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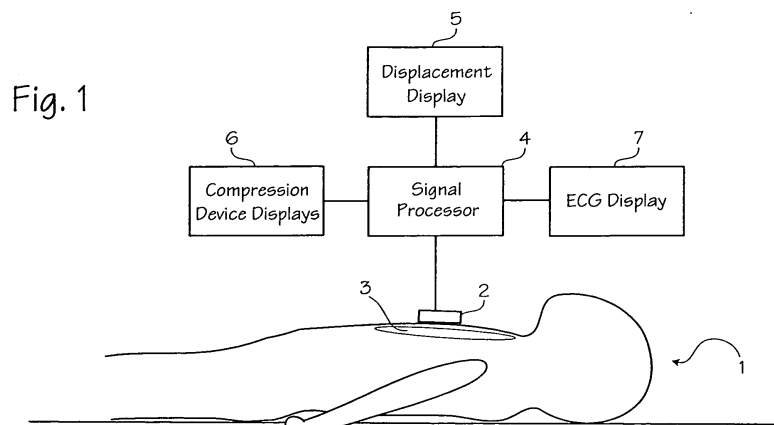
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(54) **Method of determining depth of compressions during cardio-pulmonary resuscitation**

(57) A method of processing a raw acceleration signal, measured by an accelerometer-based compression monitor, to produce an accurate and precise estimated actual depth of chest compressions. The raw acceleration signal is filtered during integration and then a moving average of past starting points estimates the actual current starting point. An estimated actual peak of the compression is then determined in a similar fashion. The es-

timated actual starting point is subtracted from the estimated actual peak to calculate the estimated actual depth of chest compressions. In addition, one or more reference sensors (such as an ECG noise sensor) may be used to help establish the starting points of compressions. The reference sensors may be used, either alone or in combination with other signal processing techniques, to enhance the accuracy and precision of the estimated actual depth of compressions.





EUROPEAN SEARCH REPORT

Application Number
EP 12 00 3129

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	SVEN O AASE* ET AL: "Compression Depth Estimation for CPR Quality Assessment Using DSP on Accelerometer Signals", IEEE TRANSACTIONS ON BIOMEDICAL ENGINEERING, IEEE SERVICE CENTER, PISCATAWAY, NJ, USA, vol. 49, no. 3, March 2002 (2002-03), XP011007210, ISSN: 0018-9294 * Setions I. to III. *	1-13	INV. A61H31/00 G06K9/00 A61B5/04 A61B5/00 A61N1/39 A61B5/053 A61M16/00
Y,D	US 6 390 996 B1 (HALPERIN HENRY R [US] ET AL) 21 May 2002 (2002-05-21) * column 10, line 52 - column 13, line 4; figures 10-16 *	1-13	
Y	EP 1 079 310 A2 (LAERDAL MEDICAL AS [NO]) 28 February 2001 (2001-02-28) * paragraphs [0009] - [0018]; figures *	1-13	
Y	SVEN OLE AASE* ET AL: "CPR Artifact Removal from Human ECG Using Optimal Multichannel Filtering", IEEE TRANSACTIONS ON BIOMEDICAL ENGINEERING, IEEE SERVICE CENTER, PISCATAWAY, NJ, USA, vol. 47, no. 11, November 2000 (2000-11), XP011006983, ISSN: 0018-9294 * Sections I. to IV. *	1-13	TECHNICAL FIELDS SEARCHED (IPC) A61H A61B G06K A61N
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 2 September 2013	Examiner Fischer, Elmar
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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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 12 00 3129

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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02-09-2013

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专利名称(译)	在心肺复苏期间确定按压深度的方法		
公开(公告)号	EP2532340A3	公开(公告)日	2013-10-09
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[标]申请(专利权)人(译)	REVIVANT		
申请(专利权)人(译)	REVIVANT CORPORATION		
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CPC分类号	A61B5/04012 A61B5/0535 A61B5/721 A61B5/7242 A61B5/725 A61H31/005 A61H31/006 A61H31/007 A61H31/008 A61H2201/5007 A61H2201/501 A61H2201/5012 A61H2201/5043 A61H2201/5048 A61H2201/5058 A61H2201/5084 A61H2201/5097 A61H2230/04 A61H2230/08 A61H2230/40 A61M16 /00 A61N1/39044 G06K9/0051 Y10S128/901 Y10S601/08 Y10S601/09 Y10S601/10 A61B5/044 A61B5 /053 A61M16/0078		
审查员(译)	FISCHER , ELMAR		
优先权	10/280220 2002-10-25 US		
其他公开文献	EP2532340A2		
外部链接	Espacenet		

摘要(译)

一种处理原始加速度信号的方法，该原始加速度信号由基于加速度计的压缩监测器测量，以产生准确且精确的胸部按压的估计实际深度。在积分期间过滤原始加速度信号，然后过去起始点的移动平均值估计实际当前起始点。然后以类似的方式确定估计的压缩实际峰值。从估计的实际峰值中减去估计的实际起始点，以计算估计的胸部按压的实际深度。另外，可以使用一个或多个参考传感器（例如ECG噪声传感器）来帮助建立压缩的起始点。可以单独使用参考传感器或者与其他信号处理技术组合使用参考传感器，以增强估计的实际压缩深度的准确度和精度。

