012
		WO	2012044555 A2	05-04-2012
		WO	2012044630 A1	05-04-2012
		WO	2012044631 A1	05-04-2012
		WO	2012044632 A2	05-04-2012
		WO	2012044634 A1	05-04-2012
		WO	2012044643 A2	05-04-2012
		WO	2012044644 A2	05-04-2012
		WO	2012044653 A1	05-04-2012
		WO	2012044654 A2	05-04-2012
		WO	2012044815 A1	05-04-2012
		WO	2012044820 A1	05-04-2012
		WO	2012044838 A1	05-04-2012
		WO	2012044844 A2	05-04-2012
		WO	2012044848 A1	05-04-2012
		WO	2012044853 A1	05-04-2012
		WO	2012044854 A1	05-04-2012
		WO	2012044859 A1	05-04-2012
<hr/>				
US 2008078808	A1	03-04-2008	CN 101534722 A	16-09-2009
			EP 2083708 A1	05-08-2009
			JP 5290182 B2	18-09-2013
			JP 2010504812 A	18-02-2010
			US 2008078808 A1	03-04-2008
			US 2008082115 A1	03-04-2008
			US 2008082125 A1	03-04-2008
			US 2008082126 A1	03-04-2008
			WO 2008042043 A1	10-04-2008
<hr/>				
US 2007034667	A1	15-02-2007	AU 2007202085 A1	06-12-2007
			CA 2588825 A1	18-11-2007
			CN 101073509 A	21-11-2007
			EP 1857057 A2	21-11-2007
			JP 2007307373 A	29-11-2007
			US 2007034667 A1	15-02-2007
			US 2008272175 A1	06-11-2008
			US 2010270356 A1	28-10-2010
<hr/>				
US 6488196	B1	03-12-2002	US 6488196 B1	03-12-2002
			US 2002190093 A1	19-12-2002
<hr/>				
US 4585153	A	29-04-1986	NONE	
<hr/>				

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

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

1. claims: 1-6

staple cartridge comprising a tissue thickness compensator with legs of staples extending into it

2. claims: 7-14

end effector of a surgical stapling instrument comprising stationary drivers
