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(54) **Method and apparatus for suturing**

(57) The present invention provides new and useful devices and techniques for use in suturing. These devices and techniques are particularly useful in laparoscopic, arthroscopic, and/or open surgical procedures. A method according to the present invention is characterised by releasably coupling a suture to a suture device, causing the tip of the suture device and a portion of the suture to penetrate a tissue, and releasing the suture from the suture device, so the suture may be drawn through the tissue for completion of a suturing procedure. One type of suturing device (100) according to the invention is characterised by a handle (102) with an elongated shaft (104) with a sharpened tip (106) configured to hold a suture at a selected point on the suture. Another type of device according to the principles of the invention is characterised by the new and useful structures and techniques for loading the suture into the device. According to still another aspect of the present invention, different shaped suture tips are provided for the selection of the most effective tip shape for a given application. A suturing device according to the present invention may also be configured for use with a needle point swedged to a suture. Yet

another type of suturing device according to the principles of the present invention included a tissue support structure disposed adjacent the sharpened tip, which may move relative to the sharpened tip to facilitate penetration of the tip through a tissue.

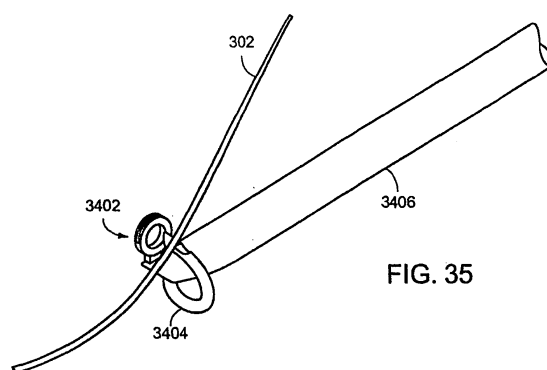


FIG. 35

**PARTIAL EUROPEAN SEARCH REPORT**

Application Number

which under Rule 63 of the European Patent Convention EP 08 00 0459 shall be considered, for the purposes of subsequent proceedings, as the European search report

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 5 843 099 A (NICHOLS ET AL.) 1 December 1998 (1998-12-01) * abstract; figures * -----	1,2	INV. A61B17/04 A61B17/06
X	US 5 522 820 A (CASPARI ET AL.) 4 June 1996 (1996-06-04) * abstract; figures * -----	1,3	
			TECHNICAL FIELDS SEARCHED (IPC)
			A61B
INCOMPLETE SEARCH			
<p>The Search Division considers that the present application, or one or more of its claims, does/do not comply with the EPC to such an extent that a meaningful search into the state of the art cannot be carried out, or can only be carried out partially, for these claims.</p> <p>Claims searched completely :</p> <p>Claims searched incompletely :</p> <p>Claims not searched :</p> <p>Reason for the limitation of the search:</p> <p>see sheet C</p>			
Place of search		Date of completion of the search	Examiner
Munich		30 September 2008	Herberhold, C
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons</p> <p>& : member of the same patent family, corresponding document</p>			

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EPO FORM 1503 03.82 (P04E07)



**INCOMPLETE SEARCH
SHEET C**

Application Number

EP 08 00 0459

Claim(s) searched completely:
1-36

Claim(s) not searched:
37-42

Reason for the limitation of the search (non-patentable invention(s)):

Article 53 (c) EPC - Method for treatment of the human or animal body by surgery

Article 53 (c) EPC - Method for treatment of the human or animal body by therapy



Application Number

EP 08 00 0459

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☒ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

1-3

☐ The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).



**LACK OF UNITY OF INVENTION
SHEET B**

Application Number

EP 08 00 0459

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-3

Suture device having a tissue support

2. claims: 4-24

Suture device having a tip configured to trap a suture

3. claims: 25-36

Suture device having a detachable needle

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 08 00 0459

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

30-09-2008

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5843099	A	01-12-1998	NONE	

US 5522820	A	04-06-1996	NONE	

专利名称(译)	缝合方法和设备		
公开(公告)号	EP1955662A3	公开(公告)日	2009-02-25
申请号	EP2008000459	申请日	2001-04-18
[标]申请(专利权)人(译)	骨科BIOSYST		
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当前申请(专利权)人(译)	骨科BIOSYSTEMS LIMITED , INC.		
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发明人	SKIBA, JEFFRY BALWIN, JEFFREY HATCH, LAIRD GARTSMAN, GARY OREN, RAN		
IPC分类号	A61B17/04 A61B17/06		
CPC分类号	A61B17/06109 A61B17/0469 A61B17/06061 A61B17/06066 A61B2017/06009 A61B2017/06019 A61B2017/06042 A61B2017/06047 A61B2017/06076 A61B2017/0608 A61B2017/061		
优先权	09/550975 2000-04-18 US		
其他公开文献	EP1955662A2		
外部链接	Espacenet		

摘要(译)

本发明提供了用于缝合的新的和有用的装置和技术。这些装置和技术在腹腔镜，关节镜和/或开放式外科手术中特别有用。根据本发明的方法的特征在于将缝合线可释放地连接到缝合装置，使缝合装置的尖端和缝合线的一部分穿透组织，并从缝合装置释放缝合线，因此缝合线可以通过组织抽出以完成缝合程序。根据本发明的一种类型的缝合装置（100）的特征在于具有细长轴（104）的手柄（102），细长轴（104）具有尖锐的尖端（106），该尖端被配置成将缝合线保持在选定的点上。缝合。根据本发明原理的另一种类型的装置的特征在于用于将缝合线装载到装置中的新的和有用的结构和技术。根据本发明的另一个方面，提供了不同形状的缝合线尖端用于选择对于给定的应用，最有效的尖端形状。根据本发明的缝合装置还可以配置成与缝合到缝合线的针尖一起使用。根据本发明原理的又一种类型的缝合装置包括邻近尖锐尖端设置的组织支撑结构，其可相对于尖锐尖端移动以促进尖端穿过尖端。组织。

