



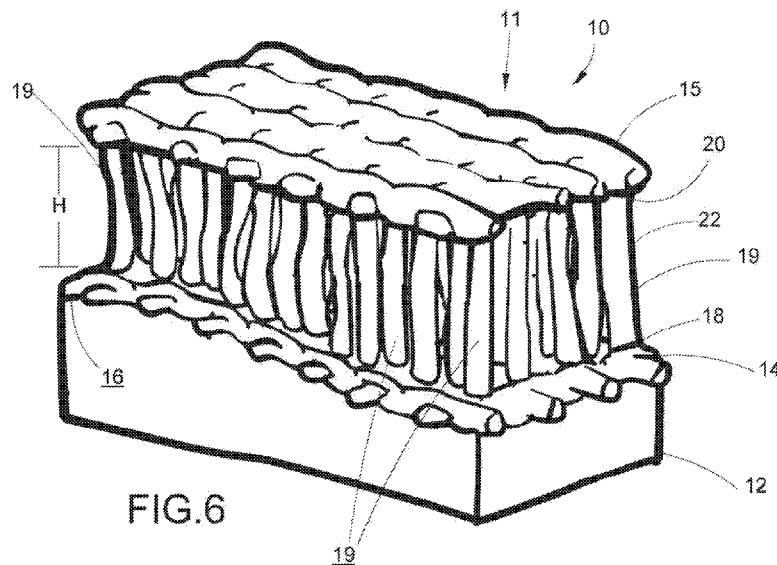
- (51) **International Patent Classification:**
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- (81) **Designated States** (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, 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, KW, 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,

[Continued on next page]

(54) **Title:** COMPRESSIBLE ADJUNCT WITH INTERMEDIATE SUPPORTING STRUCTURES



(57) **Abstract:** A compressible adjunct for use with a surgical instrument including a staple cartridge includes a first biocompatible layer, a second biocompatible layer spaced apart from the first biocompatible layer, and a plurality of supporting pillars extending between the first biocompatible layer and the second biocompatible layer.





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).

Published:

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

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

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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
INV. A61B17/072
ADD. A61B17/00

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 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,P	EP 2 954 857 A1 (ETHICON ENDO SURGERY INC [US]) 16 December 2015 (2015-12-16) paragraphs [0233] - [0253]; figures 48-52 -----	1-5, 7-16,19, 20
X,P	EP 2 954 853 A1 (ETHICON ENDO SURGERY INC [US]) 16 December 2015 (2015-12-16) paragraph [0147]; figures 68A,68B -----	1,10, 13-15
X	EP 2 644 124 A1 (ETHICON ENDO SURGERY INC [US]) 2 October 2013 (2013-10-02)	1-6, 8-16,19, 20
Y	paragraphs [0683], [0801], [0802], [0861], [0867] - [0869], [0886], [0895] - [0911], [0921] - [0924], [0989] - paragraph [1003]; figures 93-95,339,340,368,369,390-399,475-502 ----- -/--	17,18

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

4 April 2017

Date of mailing of the international search report

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Name and mailing address of the ISA/

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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.
X	EP 2 008 595 A2 (TYCO HEALTHCARE [US]) 31 December 2008 (2008-12-31)	1,2, 5-16,19, 20
Y	paragraphs [0019], [0031] - [0037]; figures 3,4	11,17,18
Y	----- US 5 397 324 A (CARROLL BRENDAN J [US] ET AL) 14 March 1995 (1995-03-14) column 4, lines 55-68; figures 5,6	17,18
Y	----- US 2013/256376 A1 (BARTON TREVOR J [US] ET AL) 3 October 2013 (2013-10-03) paragraph [0498]; figures 71,72	17
Y	----- EP 2 759 269 A1 (COVIDIEN LP [US]) 30 July 2014 (2014-07-30) paragraph [0019]; figure 2C	17
Y	----- US 2013/068820 A1 (MILLER MATTHEW C [US] ET AL) 21 March 2013 (2013-03-21) paragraph [0029]; figures 7-9	11
A	----- EP 2 497 431 A1 (TYCO HEALTHCARE [US]) 12 September 2012 (2012-09-12) paragraphs [0040] - [0045]; figures 6,7	11,12

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2016/052793

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: 1-10, 13-16, 19, 20

A compressible adjunct for use with a surgical instrument, the compressible adjunct comprising a plurality of supporting pillars extending between a first biocompatible layer and a second biocompatible layer, wherein the plurality of supporting pillars comprises a first supporting pillar and a second supporting pillar crossing the first supporting pillar for improved structural integrity of the compressible adjunct.

2. claims: 11, 12

A compressible adjunct for use with a surgical instrument, the compressible adjunct comprising a plurality of supporting pillars extending between a first biocompatible layer and a second biocompatible layer, wherein the second biocompatible layer comprises an outer surface configured to grip tissue, so that application of the compressible adjunct on tissue is facilitated.

3. claims: 17, 18

A compressible adjunct for use with a surgical instrument, the compressible adjunct comprising a plurality of supporting pillars extending between a first biocompatible layer and a second biocompatible layer, further comprising a knife slot configured to receive a knife for cutting tissue captured by the surgical instrument, so that tissue can be cut by the knife with a reduced cutting force.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2016/052793

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Information on patent family members

International application No

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