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(54) **Active load control of ultrasonic surgical instruments**

(57) Ultrasonic instruments, and particularly solid core ultrasonic instruments, are advantageous because they may be used to cut and/or coagulate organic tissue using energy in the form of mechanical vibrations transmitted to a surgical end-effector at ultrasonic frequencies. The present invention provides a surgical instrument including force feedback system, in a closed loop arrangement that modulates the force applied to tissue from a surgical instrument. A generator provides elec-

trical energy to the surgical instrument and an electrical signal representative of the generator load. The surgical instrument includes a handle that includes an actuating lever, and an end-effector located at the distal end of the handle. A force responsive element is operatively coupled to the actuating lever and the end-effector, wherein the force responsive element is adapted to alter a force on the end-effector in response to the electrical signal from the generator.

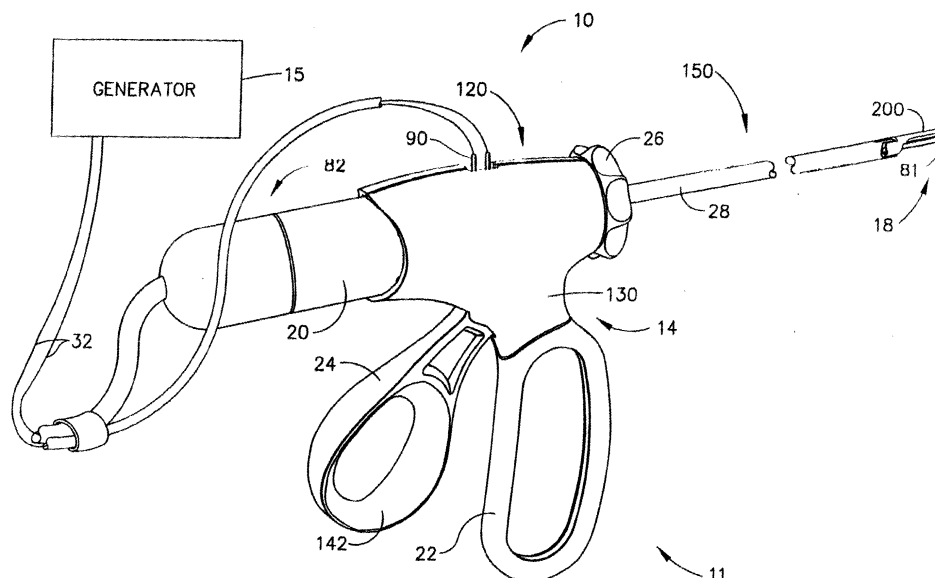


FIG. 1



European Patent
Office

PARTIAL EUROPEAN SEARCH REPORT

Application Number

which under Rule 45 of the European Patent Convention EP 00 31 1144 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 (Int.Cl.7)
D,A	US 5 947 984 A (WHIPPLE GARY) 7 September 1999 (1999-09-07) * column 5, line 63 - column 6, line 19; figure 1 * * column 12, line 53 - column 13, line 17; figure 3 *	1,3,4, 6-9	A61B17/32
A	US 5 543 695 A (CULP JERRY A ET AL) 6 August 1996 (1996-08-06) * column 2, line 38 - line 52 *	1,6,7	
A	US 5 190 517 A (ZIEVE DAVID A ET AL) 2 March 1993 (1993-03-02) * column 5, line 35 - column 44 *	1,2,6,7	
A	US 4 903 696 A (STASZ PETER ET AL) 27 February 1990 (1990-02-27) * abstract; figure 1 *	1,6,7	
D,A	US 5 776 130 A (KENNEDY JENIFER S ET AL) 7 July 1998 (1998-07-07) * abstract; figures 2-4 *	1,2,6,7	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			A61B
INCOMPLETE SEARCH			
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. Claims searched completely : 1-9 Claims searched incompletely : Claims not searched : 10 Reason for the limitation of the search: Article 52 (4) EPC - Method for treatment of the human or animal body by surgery			
Place of search		Date of completion of the search	Examiner
BERLIN		17 February 2003	Ducrau, F
CATEGORY OF CITED DOCUMENTS			
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 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 & : member of the same patent family, corresponding document			

EPO FORM 1503 03 02 /P04C07

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

EP 00 31 1144

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
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17-02-2003

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

专利名称(译)	超声波手术器械的主动负载控制		
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申请号	EP2000311144	申请日	2000-12-13
[标]申请(专利权)人(译)	伊西康内外科公司		
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代理机构(译)	MERCER，CHRISTOPHER PAUL		
优先权	09/460698 1999-12-14 US		
其他公开文献	EP1108394A2 EP1108394B1		
外部链接	Espacenet		

摘要(译)

超声仪器，特别是实芯超声仪器是有利的，因为它们可以用于以超声频率传递到外科端部执行器的机械振动形式的能量来切割和/或凝结有机组织。本发明提供一种包括力反馈系统的手术器械，其为闭环布置，其调节从手术器械施加到组织的力。发电机向手术器械提供电能和代表发电机负载的电信号。手术器械包括手柄，手柄包括致动杆和位于手柄远端的末端执行器。力响应元件可操作地连接到致动杆和末端执行器，其中力响应元件适于响应于来自发生器的电信号改变末端执行器上的力。

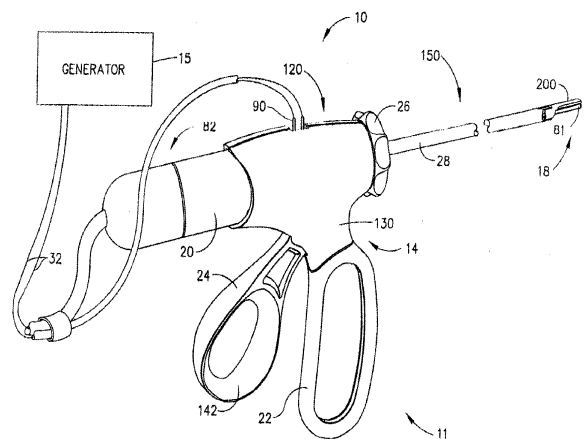


FIG. 1