

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
5 July 2001 (05.07.2001)

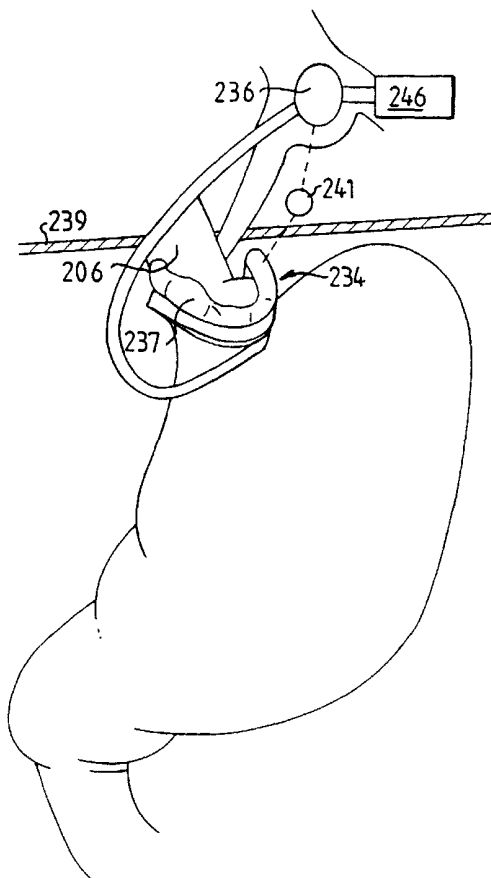
PCT

(10) International Publication Number
WO 01/47435 A3

- (51) International Patent Classification⁷: A61F 5/00 // A61B 17/12 (74) Agents: HAGSTRÖM, Leif et al.; Bergenstråhle & Lindvall AB, P.O. Box 17704, S-118 93 Stockholm (SE).
- (21) International Application Number: PCT/SE01/00311 (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.
- (22) International Filing Date: 14 February 2001 (14.02.2001)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: 09/504,047 14 February 2000 (14.02.2000) US (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).
- (71) Applicant (for all designated States except US): IT-MEDICAL AG [CH/CH]; Zugerstrasse 74, CH-6341 Baar (CH).
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): FORSELL, Peter [SE/CH]; Kirchgasse 4, CH-6313 Menzingen (CH). Published: — with international search report

[Continued on next page]

(54) Title: HEARTBURN AND REFLUX DISEASE TREATMENT APPARATUS



(57) Abstract: A heartburn and reflux disease treatment apparatus comprises an adjustable restriction device (234) implanted in a patient engaging the stomach close to the cardia, or alternatively engaging the esophagus (206), to form a restricted food passageway in the stomach or esophagus. An adjustment device is implanted in the patient for adjusting the restriction device to restrict and enlarge the passageway, and a hydraulic operation means (236) is implanted in the patient for operating the adjustment device. By using a wireless remote control (238) the patient can control the hydraulic operation means, whereby the restriction device works like an artificial sphincter.



WO 01/47435 A3



— upon request of the applicant, before the expiration of the time limit referred to in Article 21(2)(a)

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(88) Date of publication of the international search report:
17 January 2002

INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 01/00311

A. CLASSIFICATION OF SUBJECT MATTER		
IPC7: A61F 5/00 // A61B 17/12 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)		
IPC7: A61F, A61B		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
SE,DK,FI,NO classes as above		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5938669 A (KLAIBER ET AL), 17 August 1999 (17.08.99), figures 1-4, abstract	1-6,12-27, 30-33,40-42, 47,48,52,55, 62-174
A	--	7-11,28-29, 34-39,43-46, 49-51,53,54, 56-61
X	US 5771903 A (JAKOBSSON), 30 June 1998 (30.06.98), figure 1, abstract	1,47
A	US 4271827 A (ANGELCHIK), 9 June 1981 (09.06.81), abstract	1-174
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> 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	"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
"E"	earlier application or patent but published on or after the international filing date	"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
"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)	"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
"O"	document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P"	document published prior to the international filing date but later than the priority date claimed	
Date of the actual completion of the international search	Date of mailing of the international search report	
12 June 2001	14 -06- 2001	
Name and mailing address of the ISA	Authorized officer	
Swedish Patent Office Box 5055, S-102 42 STOCKHOLM Facsimile No. +46 8 666 02 86	Ingrid Falk/EK Telephone No. +46 8 782 25 00	

INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 01/00311

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	WO 00/09049 A1 (FORSELL, PETER), 24 February 2000 (24.02.00), figures 1-8, abstract --	1-174
P,X	WO 00/15158 A1 (SOFRADIM PRODUCTION), 23 March 2000 (23.03.00), abstract --	1
E,X	WO 01/12078 A1 (BLOMBERG AXEL), 22 February 2001 (22.02.01), abstract -- -----	1

INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE01/00311

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.:
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 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:

.../...

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.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE01/00311

According to rule 13.2 an international application shall relate to one invention only or a group of inventions linked by one or more of the same or corresponding "special technical features", i.e features that define a contribution which each of the inventions, considered as a whole, makes over the prior art.

Such a link between all the subject of claims 1-174 would be the implantable adjustment means for post-operative adjusting the restriction means to enlarge and restrict the food passageway, when the restriction means is implanted in a patient. An invention comprising this feature is disclosed in the documents US 5771903 A or US 5938669 A. The documents reveal an implanted adjustment means for post-operative adjusting of a restriction means that is implanted in a patient.

Accordingly the following inventions were found:

1. Claims 1-6, 12-27, 30-32, 40-42, 45-51, 53, 55, 62-174 directed to a heartburn and reflux disease treatment device comprising an implantable adjustment means for post-operative adjusting the restriction means.
2. Claims 7-11, 28-29, 33-39, 43-44, 52 directed to a heartburn and reflux disease treatment device comprising a reservoir with a first and a second wall.
3. Claims 54 directed to a heartburn and reflux disease treatment device wherein the adjustment means is adapted to pull a first portion of a restriction member from a second of a restriction member opposite the first portion.
4. Claim 56-57 directed to a heartburn and reflux disease treatment device wherein the adjustment means is adapted to squeeze the esophagus or the stomach between two elements.
5. Claims 58-61 directed to a heartburn and reflux disease treatment device wherein the adjustment means is adapted to bend a portion of the esophagus or the stomach.

INTERNATIONAL SEARCH REPORT

Information on patent family members

28/05/01

International application No.

PCT/SE 01/00311

Patent document cited in search report			Publication date	Patent family member(s)	Publication date
US	5938669	A	17/08/99	EP 0876808 A	11/11/98
US	5771903	A	30/06/98	AT 192318 T DE 69516690 D,T EP 0769282 A,B	15/05/00 01/02/01 23/04/97
US	4271827	A	09/06/81	NONE	
WO	00/09049	A1	24/02/00	NONE	
WO	00/15158	A1	23/03/00	NONE	
WO	01/12078	A1	22/02/01	NONE	