



(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
04.09.2002 Bulletin 2002/36

(51) Int Cl.⁷: **A61B 5/0205, A61B 5/08**

(43) Date of publication A2:
07.11.2001 Bulletin 2001/45

(21) Application number: **01110075.7**

(22) Date of filing: **30.04.2001**

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE TR**
Designated Extension States:
AL LT LV MK RO SI

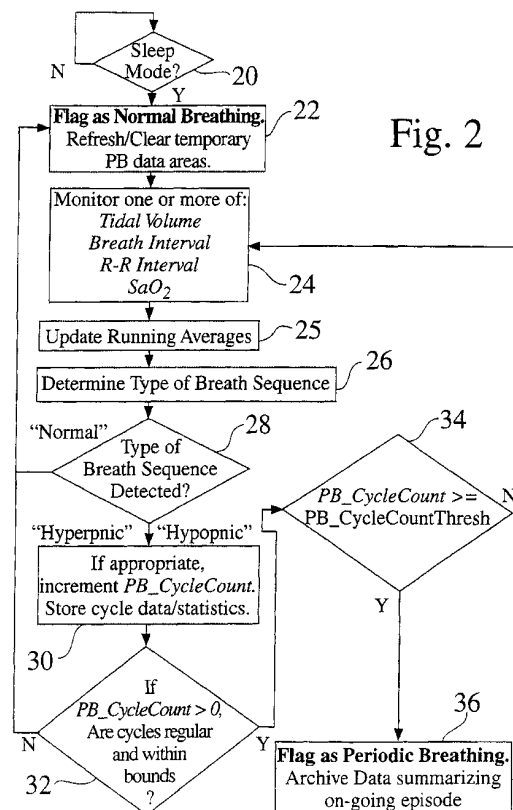
(72) Inventors:
• **Street, Anne M.**
San Rafael, CA 94901 (US)
• **Fishler, Matthew G.**
Huntington, NY 11743 (US)

(30) Priority: **05.05.2000 US 566295**

(74) Representative: **Steil, Christian, Dipl.-Ing. et al**
Witte, Weller & Partner,
Postfach 10 54 62
70047 Stuttgart (DE)

(54) **Apparatus for monitoring heart failure via respiratory patterns**

(57) Detection and monitoring of periodic breathing (PB) to provide an indication of changes in the hemodynamic status of a heart failure patient is accomplished by means for monitoring at least one of four independent physiologic parameters. The physiologic parameters are respiratory tidal volume, respiratory rate (B-B interval), arterial oxygen saturation (SaO₂) and heart rate (R-R interval). The data collected of these physiologic measures may then be analyzed by performing power spectral analysis or thresholding/binning. Each analysis method can be applied to each measure or combination thereof. In the preferred embodiment, the physiologic measures are made when the patient has been identified as being at rest or asleep to prevent interference from activity-related respiratory variations (Fig. 2.)





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 01 11 0075

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)
X	US 5 738 102 A (LEMELSON JEROME H) 14 April 1998 (1998-04-14) * column 1, line 33 - line 50 * * column 2, line 58 - column 3, line 8 * * column 4, line 2 - line 11 * * figure *	1,2,5-7, 9-17	A61B5/0205 A61B5/08
Y	---	3,4,8	
Y	US 5 020 541 A (MARRIOTT ARTHUR R) 4 June 1991 (1991-06-04) * column 7, line 8 - line 14 *	3	
Y	WO 86 07248 A (UNIV ILLINOIS) 18 December 1986 (1986-12-18) * abstract; figures 14,15 *	4,8	
X	DE 25 27 475 A (HELLIGE GMBH) 30 December 1976 (1976-12-30) * page 1, paragraph 1 - paragraph 2 * * page 7, paragraph 3 * * claim 1; figure 1 *	1-3,5-7, 9-17	
X	FR 2 664 487 A (UNIV ANGERS) 17 January 1992 (1992-01-17) * page 1, line 10 - line 20 * * page 2, line 33 - page 3, line 9 * * page 4, line 5 - line 9 * * page 13, line 8-19 * * figures 1,3,7,8 *	1,2,4, 8-11	A61B
X	US 5 605 151 A (LYNN LAWRENCE A) 25 February 1997 (1997-02-25) * column 3, line 58 - column 4, line 39 * * column 10, line 32 - line 48 * * column 11, line 50 - column 12, line 20 * * claim 1 *	1,2,5,7, 9-17	
The present search report has been drawn up for all claims			
Place of search MUNICH		Date of completion of the search 1 July 2002	Examiner Lohmann, S
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 03.82 (P04C01)

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

EP 01 11 0075

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.

01-07-2002

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5738102	A	14-04-1998	NONE	
US 5020541	A	04-06-1991	US 4919145 A	24-04-1990
WO 8607248	A	18-12-1986	AU 5965486 A	07-01-1987
			BR 8606714 A	11-08-1987
			CA 1257395 A1	11-07-1989
			CN 86104798 A	20-05-1987
			DK 55787 A	24-03-1987
			EP 0223846 A1	03-06-1987
			ES 555655 D0	01-09-1987
			ES 8707853 A1	16-11-1987
			FI 870470 A	04-02-1987
			GR 861453 A1	02-10-1986
			JP 63500153 T	21-01-1988
			NO 870448 A	03-04-1987
			US 4832038 A	23-05-1989
			WO 8607248 A1	18-12-1986
			ZA 8604119 A	25-02-1987
DE 2527475	A	30-12-1976	DE 2527475 A1	30-12-1976
FR 2664487	A	17-01-1992	FR 2664487 A1	17-01-1992
US 5605151	A	25-02-1997	US 5398682 A	21-03-1995
			US 6223064 B1	24-04-2001
			US 6342039 B1	29-01-2002
			US 2001018557 A1	30-08-2001
			US 5891023 A	06-04-1999
			AU 5016593 A	15-03-1994
			DE 69331951 D1	27-06-2002
			EP 0661947 A1	12-07-1995
			WO 9404071 A1	03-03-1994

专利名称(译)	通过呼吸模式监测心力衰竭的装置		
公开(公告)号	EP1151718A3	公开(公告)日	2002-09-04
申请号	EP2001110075	申请日	2001-04-30
[标]申请(专利权)人(译)	标兵		
申请(专利权)人(译)	PACESETTER, INC.		
当前申请(专利权)人(译)	PACESETTER, INC.		
[标]发明人	STREET ANNE M FISHLER MATTHEW G		
发明人	STREET, ANNE M. FISHLER, MATTHEW G.		
IPC分类号	A61B5/00 A61B5/0205 A61B5/024 A61B5/053 A61B5/08 A61B5/091		
CPC分类号	A61B5/0816 A61B5/0205 A61B5/024 A61B5/0535 A61B5/091 A61B5/1455		
优先权	09/566295 2000-05-05 US		
其他公开文献	EP1151718B1 EP1151718A2		
外部链接	Espacenet		

摘要(译)

检测和监测周期性呼吸 (PB) 以提供心力衰竭患者的血液动力学状态变化的指示通过用于监测四个独立生理参数中的至少一个的手段来实现。生理参数是呼吸潮气量, 呼吸频率 (B-B间期), 动脉血氧饱和度 (SaO₂) 和心率 (R-R间期)。然后可以通过执行功率谱分析或阈值/分级来分析收集的这些生理测量的数据。每种分析方法可以应用于每种度量或其组合。在优选实施例中, 当患者被识别为处于休息或睡眠时进行生理测量以防止与活动相关的呼吸变化的干扰 (图2)。

