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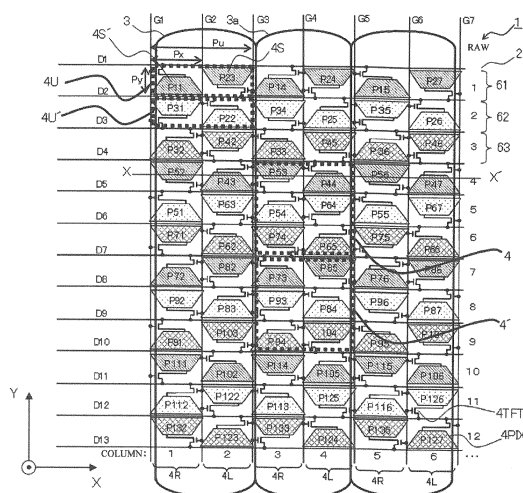
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(54) **Liquid crystal display element, image display apparatus, method for driving image display apparatus, and portable device**

(57) Disclosed is a display apparatus (1) capable of displaying respective images toward a plurality of eyepoints, wherein a problem caused by local fluctuation of transmittance is suppressed; and good three-dimensional display characteristics are realized. The image display apparatus (1) according to the present invention includes: a liquid crystal display element in which a plurality of display units (4U) including at least a pixel (4L) that displays an image for a first eyepoint and a pixel (4R) that displays an image for a second eyepoint are arranged in a matrix shape; optical means (3) which distributes light emitted from the pixel (4L) that displays the image for the first eyepoint and light emitted from the pixel (4R) that displays the image for the second eyepoint in mutually different directions; a first control electrode and a second control electrode disposed on each pixel in the display units; and a plurality of domain regions of which the orientation is controlled by a diagonal electric field or a lateral electric field formed by the first control electrode and the second control electrode and which have different liquid crystal molecule orientation states.

Fig.1





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 (IPC)
X	EP 2 395 391 A1 (NLT TECHNOLOGIES LTD [JP]) 14 December 2011 (2011-12-14)	1,4-7, 12,14-25	INV. G02F1/1343
Y	* the whole document *	13	G02B27/22
A	-----	2,3,8-11	H04N13/04
Y	EP 2 432 242 A2 (NLT TECHNOLOGIES LTD [JP]) 21 March 2012 (2012-03-21)	13	
A	* figures 31,32; examples 6,7 * * figures 1-3, 5-10,17-23, 26-30,34-37 * -----	1-12, 14-25	
			TECHNICAL FIELDS SEARCHED (IPC)
			G02F G02B H04N
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 13 October 2015	Examiner Wahl, Martin
CATEGORY OF CITED DOCUMENTS		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	
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			

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EPO FORM 1503 03.82 (P04C01)

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

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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
EP 2395391	A1	14-12-2011	CN	102279494 A	14-12-2011
			EP	2395391 A1	14-12-2011
			JP	5776967 B2	09-09-2015
			JP	2012018382 A	26-01-2012
			US	2011304601 A1	15-12-2011

EP 2432242	A2	21-03-2012	CN	102445760 A	09-05-2012
			EP	2432242 A2	21-03-2012
			JP	2012063556 A	29-03-2012
			KR	20120028842 A	23-03-2012
			TW	201233147 A	01-08-2012
			US	2012113100 A1	10-05-2012

专利名称(译)	液晶显示元件，图像显示装置，用于驱动图像显示装置的方法和便携式装置		
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审查员(译)	华尔， MARTIN		
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其他公开文献	EP2713202A2		
外部链接	Espacenet		

摘要(译)

公开了一种能够向多个视点显示各个图像的显示装置（1），其中抑制了由透射率的局部波动引起的问题;实现了良好的三维显示特性。根据本发明的图像显示装置（1）包括：液晶显示元件，其中包括至少一个显示第一眼点的图像的像素（4L）的多个显示单元（4U）和像素（4R））显示第二眼点的图像以矩阵形状排列;光学装置（3），其分配从显示第一视点的图像的像素（4L）发射的光和从像素/4R发射的光，其在相互不同的方向上显示第二视点的图像;第一控制电极和第二控制电极，设置在显示单元中的每个像素上;多个畴区的取向由对角电场或由第一控制电极和第二控制电极形成的横向电场控制，并且具有不同的液晶分子取向状态。

Fig.1

