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(71) Applicant: **Sharp Kabushiki Kaisha**
Osaka-shi, Osaka 545-8522 (JP)

(72) Inventors:

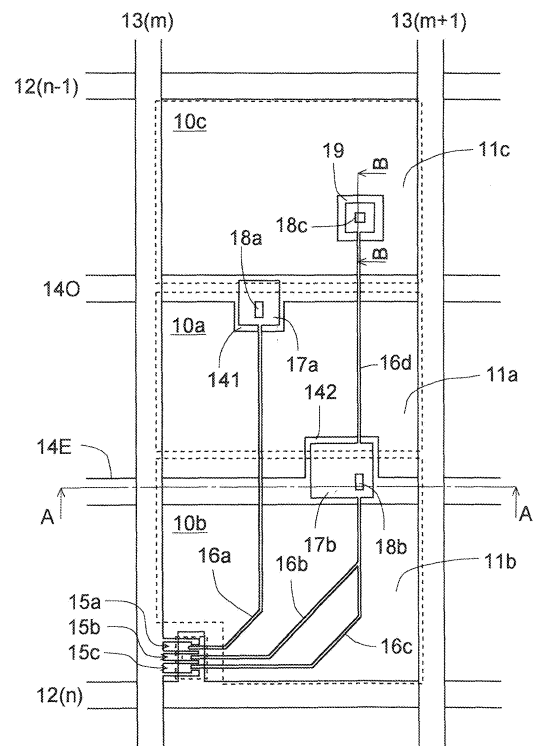
- **Takeuchi, Masanori**
Mie 514-0101 (JP)
- **Ohtsubo, Tomokazu**
Mie 510-0208 (JP)
- **Tsubata, Toshihide**
Mie 514-0003 (JP)

(74) Representative: **Brown, Kenneth Richard et al**
R.G.C. Jenkins & Co
26 Caxton Street
London SW1H 0RJ (GB)

(54) **Liquid crystal display**

(57) A liquid crystal display comprises a plurality of scanning lines (12) extending in a row direction, a plurality of signal lines (13) extending in a column direction, and a plurality of pixels (10). Each of the plurality of pixels has a bright sub-pixel (10a) and a dim sub-pixel (10b, 10c) arranged in the column direction, the bright sub-pixel in a middle halftone state having a higher brightness level than the dim sub-pixel. The bright sub-pixel has a bright sub-pixel electrode (11a) and the dim sub-pixel has a dim sub-pixel electrode (11b, 11c). A connecting conductor (16b, 16c, 16d, 17b) is provided and connects the dim sub-pixel electrode (10c) to a drain electrode of a transistor (15b, 15c). There are provided two auxiliary capacitance conductors (140, 14E) between adjacent ones (12(n-1), 12(n)) of the scanning lines parallel to the scanning lines, and the connecting conductor overlaps with the two auxiliary capacitance conductors.

FIG.1





EUROPEAN SEARCH REPORT

Application Number
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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)
A,D	US 2003/227429 A1 (SHIMOSHIKIRYO FUMIKAZU [JP]) 11 December 2003 (2003-12-11) * paragraphs [0013] - [0015], [0022], [0066], [0067], [0123] - [0127], [0156], [0198] - [0204]; figures 12,13,21 *	1,2	INV. G02F1/1343 G02F1/1362 G09G3/36
A,D	US 2004/001167 A1 (TAKEUCHI MASANORI [JP] ET AL) 1 January 2004 (2004-01-01) * paragraphs [0056] - [0058], [0063]; figures 1-3 *	1,2	
A	EP 0 669 549 A (HOSIDEN CORP [JP] KONINKL PHILIPS ELECTRONICS NV [NL]) 30 August 1995 (1995-08-30) * page 8, line 52 - page 9, line 5 * * page 9, line 19 - line 24 * * page 4, line 25 - line 27 *	1	
A	US 2002/167477 A1 (TSUTSUI YUSUKE [JP] ET AL) 14 November 2002 (2002-11-14) * paragraphs [0013], [0059], [0060]; figures 1,3 *	1	TECHNICAL FIELDS SEARCHED (IPC) G02F G09G
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 28 March 2012	Examiner Stang, Ingo
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 10 16 7600

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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28-03-2012

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 2003227429	A1	11-12-2003	CN 1482593 A	17-03-2004
			JP 4342200 B2	14-10-2009
			JP 2004062146 A	26-02-2004
			KR 20050113578 A	02-12-2005
			KR 20070026755 A	08-03-2007
			US 2003227429 A1	11-12-2003
			US 2005213015 A1	29-09-2005

US 2004001167	A1	01-01-2004	CN 1469175 A	21-01-2004
			JP 4248306 B2	02-04-2009
			JP 2004078157 A	11-03-2004
			KR 20040002600 A	07-01-2004
			US 2004001167 A1	01-01-2004
			US 2006097972 A1	11-05-2006
			US 2009021658 A1	22-01-2009

EP 0669549	A	30-08-1995	EP 0669549 A1	30-08-1995
			EP 0672935 A1	20-09-1995

US 2002167477	A1	14-11-2002	US 2002167477 A1	14-11-2002
			US 2005280621 A1	22-12-2005

专利名称(译)	液晶显示器		
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[标]申请(专利权)人(译)	夏普株式会社		
申请(专利权)人(译)	夏普株式会社		
当前申请(专利权)人(译)	夏普株式会社		
[标]发明人	TAKEUCHI MASANORI OHTSUBO TOMOKAZU TSUBATA TOSHIHIDE		
发明人	TAKEUCHI, MASANORI OHTSUBO, TOMOKAZU TSUBATA, TOSHIHIDE		
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优先权	2004293218 2004-10-06 JP		
其他公开文献	EP2230551A2		
外部链接	Espacenet		

摘要(译)

液晶显示器包括沿行方向延伸的多条扫描线 (12)，沿列方向延伸的多条信号线 (13) 和多个像素 (10)。多个像素中的每一个具有沿列方向布置的亮子像素 (10a) 和暗子像素 (10b, 10c)，处于中间半色调状态的亮子像素具有比暗淡更高的亮度级别子像素。亮子像素具有亮子像素电极 (11a)，暗子像素具有暗子像素电极 (11b, 11c)。提供连接导体 (16b, 16c, 16d, 17b) 并将昏暗的子像素电极 (10c) 连接到晶体管 (15b, 15c) 的漏电极。在与扫描线平行的扫描线的相邻 (12 (n-1)，12 (n)) 之间设置两个辅助电容导体 (140, 14E)，并且连接导体与两个辅助电容导体重叠。

FIG. 1

