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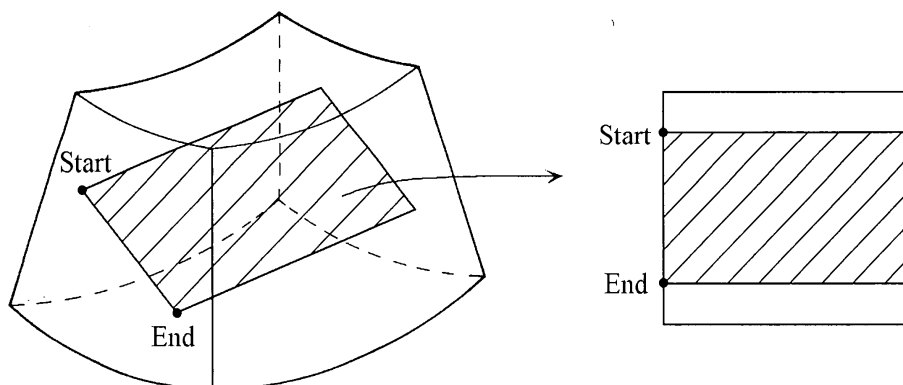
(54) **Apparatus and method for displaying sectional planes of target object utilizing 3-dimensional ultrasound data**

(57) An apparatus for displaying sectional planes of a target object utilizing 3 dimensional (3D) ultrasound data. The apparatus is capable of scanning the target object in real time by improving a scan conversion speed and virtually scans the target object by storing previously acquired 3D data. The apparatus, which displays a

target object by using 3D ultrasound data, includes 1) a scan conversion unit for performing scan conversion to convert Cartesian coordinates for display on a screen of a display device to conical coordinates of 3D data, and 2) a rendering unit for rendering multiple sectional plane images, based on the 3D scan conversion, parallel with a reference sectional plane.

Fig. 7A

Sectional plane drawing strait line on A sectional plane





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EUROPEAN SEARCH REPORT

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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)
P,X	US 2004/138560 A1 (PALADINI GIANLUCA) 15 July 2004 (2004-07-15) * abstract; figures 1-6b * * paragraphs [0002], [0003], [0007] - [0010], [0024] - [0026], [0030] - [0091], [0102], [0109] - [0112] * -----	1-16	G01S15/89 G01S7/52 G06T17/40
X	US 5 396 890 A (WENG ET AL) 14 March 1995 (1995-03-14) * abstract; figures 1-9 * * column 1, lines 7-12 * * column 3, line 44 - column 9, line 12 * -----	1-16	
X	SAKAS G ET AL: "Interactive visualization of large scalar voxel fields" PROCEEDINGS OF THE VISUALIZATION CONFERENCE. BOSTON, OCT. 19 - 23, 1992, LOS ALAMITOS, IEEE COMP. SOC. PRESS, US, vol. CONF. 3, 19 October 1992 (1992-10-19), pages 29-36, XP010029602 ISBN: 0-8186-2897-9 * abstract; figures 1,2,4,6,7 * * page 29, left-hand column - page 30, left-hand column * Sections 2.2, 2.3 and 3 -----	1-16	TECHNICAL FIELDS SEARCHED (Int.Cl.7) G01S G06T
X	US 6 374 674 B1 (MINE YOSHITAKA) 23 April 2002 (2002-04-23) * abstract; figures 1,4 * * column 1, lines 13-30 * * column 2, lines 7-12,33-62 * * column 6, lines 1-44 * * column 7, line 63 - column 8, line 3 * ----- -/--	13-15	
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 8 August 2005	Examiner Reuss, T
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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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	ROBB R A: "THREE-DIMENSIONAL VISUALIZATION IN MEDICINE AND BIOLOGY" HANDBOOK OF MEDICAL IMAGING, 1 September 2000 (2000-09-01), pages 685-712, XP002270429 * figures 3,4 * Section 3.1: "2D Image Generation and Display"	13-15	
A	----- NIKOLOV S I ET AL: "Real time 3D visualization of ultrasonic data using a standard PC" ULTRASONICS, IPC SCIENCE AND TECHNOLOGY PRESS LTD. GUILDFORD, GB, vol. 41, no. 6, August 2003 (2003-08), pages 421-426, XP004437390 ISSN: 0041-624X * the whole document *	1-16	
A	----- KREEGER K A ET AL: "Mixing translucent polygons with volumes" VISUALIZATION '99. PROCEEDINGS SAN FRANCISCO, CA, USA 24-29 OCT. 1999, PISCATAWAY, NJ, USA, IEEE, US, 24 October 1999 (1999-10-24), pages 191-525, XP010364952 ISBN: 0-7803-5897-X * the whole document * -----	1-16	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
Place of search Munich		Date of completion of the search 8 August 2005	Examiner Reuss, T
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 03.82 (P04C01)

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

EP 04 03 0404

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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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2004138560 A1	15-07-2004	NONE	
US 5396890 A	14-03-1995	NONE	
US 6374674 B1	23-04-2002	JP 2000116651 A	25-04-2000

专利名称(译)	利用三维超声数据显示目标对象的截面的装置和方法		
公开(公告)号	EP1550883A3	公开(公告)日	2005-09-28
申请号	EP2004030404	申请日	2004-12-22
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当前申请(专利权)人(译)	MEDISON CO. , LTD.		
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IPC分类号	A61B8/00 A61B8/13 G01S7/52 G01S15/89 G06T3/00 G06T15/08 G06T19/00 G06T17/40		
CPC分类号	G06T19/00 A61B8/463 A61B8/483 A61B8/523 G01S7/52044 G01S7/52063 G01S7/52073 G01S7/52074 G01S15/8993 G06T2219/008		
代理机构(译)	LORENZ , WERNER		
优先权	1020040091704 2004-11-11 KR 1020030101188 2003-12-31 KR		
其他公开文献	EP1550883B1 EP1550883A2		
外部链接	Espacenet		

摘要(译)

一种利用三维 (3D) 超声数据显示目标对象的截面的装置。该装置能够通过提高扫描转换速度来实时扫描目标对象, 并通过存储先前获取的3D数据来虚拟地扫描目标对象。通过使用3D超声数据显示目标对象的设备包括: 1) 扫描转换单元, 用于执行扫描转换以将用于在显示设备的屏幕上显示的笛卡尔坐标转换为3D数据的锥形坐标, 以及2) 渲染用于渲染多个截面图像的单元, 基于3D扫描转换, 与参考截面平行。

Fig. 7A

Sectional plane drawing strait line on A sectional plane

