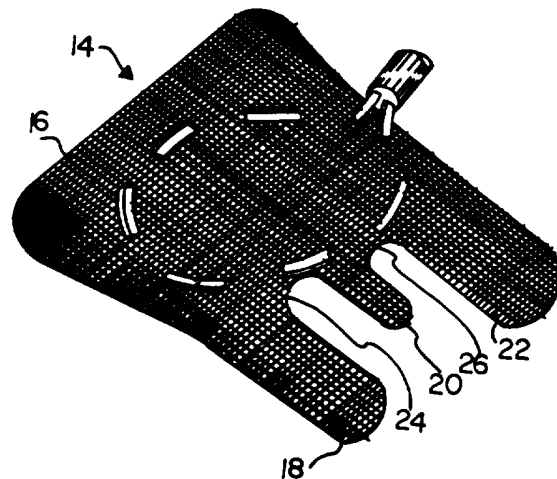
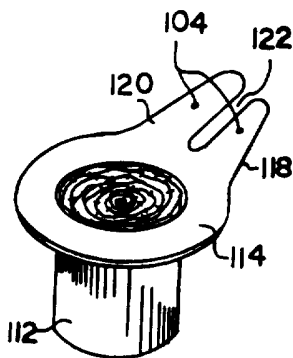




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification ⁵ : A61B 17/00, A61F 2/00</p>	<p>A3</p>	<p>(11) International Publication Number: WO 92/06639 (43) International Publication Date: 30 April 1992 (30.04.92)</p>
<p>(21) International Application Number: PCT/US91/07601 (22) International Filing Date: 11 October 1991 (11.10.91) (30) Priority data: 595,956 11 October 1990 (11.10.90) US (71)(72) Applicant and Inventor: EBERBACH, Mark, Allen [US/US]; 4234 Winding Willow Drive, Tampa, FL 33624 (US). (74) Agent: COLITZ, Michael, J., Jr.; 3030 North Rocky Point Dr. W., Suite 400, Tampa, FL 33607 (US). (81) Designated States: AT (European patent), AU, BE (European patent), CA, CH (European patent), DE (European patent), DK (European patent), ES (European patent), FR (European patent), GB (European patent), GR (European patent), IT (European patent), JP, LU (European patent), NL (European patent), SE (European patent).</p>		<p>Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i> (88) Date of publication of the international search report: 18 February 1993 (18.02.93)</p>

(54) Title: SURGICAL PLUG AND SURGICAL PATCH AND INSERTION DEVICES



(57) Abstract

A method and system for the repair of hernias through laparoscopic techniques including plugging and patching, the system comprising a first assembly (110) having a tubular sheath (128), a tubular plunger (126) located within and moveable with respect to the sheath (128), the plunger (126) having a distal end spaced proximally of the distal end of the sheath (128) and a proximal end extending proximally of the proximal end of the sheath (128); a plug (12) within the sheath (128) at the distal end and moveable from interior thereof to exterior thereof upon manipulation of the proximal ends of the sheath (128) and plunger (126) by a surgeon. The system further comprising a second assembly (10) having another tubular sheath (48); another tubular plunger (42) located within and moveable with respect to the other sheath (48), the proximal end of the other plunger (42) extending proximally outwardly of the other sheath (48) for manipulation by a surgeon; elongated means (36) extending through the other plunger (42) and, at the distal end thereof forming a loop (32), the proximal end (52) of the elongated means (36) extending proximally outwardly of the other sheath (48) for manipulation by a surgeon; and a patch (14) supported on the loop (32) for movement therewith.

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INTERNATIONAL SEARCH REPORT

PCT/US 91/07601

International Application No

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) ⁶		
According to International Patent Classification (IPC) or to both National Classification and IPC Int.Cl. 5 A61B17/00; A61F2/00		
II. FIELDS SEARCHED		
Minimum Documentation Searched ⁷		
Classification System	Classification Symbols	
Int.Cl. 5	A61B ; A61F	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched ⁸		
III. DOCUMENTS CONSIDERED TO BE RELEVANT⁹		
Category ¹⁰	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³
Y	US,A,4 769 038 (BENDAVID) 6 September 1988	1-5
A	see abstract; figures 10-16 see column 7, line 30 - line 48 ---	6,8, 18-20
Y	WO,A,8 911 301 (KENSEY NASH) 30 November 1989	1,2,4,5
A	see the whole document ---	6,19,20
Y	US,A,3 857 395 (JOHNSON) 31 December 1974	1,3
A	see column 5, line 36 - column 10, line 26; figures 1-17 ---	8,9,15, 17,18,20
A	WO,A,8 402 840 (JOHNSON & JOHNSON) 2 August 1984 see abstract; figures ---	1,2,4,5, 19,20
	-/--	
<p>¹⁰ Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"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)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"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</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"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.</p> <p>"&" document member of the same patent family</p>		
IV. CERTIFICATION		
Date of the Actual Completion of the International Search		Date of Mailing of this International Search Report
13 JANUARY 1993		23. 01. 93
International Searching Authority		Signature of Authorized Officer
EUROPEAN PATENT OFFICE		KLEIN C.

III. DOCUMENTS CONSIDERED TO BE RELEVANT

(CONTINUED FROM THE SECOND SHEET)

Category °	Citation of Document, with indication, where appropriate, of the relevant passages	Relevant to Claim No.
A	US,A,4 031 569 (JACOB) 28 June 1977 see column 2, line 10 - line 31; figures 2,3	2,5,6,19
A	EP,A,0 362 113 (SIDERIS) 4 April 1990 see abstract; claim 1; figures	1,3,8, 13,15, 17,18,20
A	DE,A,2 822 603 (THIERFELDER) 29 November 1979 see page 10, line 1 - page 11, line 3; claims 1-4; figures 2-6	1,3,8, 15,18,20
A	US,A,1 456 828 (PISTOR) 29 May 1923 see claim 1; figures 2,3	1,3,8, 18,20
A	US,A,3 181 533 (HEATH) 4 May 1965 see column 2, line 38 - line 54; figure 1	8,12
A	US,A,4 873 978 (GINSBURG) 17 October 1989	
A	US,A,4 854 316 (DAVIS) 8 August 1989	

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 91/07601

Box I Observations where certain claims were found unsearchable (Continuation of item 1 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.: 21
because they relate to subject matter not required to be searched by this Authority, namely:
Methods for treatment of the human body by surgery
See PCT-Rule 39.1(iv)
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 II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

For further information see Form PCT/ISA/206 sent on 03.03.92

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. No protest accompanied the payment of additional search fees.

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

US 9107601
SA 53800

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international 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.

13/01/93

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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WO-A-8911301	30-11-89	US-A- 4890612 EP-A- 0422046 JP-T- 3505048	02-01-90 17-04-91 07-11-91
US-A-3857395	31-12-74	None	
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US-A-4031569	28-06-77	None	
EP-A-0362113	04-04-90	US-A- 4917089	17-04-90
DE-A-2822603	29-11-79	None	
US-A-1456828		None	
US-A-3181533		None	
US-A-4873978	17-10-89	None	
US-A-4854316	08-08-89	None	

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