

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
29 December 2010 (29.12.2010)

(10) International Publication Number
WO 2010/150178 A3

- (51) **International Patent Classification:**
A61B 17/068 (2006.01) A61B 19/00 (2006.01)
- (21) **International Application Number:**
PCT/IB2010/052804
- (22) **International Filing Date:**
21 June 2010 (21.06.2010)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
61/269,664 26 June 2009 (26.06.2009) US
- (72) **Inventor; and**
(71) **Applicant :** MILO, Simcha [IL/IL]; 6a Noga Street, 34407 Haifa (IL).
- (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, 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, IS, JP, KE, KG, KM, 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, PE, PG, PH, PL, PT, RO, RS, RU, 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, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, 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, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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))

- (88) **Date of publication of the international search report:**
7 April 2011

(54) **Title:** SURGICAL STAPLER

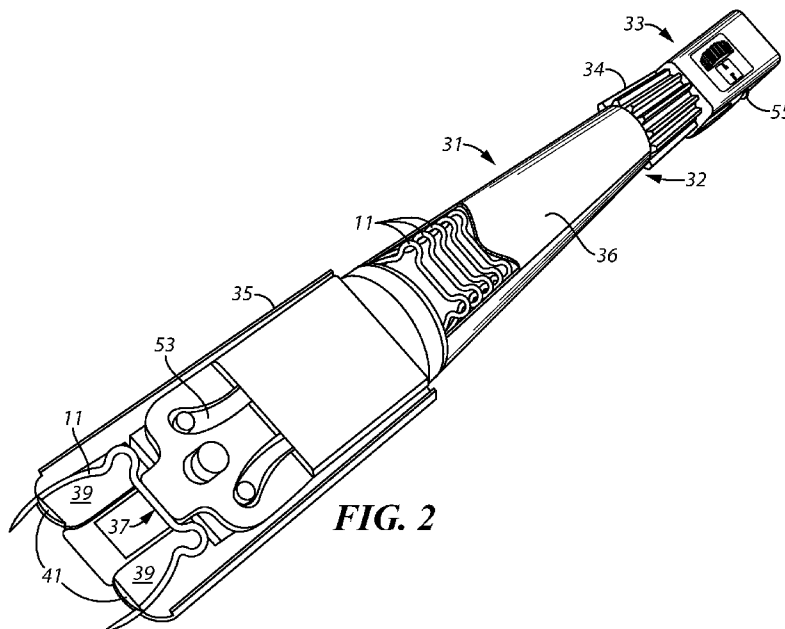


FIG. 2

(57) **Abstract:** Surgical stapling methods and tools which allow a surgeon to create several different predetermined amounts of tissue constriction using the same staple (11) loaded in such a tool (31). An improved staple construction (61) of increased rigidity is also shown.



WO 2010/150178 A3

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2010/052804

A. CLASSIFICATION OF SUBJECT MATTER

INV. A61B17/068

ADD. A61B19/00

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 practical, 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.
X	US 2005/096660 A1 (ALLEN DREW [US]) 5 May 2005 (2005-05-05) paragraphs [0060] - [0075]; figures 17-18	1,2
X	WO 97/12729 A2 (TRACOR AEROSPACE INC [US]) 10 April 1997 (1997-04-10) pages 7-9; figure 3	1,2
A	EP 1 870 042 A1 (TEXTILE HI TEC T H T [FR]) 26 December 2007 (2007-12-26) the whole document	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 document 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

13 January 2011

Date of mailing of the international search report

24/01/2011

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

Chopinaud, Marjorie

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2010/052804

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.: 7-16
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:
see FURTHER INFORMATION sheet PCT/ISA/210

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.:
1-6

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: 1-6

A surgical stapling tool which comprises:
a main body which includes a handle portion,
an effector extending from said body which holds at least one surgical staple having two legs with pointed ends and a crown connector interconnecting the opposite ends of the legs,
said effector including a first mechanism for adjusting the distance between the pointed ends of the legs so they become spaced apart a precise desired distance that is one of several different distances,
an actuator-indicator incorporated in said body for operating said first mechanism,
a second mechanism which causes the effector to implant the staple into body tissue or organ tissue so as to achieve a precise amount of constriction, which constriction is dependent upon the one of said several different precise spaced apart distances to which the pointed ends were adjusted, and
an actuator for causing said second mechanism to operate.

2. claims: 17, 18

A surgical staple which comprises two legs having pointed free ends and a crown connector interconnecting the upper ends of said legs, said staple being essentially planar and formed completely of wireform material having an I-beam cross-section where two parallel flanges flank a central web, which flanges are oriented perpendicular to the plane of the staple.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.2

Claims Nos.: 7-16

Claims 7-11 and 12-16 pertain to methods for inserting a surgical staple in the tissue comprising the step of causing the tool to implant the staple into the body or organ tissue obviously forming part of a surgical procedure. The Authority is therefore not required to carry out international search preliminary examination.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.2), should the problems which led to the Article 17(2)PCT declaration be overcome.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2010/052804

Patent document cited in search report	A1	Publication date	Patent family member(s)	Publication date
US 2005096660	A1	05-05-2005	NONE	
WO 9712729	A2	10-04-1997	AU 7365896 A	28-04-1997
EP 1870042	A1	26-12-2007	AT 437608 T	15-08-2009
			DK 1870042 T3	30-11-2009
			ES 2331099 T3	21-12-2009
			FR 2902636 A1	28-12-2007
			PT 1870042 E	05-11-2009