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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, IS, JP, KE, KG, 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, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, 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.

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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))

Published:

- with international search report (Art. 21(3))

[Continued on next page]

(54) **Title:** ROTARY DRIVE SHAFT ASSEMBLIES FOR SURGICAL INSTRUMENTS WITH ARTICULATABLE END EFFECTORS

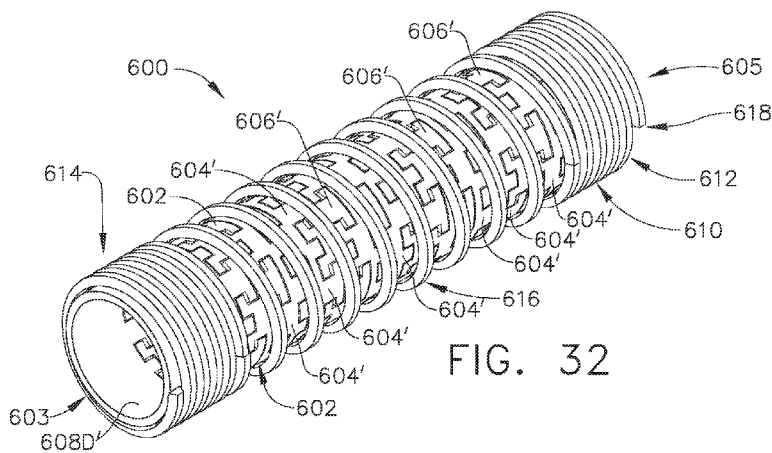


FIG. 32

(57) **Abstract:** Drive shaft assemblies for a surgical instrument. Various forms include a plurality of movably interlocking joint segments that are interconnected to form a flexible hollow tube. A flexible secondary constraining member is configured in flexible constraining engagement with the plurality of movably interlocking joint segments to retain the interlocking joint segments in movable interlocking engagement while facilitating flexing of the drive shaft assembly.





— *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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24 December 2014

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2013/047049

A. CLASSIFICATION OF SUBJECT MATTER
INV. A61B19/2203 A61B17/29 F16C1/04
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 2009/240274 A1 (BOEBEL MANFRED [DE] ET AL) 24 September 2009 (2009-09-24) paragraphs [0042], [0043] figure 3	1-3,11, 19,21
X	US 2009/018567 A1 (ESCUDERO PAUL QUENTIN [US] ET AL) 15 January 2009 (2009-01-15) paragraph [0204] figure 18C	1-3,6, 11,14
X	US 2002/038129 A1 (PETERS GARY [US] ET AL) 28 March 2002 (2002-03-28) paragraphs [0034], [0039] figures 1, 2, 3, 4, 7, 8	1,2,4,5, 11-13, 19,20
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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 30 October 2014	Date of mailing of the international search report 10/11/2014
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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 Chabus, Hervé
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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2013/047049

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 2003/220641 A1 (THELEN SARAH L [US] ET AL) 27 November 2003 (2003-11-27) paragraph [0122] figures 39, 40 -----	1,2
X	US 5 851 208 A (TROTT A FRANK [US]) 22 December 1998 (1998-12-22) column 4, line 42 - column 5, line 5 column 5, line 46 - column 6, line 14 figures 1-4c, 6 -----	1,2, 7-10, 15-18
A	EP 0 764 423 A1 (WOLF GMBH RICHARD [DE]) 26 March 1997 (1997-03-26) column 6, lines 3-16 figures 1-3c -----	11,19

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2013/047049

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

Information on patent family members

International application No PCT/US2013/047049

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2009240274	A1	24-09-2009	AT 536818 T 15-12-2011
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			JP H09117413 A 06-05-1997
			US 5807241 A 15-09-1998

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

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

1. claims: 2-6, 11-14, 19-21(completely); 1(partially)

Drive shaft assembly with a helically wound member extending around the perimeter of a flexible hollow tube.

2. claims: 7-10, 15-18(completely); 1(partially)

Drive shaft assembly with interlocking joint segments comprising a ball and socket connector and a hollow passage extending therethrough.
