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**Declarations under Rule 4.17:**

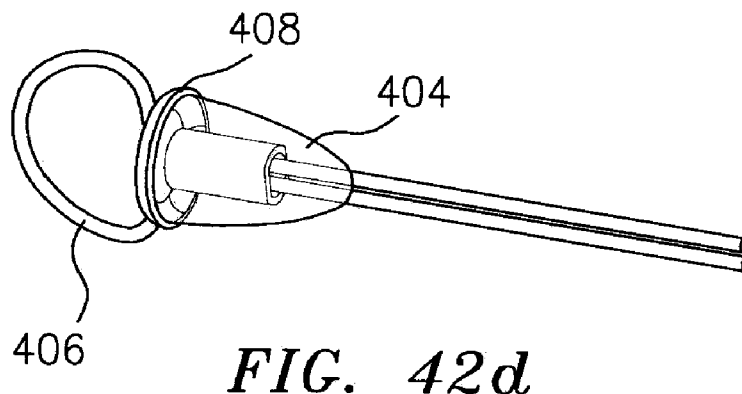
- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

**Published:**

- with international search report (Art. 21(3))
- 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:  
31 March 2011

(54) Title: CRIMPING AND CUTTING DEVICE



(57) Abstract: A method and apparatus for securing and cutting suture material is disclosed. Suture material is preferably threaded through a ferrule in the crimping and cutting device which includes a hammer head slidable within a tip of the device for crimping the ferrule and trapping the suture material therein. The tip further preferably includes a cutting edge such that the ferrule is crimped and the suture material is cut in one proximal movement of the hammer head. The suture material may be threaded through the ferrule using a suture loading assembly which includes a flexible loop pre-threaded through the ferrule. A handle assembly having a safety button for preventing movement of the trigger until the safety button is depressed is also disclosed. An adjustment screw within the handle assembly allows for a change in length of a rod within the device during manufacture.



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## INTERNATIONAL SEARCH REPORT

International application No.  
**PCT/US2010/039328****A. CLASSIFICATION OF SUBJECT MATTER****A61B 17/04(2006.01)i, A61B 17/076(2006.01)i**

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 17/04; A61B 17/10; A61B 17/00; A61B 17/08; A61D 1/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) &amp; Keywords: hemostatic

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5391183 A (ERNST JANZEN et al.) 21 February 1995 See column 3, line 58 - column 10, line 15 and figures 1-23	1
A	US 6048358 A (SHLOMO BARAK) 11 April 2000 See the abstract and figures 1A-22	1-6
A	US 2003-0040760 A1 (OLEXANDER HNOJEWYJ et al.) 27 February 2003 See the abstract and figures 1-30	1-6
A	US 5306280 A (MICHAEL BREGEN et al.) 26 April 1994 See the abstract and figures 1-6	1-6
A	US 2004-0068272 A1 (JUDE S. SAUER et al.) 08 April 2004 See the abstract and figures 1-18	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 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

"&amp;" document member of the same patent family

Date of the actual completion of the international search

28 JANUARY 2011 (28.01.2011)

Date of mailing of the international search report

**08 FEBRUARY 2011 (08.02.2011)**

Name and mailing address of the ISA/KR

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**INTERNATIONAL SEARCH REPORT**

International application No.

**PCT/US2010/039328****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:

Group 1: claim 1 relating to a kit comprising a cutting and crimping device, a ferrule, and a syringe

Group 2: claims 2-6 relating to a crimping and cutting device comprising a hammer head, a tip, and a hemostatic agent.

The common technical feature among groups 1-2 is readily derived from document US 5391183 A. Therefore, groups 1-2 do not have any common special technical feature over the prior art, thereby resulting in lack of unity of invention. (PCT Rule 13.1, 13.2).

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 fee, this Authority did not invite payment of any additional fee.
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/US2010/039328**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5391183 A	21.02.1995	CA 2051360 C	03.10.2000
		CA 2051360-A1	22.03.1992
		EP 0476178 A1	25.03.1992
		EP 0482350 A2	29.04.1992
		EP 0482350 B1	27.12.1996
		JP 03-228965 B2	07.09.2001
		JP 03-475185 B2	19.09.2003
		JP 06-339483 A	13.12.1994
		JP 2002-058673 A	26.02.2002
		US 2008-0077178 A1	27.03.2008
		US 5437631 A1	01.08.1995
		US 5591204 A1	07.01.1997
		US 5725498 A1	10.03.1998
		US 5741223 A1	21.04.1998
		US 5830130 A1	03.11.1998
		US 5948425 A1	07.09.1999
		US 6325789 B1	04.12.2001
US 7008439 B1	07.03.2006		
US 6048358 A	11.04.2000	AU 1999-46459 A1	01.02.2000
		EP 1096884 A1	09.05.2001
		EP 1096884 B1	29.03.2006
		WO 00-02488 A1	20.01.2000
US 2003-0040760 A1	27.02.2003	AU 1995-29981 B2	15.07.1999
		AU 1996-68514 B2	18.02.1999
		AU 1996-68988 B2	13.04.2000
		AU 1996-69548 B2	19.10.2000
		AU 1997-34022 B2	14.06.2001
		AU 1997-46465 B2	12.07.2001
		AU 1998-61896 B2	20.04.2000
		AU 1998-78099 B2	12.04.2001
		AU 1999-22244 A1	02.08.1999
		AU 1999-23178 A1	02.08.1999
		AU 1999-27788 A1	06.09.1999
		AU 1999-27788 B2	12.09.2002
		AU 1999-28722 A1	06.09.1999
		AU 1999-28722 B2	31.10.2002
		AU 1999-28723 A1	06.09.1999
		AU 1999-28821 A1	15.09.1999
		AU 1999-29726 A1	06.09.1999
		AU 1999-29757 A1	15.09.1999
		AU 1999-29757 B2	14.11.2002
		AU 1999-29839 A1	20.09.1999
AU 1999-36606 A1	08.11.1999		
AU 1999-36722 A1	16.11.1999		
AU 1999-55870 A1	21.03.2000		
AU 1999-55870 B2	01.05.2003		
AU 2000-45022 A1	17.11.2000		

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/US2010/039328**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
		AU 2000-46961 A1	17. 11. 2000
		AU 2000-46969 A1	17. 11. 2000
		AU 2000-46971 A1	17. 11. 2000
		AU 2000-47002 A1	17. 11. 2000
		AU 2000-48170 A1	17. 11. 2000
		AU 2000-48203 A1	17. 11. 2000
		AU 2000-49824 A1	17. 11. 2000
		AU 2000-49840 A1	17. 11. 2000
		AU 2000-51256 A1	17. 11. 2000
		AU 2000-56412 A1	13. 02. 2001
		AU 2000-60875 A1	05. 02. 2001
		AU 2000-71180 A1	10. 04. 2001
		AU 2000-73525 A1	10. 04. 2001
		AU 2000-74802 A1	10. 04. 2001
		AU 2000-77242 A1	10. 05. 2001
		AU 2001-16290 A1	10. 04. 2001
		AU 2001-38635 A1	17. 09. 2001
		AU 2001-57192 A1	07. 11. 2001
		AU 2002-236986 A8	28. 08. 2002
		AU 2002-238065 A8	28. 08. 2002
		AU 2003-237170 A1	11. 11. 2003
		AU 2003-269940 A1	23. 02. 2004
		AU 2003-269940 A8	23. 02. 2004
		CA 2226484 C	12. 12. 2000
		CA 2226484-A1	03. 03. 1994
		CA 2275162 C	07. 11. 2000
		CA 2292801-A1	15. 01. 1998
		CA 2299362-A1	18. 02. 1999
		CA 2318315-A1	22. 07. 1999
		CA 2319517-A1	26. 08. 1999
		CA 2320105-A1	26. 08. 1999
		CA 2320110-A1	02. 09. 1999
		CA 2340648-A1	09. 03. 2000
		CA 2372201-A1	09. 11. 2000
		CA 2378067-A1	25. 01. 2001
		CA 2384025-A1	15. 03. 2001
		CA 2384273-A1	15. 03. 2001
		CA 2384410-A1	15. 03. 2001
		CA 2385689-A1	12. 04. 2001
		CA 2388376-A1	15. 03. 2001
		CA 2391301-A1	01. 02. 2001
		CA 2435050-A1	09. 03. 2000
		CA 2680302-A1	18. 09. 2008
		CN 1099276 C	22. 01. 2003
		CN 1119418 A0	27. 03. 1996
		CN 1125390 A	26. 06. 1996
		CN 1125390 C0	26. 06. 1996
		CN 1128943 A0	14. 08. 1996
		CN 1216911 A0	19. 05. 1999
		CN 1217639 A0	26. 05. 1999

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/US2010/039328**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
		CN 1219885 A0	16.06.1999
		CN 1222843 A0	14.07.1999
		CN 1224338 A0	28.07.1999
		CN 1272776 A0	08.11.2000
		EP 0521595 A2	07.01.1993
		EP 0521595 A3	03.03.1993
		EP 0521595 B1	12.05.1999
		EP 0611314 A1	24.08.1994
		EP 0611314 B1	27.12.1995
		EP 0628288 A2	14.12.1994
		EP 0628288 B1	05.04.2000
		EP 0629382 A1	21.12.1994
		EP 0629382 B1	02.06.1999
		EP 0631514 A1	09.06.1999
		EP 0637436 A1	08.02.1995
		EP 0637436 B1	05.04.2000
		EP 0667126 A1	16.08.1995
		EP 0667126 B1	17.03.1999
		EP 0697837 A1	25.09.2002
		EP 0697837 B1	04.12.2002
		EP 0729321 A1	10.12.2003
		EP 0729321 B1	19.05.2004
		EP 0767629 A1	28.06.2000
		EP 0767629 A1	16.04.1997
		EP 0790066 A2	20.08.1997
		EP 0790066 A3	21.01.1998
		EP 0790066 B1	12.04.2000
		EP 0850023 A1	10.09.2003
		EP 0850023 A1	01.07.1998
		EP 0893101 A2	27.01.1999
		EP 0893101 A3	03.03.1999
		EP 0893101 B1	07.04.2004
		EP 0901348 A1	17.03.1999
		EP 0901348 A1	19.05.1999
		EP 0901398 A1	17.03.1999
		EP 0904025 A2	02.06.1999
		EP 0904025 A2	31.03.1999
		EP 0914068 A2	03.09.2003
		EP 0914068 A2	12.05.1999
		EP 0925042 A1	07.07.2004
		EP 0925042 A1	30.06.1999
		EP 0935444 A1	06.10.2004
		EP 0935444 A1	18.08.1999
		EP 0957796 A1	24.11.1999
		EP 0957796 A1	28.04.2004
		EP 0959785 A1	16.02.2000
		EP 0959785 A1	01.12.1999
		EP 0969768 A2	12.01.2000
		EP 0969769 A2	12.01.2000
		EP 1001710 A1	24.05.2000

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/US2010/039328**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
		EP 1001710 B1	12.01.2005
		EP 1047348 A1	02.11.2000
		EP 1056403 A1	06.12.2000
		EP 1056403 B1	19.01.2005
		EP 1056404 A1	06.12.2000
		EP 1056405 A1	06.12.2000
		EP 1084495 A1	21.03.2001
		EP 1084495 A4	10.09.2003
		EP 1107813 A1	20.06.2001
		EP 1107813 B1	03.05.2006
		EP 1180992 A1	27.02.2002
		EP 1180992 A4	30.07.2003
		EP 1180992 B1	14.12.2005
		EP 1196105 A1	17.04.2002
		EP 1196106 A1	17.04.2002
		EP 1196106 A4	06.04.2005
		EP 1196106 B1	30.09.2009
		EP 1210024 A1	05.06.2002
		EP 1211984 A2	12.06.2002
		EP 1211998 A1	12.06.2002
		EP 1218801 A2	03.07.2002
		EP 1223881 A1	24.07.2002
		EP 1263327 A1	11.12.2002
		EP 1263327 A4	02.07.2003
		EP 1263327 B1	10.08.2005
		EP 1501426 A1	02.02.2005
		EP 1634542 A1	15.03.2006
		EP 1634542 B1	09.04.2008
		EP 2134408 A1	23.12.2009
		GB 2269538 A	16.02.1994
		JP 02-647557 B2	09.05.1997
		JP 03-128242 B2	10.11.2000
		JP 03-879055 B2	07.02.2007
		JP 04-515008 B2	21.05.2010
		JP 07-255855 A	09.10.1995
		JP 08-506259 A	09.07.1996
		JP 08-508664 A	17.09.1996
		JP 08-510148 A	29.10.1996
		JP 11-511054 A	28.09.1999
		JP 2000-509619 A	02.08.2000
		JP 2000-509622 A	02.08.2000
		JP 2000-511087 A	29.08.2000
		JP 2000-511089 A	29.08.2000
		JP 2000-511092 A	29.08.2000
		JP 2000-514319 A	31.10.2000
		JP 2001-500763 A	23.01.2001
		JP 2001-501491 A	06.02.2001
		JP 2001-513356 A	04.09.2001
		JP 2002-503512 A	05.02.2002
		JP 2002-503513 A	05.02.2002

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/US2010/039328**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
		JP 2002-504390 A	12.02.2002
		JP 2002-505591 A	19.02.2002
		JP 2002-508989 A	26.03.2002
		JP 2002-514006 A	14.05.2002
		JP 2002-525137 A	13.08.2002
		JP 2002-542891 A	17.12.2002
		JP 2003-505140 A	12.02.2003
		JP 2003-508150 A	04.03.2003
		JP 2003-510160 A	18.03.2003
		JP 2003-520069 A	02.07.2003
		JP 2003-523225 A	05.08.2003
		JP 2003-525659 A	02.09.2003
		JP 2003-525683 A	02.09.2003
		JP 2003-526407 A	09.09.2003
		JP 2010-520799 A	17.06.2010
		KR 10-0181538 B1	01.04.1999
		KR 10-0273015 B1	01.12.2000
		KR 10-0289749 B1	15.05.2001
		KR 10-0333776 B1	27.09.2002
		KR 10-1996-0700778 A	24.02.1996
		KR 10-1999-0037713 A	25.05.1999
		KR 10-1999-0087209 A	15.12.1999
		KR 10-2000-0010722 A	25.02.2000
		KR 10-2000-0010723 A	25.02.2000
		KR 10-2000-0010815 A	25.02.2000
		KR 10-2000-0015918 A	15.03.2000
		KR 10-2000-0015919 A	15.03.2000
		US 05228441A A	20.07.1993
		US 05315996A A	31.05.1994
		US 05322064A A	21.06.1994
		US 05329923A A	19.07.1994
		US 05454787A A	03.10.1995
		US 05477856A A	26.12.1995
		US 05505730A A	09.04.1996
		US 05514131A A	07.05.1996
		US 05558672A A	24.09.1996
		US 05569241A A	29.10.1996
		US 05573774A A	12.11.1996
		US 05575788A A	19.11.1996
		US 05624439A A	29.04.1997
		US 05674191A A	07.10.1997
		US 05681308A A	28.10.1997
		US 05685868A A	11.11.1997
		US 05707349A A	13.01.1998
		US 05718702A A	17.02.1998
		US 05728094A A	17.03.1998
		US 05730719A A	24.03.1998
		US 05738114A A	14.04.1998
		US 05743870A A	28.04.1998
		US 05743904A A	28.04.1998



**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/US2010/039328**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
		US 05746224A A	05.05.1998
		US 05769846A A	23.06.1998
		US 05800379A A	01.09.1998
		US 05800429A A	01.09.1998
		US 05807308A A	15.09.1998
		US 05817049A A	06.10.1998
		US 05820580A A	13.10.1998
		US 05823197A A	20.10.1998
		US 05827273A A	27.10.1998
		US 05827277A A	27.10.1998
		US 05836906A A	17.11.1998
		US 05843021A A	01.12.1998
		US 05843077A A	01.12.1998
		US 05852577A A	22.12.1998
		US 05869503A A	09.02.1999
		US 05869505A A	09.02.1999
US 5306280 A	26.04.1994	EP 0559417 A1	08.09.1993
		EP 0559417 B1	03.06.1998
		JP 06-007361 A	18.01.1994
		US 5171251 A1	15.12.1992
US 2004-0068272 A1	08.04.2004	US 2004-068272 A1	08.04.2004
		US 6641592 B1	04.11.2003