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(54) **Flow characteristic imaging in medical diagnostic ultrasound**

(57) Flow is characterized in medical diagnostic ultrasound imaging. The flow information over time for each spatial location may be broken down (36) into component parts using Fourier analysis. For example, the average or steady state component of the flow at each location may be determined (37) and used for imaging (40). The

first harmonic may likewise be used. Imaging using one or more component parts of the flow information over time may provide diagnostically useful information. In addition or independently, the flow information may be analyzed to identify (42) a vortex. The vortex characteristics may provide diagnostically useful information.

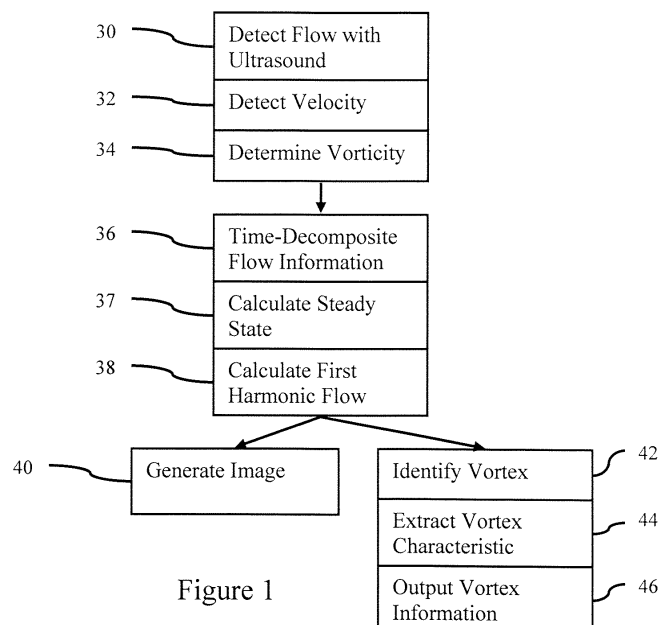


Figure 1

**PARTIAL EUROPEAN SEARCH REPORT**

Application Number

which under Rule 63 of the European Patent Convention EP 08 15 5039 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 6 251 075 B1 (HASHIMOTO KEISUKE [JP]) 26 June 2001 (2001-06-26)	1-3,6-8, 11,13	INV. A61B8/06
Y	* column 5, line 57 - column 6, line 2 * * column 8, lines 6-17 * * figures 1,5 *	5,9,10, 12,14, 17,21	ADD. G01S15/89
X	EP 1 354 556 A (MEDISON CO LTD [KR]) 22 October 2003 (2003-10-22)	1-3,6-8, 11,13	
Y	* paragraphs [0050] - [0055] * * claim 3 * * figures 13-15 *	5,9,10, 12,14	
X	US 5 327 893 A (SAVIC MICHAEL [US]) 12 July 1994 (1994-07-12)	15,16, 18-20	
Y	* column 4, line 25 - column 7, line 56 * ----- -/--	5,9,10, 12,14, 17,21	
			TECHNICAL FIELDS SEARCHED (IPC)
			A61B G01S
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 : Claims searched incompletely : Claims not searched : Reason for the limitation of the search: see sheet C			
Place of search		Date of completion of the search	Examiner
The Hague		12 March 2009	Dydenko, Igor
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			

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EPO FORM 1503 03.02 (P04E07)



PARTIAL EUROPEAN SEARCH REPORT

Application Number

EP 08 15 5039

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (IPC)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
Y	ZHENG HAIRONG ET AL: "Real time multicomponent echo particle image velocimetry technique for opaque flow imaging" APPLIED PHYSICS LETTERS, AIP, AMERICAN INSTITUTE OF PHYSICS, MELVILLE, NY, vol. 88, no. 26, 29 June 2006 (2006-06-29), pages 261915-261915, XP012082318 ISSN: 0003-6951	5,9,10, 12,14	
A	* the whole document *	15-21	

A	JASON COOKE, JEAN HERTZBERG, MATTHIEU BOARDMAN, ROBIN SHANDAS: "Characterizing Vortex Ring Behavior During Ventricular Filling with Doppler Echocardiography: An in Vitro Study" ANNALS OF BIOMEDICAL ENGINEERING, vol. 32, no. 2, February 2004 (2004-02), pages 245-256, XP002519078 * the whole document *	15-21	TECHNICAL FIELDS SEARCHED (IPC)

A	US 2004/111028 A1 (ABE YASUHIKO [JP] ET AL) 10 June 2004 (2004-06-10) * the whole document *	1-21	



**INCOMPLETE SEARCH
SHEET C**

Application Number
EP 08 15 5039

Claim(s) searched completely:
1-3, 5-21

Claim(s) not searched:
4

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

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

EP 08 15 5039

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.

12-03-2009

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专利名称(译)	医学诊断超声中的流动特征成像		
公开(公告)号	EP1985238A3	公开(公告)日	2009-04-22
申请号	EP2008155039	申请日	2008-04-23
[标]申请(专利权)人(译)	美国西门子医疗解决公司		
申请(专利权)人(译)	西门子医疗解决方案USA, INC. AMID SRL		
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CPC分类号	G01S7/52071 A61B8/06 A61B8/13 G01S7/52038 G01S15/8977 G01S15/8979		
代理机构(译)	HAZZARD, ALAN DAVID		
优先权	60/926124 2007-04-24 US 12/148746 2008-04-21 US		
其他公开文献	EP1985238A2		
外部链接	Espacenet		

摘要(译)

流动的特征在于医学诊断超声成像。可以使用傅立叶分析将每个空间位置随时间的流量信息分解 (36) 成组成部分。例如, 可确定每个位置处的流动的平均或稳态分量 (37) 并用于成像 (40)。同样可以使用一次谐波。随时间使用流信息的一个或多个组成部分进行成像可以提供诊断上有用的信息。另外或独立地, 可以分析流量信息以识别 (42) 涡流。涡流特征可以提供诊断上有用的信息。

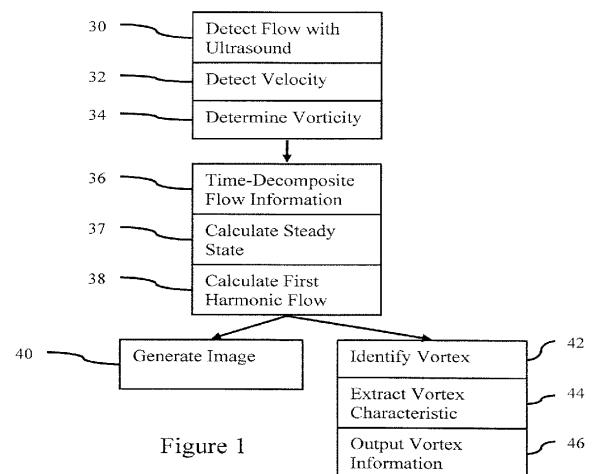


Figure 1