



(43) International Publication Date  
05 December 2019 (05.12.2019)

(51) International Patent Classification:

A61B 17/072 (2006.01) A61B 34/30 (2016.01)

(21) International Application Number:

PCT/EP2019/064034

(22) International Filing Date:

29 May 2019 (29.05.2019)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

18175583.6 01 June 2018 (01.06.2018) EP

(71) Applicant: **STEERABLE INSTRUMENTS NV** [BE/BE]; Poortakkerstraat 9c, 9051 Sint-Denijs-Westrem (BE).

(72) Inventors: **DEWAELE, Frank**; Pruijnenbosstraat 13, 9840 De Pinte (BE). **MABILDE, Cyriel**; Wallestraat 39, 9700 Oudenaarde (BE). **BLANCKAERT, Bart**; Peperstraat F1, 9900 Eeklo (BE). **MAENE, Lieven**; Zeedijk 681 bus 61, 8300 Knokke (BE). **KALMAR, Alain**; Gelukstraat 20, 9000 Gent (BE).

(74) Agent: **DE CLERCQ & PARTNERS**; Edgard Gevaert-dreef 10a, 9830 Sint-Martens-Latem (BE).

(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, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, 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, 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).

(54) Title: CONTROLLABLE STEERABLE FUSING DEVICE

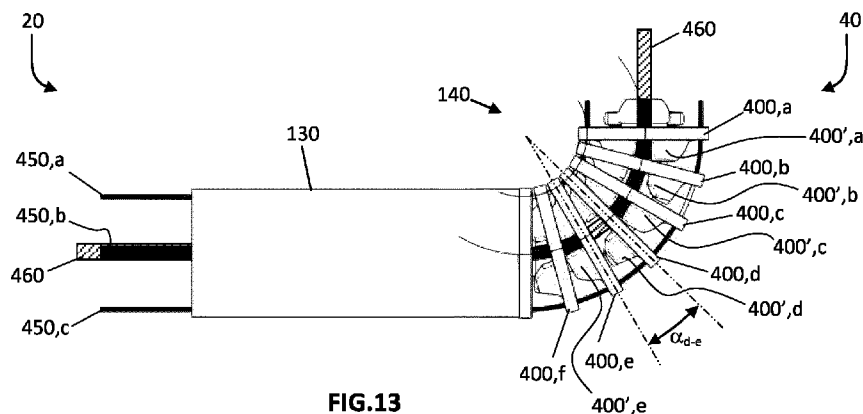


FIG.13

(57) Abstract: Provided is a steerable fusing device (50) comprising: a steerable instrument (100) having a proximal end (20) and a distal (40) end comprising a shaft (130), a bendable proximal part (120) and a bendable distal part (140), the steerable instrument (100) configured such that the bendable distal part (140) bends responsive to bending of the bendable proximal part (120), fusing head (302) attached in fixed rotational relation to the bendable distal part (140) configured for fusing tissue captured between jaws (310, 320) of the fusing head (300), wherein the fusing head (300) is rotatable when the bendable distal part (140) is in a bent position by a complementary rotation of the bendable proximal part (120).



WO 2019/229158 A3

**Declarations under Rule 4.17:**

— *of inventorship (Rule 4.17(iv))*

**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:**

13 February 2020 (13.02.2020)

INTERNATIONAL SEARCH REPORT

International application No  
PCT/EP2019/064034

A. CLASSIFICATION OF SUBJECT MATTER  
INV. A61B17/072 A61B34/30  
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 2014/194893 A1 (JEONG CHANG WOOK [KR] ET AL) 10 July 2014 (2014-07-10)          | 1-4,16                |
| A         | figures 1-2, 12  | 5-15                  |
| X         | WO 2009/091497 A2 (KIM JOHN HYOUNG [US]) 23 July 2009 (2009-07-23)                 | 1,2,5-9               |
| Y         | para. 29, 36, 40, 42, 51-53; figures 1-3   | 10-15                 |
| A         | EP 0 634 144 A1 (ETHICON INC [US]) 18 January 1995 (1995-01-18)                    | 1-15                  |
| X         | figures 1, 4,6, 7, 15  |                       |
| X         | WO 2014/004293 A1 (ETHICON ENDO SURGERY INC [US]) 3 January 2014 (2014-01-03)      | 1,5, 10-21            |
| Y         | figures 25, 49, 50, 105, 138, 139  | 10-15, 19,21          |
|           | -----<br>-/--  |                       |

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 | Date of mailing of the international search report |
| 20 December 2019  | 15/01/2020   |

|  |  |
|--|--|
| Name and mailing address of the ISA/<br>European Patent Office, P.B. 5818 Patentlaan 2<br>NL - 2280 HV Rijswijk<br>Tel. (+31-70) 340-2040,<br>Fax: (+31-70) 340-3016 | Authorized officer<br><br>Kamp, Martin |
|--|--|

## INTERNATIONAL SEARCH REPORT

International application No  
PCT/EP2019/064034

| C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT |  |                       |
|--|--|-----------------------|
| Category*  | Citation of document, with indication, where appropriate, of the relevant passages   | Relevant to claim No. |
| A  | US 2010/041945 A1 (ISBELL JR LEWIS [US])<br>18 February 2010 (2010-02-18)<br>para. 62-65, 75;<br>figures 1A-2B, 25<br>-----    | 1-15                  |
| X  | EP 2 799 014 A2 (COVIDIEN LP [US])<br>5 November 2014 (2014-11-05)<br>para. 18, 19;<br>figures 1-11<br>-----                   | 16-18                 |
| Y  |  | 19,21                 |
| X  | EP 1 955 659 A1 (NOVARE SURGICAL SYSTEMS<br>INC [US]) 13 August 2008 (2008-08-13)<br>para. 89-92;<br>figures 1A-1C,<br>-----   | 16                    |
| X  | US 2004/176751 A1 (WEITZNER BARRY D [US]<br>ET AL) 9 September 2004 (2004-09-09)<br>para. 45 - 141;<br>figures 1, 4,5<br>----- | 16-19,21              |
| X,P  | EP 3 375 387 A2 (COVIDIEN LP [US])<br>19 September 2018 (2018-09-19)<br>para. 29-75;<br>figures 1-4, 24, 25, 26<br>-----       | 16-18                 |
| A  | US 2013/178838 A1 (MALKOWSKI JAROSLAW T<br>[US]) 11 July 2013 (2013-07-11)<br>para. 34-63;<br>figures 1-12<br>-----            | 16                    |

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2019/064034

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date              |
|--|------------------|-------------------------|-------------------------------|
| US 2014194893                          | A1               | 10-07-2014              | KR 101075294 B1 19-10-2011    |
|  |                  |                         | US 2014194893 A1 10-07-2014   |
|  |                  |                         | WO 2012096464 A2 19-07-2012   |
| -----                                  |                  |                         |                               |
| WO 2009091497                          | A2               | 23-07-2009              | NONE                          |
| -----                                  |                  |                         |                               |
| EP 0634144                             | A1               | 18-01-1995              | CA 2127929 A1 16-01-1995      |
|  |                  |                         | EP 0634144 A1 18-01-1995      |
|  |                  |                         | US 5433721 A 18-07-1995       |
| -----                                  |                  |                         |                               |
| WO 2014004293                          | A1               | 03-01-2014              | BR 112014032756 A2 27-06-2017 |
|  |                  |                         | CN 104582594 A 29-04-2015     |
|  |                  |                         | EP 2866683 A1 06-05-2015      |
|  |                  |                         | JP 6262223 B2 17-01-2018      |
|  |                  |                         | JP 2015523147 A 13-08-2015    |
|  |                  |                         | RU 2015102585 A 20-08-2016    |
|  |                  |                         | US 2014005678 A1 02-01-2014   |
|  |                  |                         | US 2016000513 A1 07-01-2016   |
|  |                  |                         | US 2016331375 A1 17-11-2016   |
|  |                  |                         | US 2018353176 A1 13-12-2018   |
|  |                  |                         | US 2018353177 A1 13-12-2018   |
|  |                  |                         | US 2018353178 A1 13-12-2018   |
|  |                  |                         | US 2018353179 A1 13-12-2018   |
|  |                  |                         | WO 2014004293 A1 03-01-2014   |
| -----                                  |                  |                         |                               |
| US 2010041945                          | A1               | 18-02-2010              | US 2010041945 A1 18-02-2010   |
|  |                  |                         | US 2013281989 A1 24-10-2013   |
|  |                  |                         | US 2015327852 A1 19-11-2015   |
|  |                  |                         | US 2017325812 A1 16-11-2017   |
| -----                                  |                  |                         |                               |
| EP 2799014                             | A2               | 05-11-2014              | CA 2617122 A1 01-02-2007      |
|  |                  |                         | CN 101495046 A 29-07-2009     |
|  |                  |                         | CN 102988087 A 27-03-2013     |
|  |                  |                         | EP 1912570 A2 23-04-2008      |
|  |                  |                         | EP 2799014 A2 05-11-2014      |
|  |                  |                         | IL 189046 A 31-10-2012        |
|  |                  |                         | JP 5043842 B2 10-10-2012      |
|  |                  |                         | JP 5432975 B2 05-03-2014      |
|  |                  |                         | JP 2009502359 A 29-01-2009    |
|  |                  |                         | JP 2012081291 A 26-04-2012    |
|  |                  |                         | US 2007055219 A1 08-03-2007   |
|  |                  |                         | US 2015133224 A1 14-05-2015   |
|  |                  |                         | US 2017056119 A1 02-03-2017   |
|  |                  |                         | WO 2007014355 A2 01-02-2007   |
| -----                                  |                  |                         |                               |
| EP 1955659                             | A1               | 13-08-2008              | AT 502581 T 15-04-2011        |
|  |                  |                         | CN 101106945 A 16-01-2008     |
|  |                  |                         | EP 1955659 A1 13-08-2008      |
|  |                  |                         | JP 5283384 B2 04-09-2013      |
|  |                  |                         | JP 5655102 B2 14-01-2015      |
|  |                  |                         | JP 5661823 B2 28-01-2015      |
|  |                  |                         | JP 2008520362 A 19-06-2008    |
|  |                  |                         | JP 2013081827 A 09-05-2013    |
|  |                  |                         | JP 2013081828 A 09-05-2013    |
|  |                  |                         | US 2006111209 A1 25-05-2006   |
|  |                  |                         | US 2006111210 A1 25-05-2006   |
|  |                  |                         | US 2019290309 A1 26-09-2019   |
| -----                                  |                  |                         |                               |

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/EP2019/064034

## 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: 1-15

Steerable fusion device comprising:

- a steerable instrument having a shaft, a bendable distal part, a bendable proximal part, wherein the bendable distal part bends responsive to the bendable proximal part
  - a fusing head in fixed rotational relation to the bendable distal part
- wherein the fusing head is axially rotatable in a bent position by a complementary rotation of the bendable proximal part.

---

## 2. claims: 16-21

Steerable fusion device comprising:

- a steerable instrument having a shaft, a bendable distal part, a bendable proximal part, wherein the bendable distal part bends responsive to the bendable proximal part
- a fusing head in fixed rotational relation to the bendable distal part
- a set of longitudinal members configured to transmit actuating movement along the shaft.

---

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2019/064034

| Patent document<br>cited in search report | Publication<br>date | Patent family<br>member(s) | Publication<br>date |            |
|---|---------------------|----------------------------|---------------------|------------|
| US 2004176751                             | A1                  | 09-09-2004                 | US 2004176751 A1    | 09-09-2004 |
|   |                     |                            | US 2007232855 A1    | 04-10-2007 |
|   |                     |                            | US 2007238924 A1    | 11-10-2007 |
|   |                     |                            | US 2007239178 A1    | 11-10-2007 |
|   |                     |                            | US 2007239186 A1    | 11-10-2007 |
|   |                     |                            | US 2007250072 A1    | 25-10-2007 |
|   |                     |                            | US 2007250097 A1    | 25-10-2007 |
|   |                     |                            | US 2008177281 A1    | 24-07-2008 |
| -----                                     |                     |                            |                     |            |
| EP 3375387                                | A2                  | 19-09-2018                 | AU 2018201086 A1    | 04-10-2018 |
|   |                     |                            | CA 2994840 A1       | 16-09-2018 |
|   |                     |                            | EP 3375387 A2       | 19-09-2018 |
|   |                     |                            | JP 2018153628 A     | 04-10-2018 |
|   |                     |                            | US 2018263608 A1    | 20-09-2018 |
| -----                                     |                     |                            |                     |            |
| US 2013178838                             | A1                  | 11-07-2013                 | US 2013178838 A1    | 11-07-2013 |
|   |                     |                            | US 2016175562 A1    | 23-06-2016 |
|   |                     |                            | US 2019046768 A1    | 14-02-2019 |
| -----                                     |                     |                            |                     |            |