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**17172364.6 / 3 232 429**  
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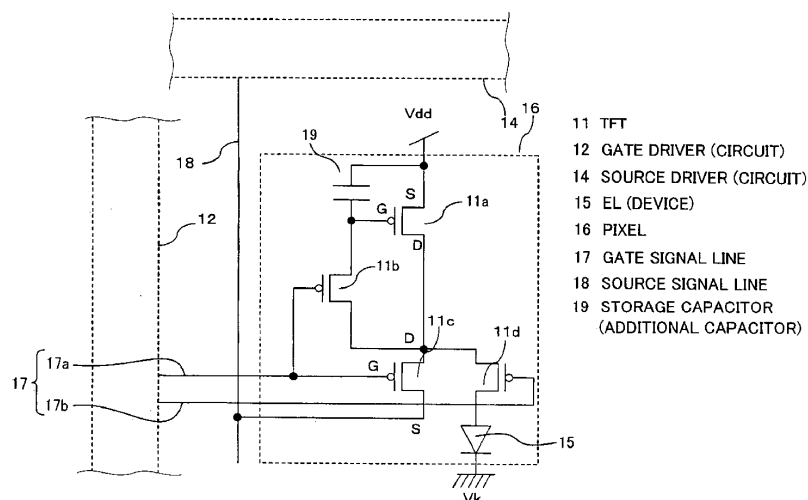
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(54) **EL DISPLAY PANEL, METHOD OF DRIVING THE SAME, AND EL DISPLAY DEVICE**

(57) An EL display apparatus according to the present invention includes EL device (15) adapted to emit light at a luminance corresponding to a current fed thereto. A source driver (14) outputs a current higher than a current corresponding to an image signal to the EL device (15) through a source signal line (18). This operation

charges/discharges a parasitic capacitance present in the source signal line (18). A transistor (11d) formed between the EL device (15) and the source driver (14) operates so that the EL device (15) is fed with the current for only a part of a one-frame period. As a result, the EL device (15) emits light for only the part of the period.



**FIG. 1**



## EUROPEAN SEARCH REPORT

Application Number  
EP 19 20 0688

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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 1 061 497 A (SONY CORP [JP]) 20 December 2000 (2000-12-20)	1,13-15	INV. G09G3/20 G09G3/30 G09G3/36
Y	* figures 5-7 * * paragraphs [0037] - [0042] * * paragraph [0046] * * paragraphs [0048] - [0050] *	2-12	
X	WO 98/48403 A1 (SARNOFF CORP [US]) 29 October 1998 (1998-10-29)	1,13-15	
Y	* figure 3 *	8-10	
A		2	
Y	EP 0 949 603 A1 (SEIKO EPSON CORP [JP]) 13 October 1999 (1999-10-13) * figure 2 * * paragraph [0022] *	2	TECHNICAL FIELDS SEARCHED (IPC)  G09G
Y	JP 2001 109432 A (PIONEER CORP) 20 April 2001 (2001-04-20) * figures 2,5,6 *	11,12	
Y	US 2001/003448 A1 (NOSE TAKASHI [JP] ET AL) 14 June 2001 (2001-06-14) * paragraphs [0068] - [0070]; figure 2 *	3-7	
A	GB 2 335 776 A (CENTRAL RESEARCH LAB LTD [GB]) 29 September 1999 (1999-09-29) * figure 2 *	3-7	
The present search report has been drawn up for all claims			
Place of search <b>The Hague</b>		Date of completion of the search <b>16 March 2020</b>	Examiner <b>Husselin, Stephane</b>
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			

EPO FORM 1503 03.82 (P04C01)



Application Number

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**CLAIMS INCURRING FEES**

The present European patent application comprised at the time of filing claims for which payment was due.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

**LACK OF UNITY OF INVENTION**

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

☐ The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).



**LACK OF UNITY OF INVENTION  
SHEET B**

Application Number

EP 19 20 0688

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1, 2, 13-15

An electroluminescent (EL) display apparatus wherein area of a pixel electrode of a first color and area of a pixel electrode of the second color are different.

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2. claims: 3-7

An EL display apparatus generating band-shaped non-display regions and band-shaped display regions on the display screen.

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3. claims: 8-10

An EL display apparatus wherein the pixel circuit of each of the pixels includes a switch transistor connected between the gate terminal and another terminal of the driving transistor and which gate terminal of the switch transistor is connected to one gate signal line.

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4. claims: 11, 12

An EL display apparatus wherein the pixel circuit of each of the pixels includes a switch transistor provided between an anode terminal of the EL device and a voltage line configured to supply a reverse bias voltage for reverse biasing the anode terminal of the EL device.

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

EP 19 20 0688

5 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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16-03-2020

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 1061497 A	20-12-2000	CN 1278635 A	03-01-2001
		CN 1677460 A	05-10-2005
		EP 1061497 A1	20-12-2000
		JP 4092857 B2	28-05-2008
		JP 2001060076 A	06-03-2001
		KR 20010039666 A	15-05-2001
		TW 502233 B	11-09-2002
WO 9848403 A1	29-10-1998	US 6583775 B1	24-06-2003
		EP 0978114 A1	09-02-2000
		JP 4251377 B2	08-04-2009
		JP 2002514320 A	14-05-2002
		KR 20010020114 A	15-03-2001
		KR 20050084509 A	26-08-2005
		WO 9848403 A1	29-10-1998
EP 0949603 A1	13-10-1999	CN 1242858 A	26-01-2000
		DE 69833257 T2	21-09-2006
		EP 0949603 A1	13-10-1999
		JP H1173158 A	16-03-1999
		KR 20000068801 A	25-11-2000
		TW 385420 B	21-03-2000
		US 6518941 B1	11-02-2003
JP 2001109432 A	20-04-2001	US 2003071772 A1	17-04-2003
		WO 9912150 A1	11-03-1999
		JP 2001109432 A	20-04-2001
		US 6380689 B1	30-04-2002
US 2001003448 A1	14-06-2001	JP 2001166280 A	22-06-2001
		KR 20010062180 A	07-07-2001
		TW 589476 B	01-06-2004
		US 2001003448 A1	14-06-2001
GB 2335776 A	29-09-1999	EP 1066619 A1	10-01-2001
		GB 2335776 A	29-09-1999
		JP 2002510073 A	02-04-2002
		KR 20010034715 A	25-04-2001
		TW 452752 B	01-09-2001
		WO 9950817 A1	07-10-1999

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

专利名称(译)	EL显示面板，控制它们的方法和EL显示装置		
公开(公告)号	EP3611716A3	公开(公告)日	2020-04-22
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[标]申请(专利权)人(译)	日本有机雷特显示器股份有限公司		
申请(专利权)人(译)	JOLED INC.		
当前申请(专利权)人(译)	JOLED INC.		
[标]发明人	TAKAHARA HIROSHI TSUGE HITOSHI		
发明人	TAKAHARA, HIROSHI TSUGE, HITOSHI		
IPC分类号	G09G3/20 G09G3/30 G09G3/36 G09G5/02 H01L27/32		
CPC分类号	G09G3/3241 G09G3/325 G09G3/3266 G09G5/02 G09G2300/0809 G09G2300/0814 G09G2300/0819 G09G2300/0842 G09G2300/0852 G09G2300/0861 G09G2310/0205 G09G2310/0218 G09G2310/0248 G09G2310/0251 G09G2310/0256 G09G2310/027 G09G2320/0247 G09G2320/0257 G09G2320/0261 G09G2320/043 G09G2320/06 G09G2320/0606 G09G2320/0626 H01L27/3244 G09G3/2003 G09G3/2007 G09G3/32 G09G3/3233 G09G3/3258 G09G3/3275 G09G2300/0404 G09G2300/0413 G09G2310/0289 G09G2310/08 G09G2320/0646 G09G2320/0653 H01L27/124 H01L27/1251 H01L27/1255 H01L27/127 H01L27/156 H01L27/3211 H01L27/3216 H01L27/3262 H01L27/3265 H01L29/78645 H01L29/78672 H01L33/56 H01L33/58 H01L51/525 H01L51/5253 H01L51/5259 H01L51/5281 H05K999/99		
优先权	2001271311 2001-09-07 JP 2001291598 2001-09-25 JP 2001347014 2001-11-13 JP 2002136117 2002-05-10 JP PCT/JP2002/009111 2002-09-06 WO		
其他公开文献	EP3611716A2		
外部链接	<a href="#">Espacenet</a>		

## 摘要(译)

根据本发明的EL显示设备包括适于以与馈入其的电流相对应的亮度发光的EL器件(15)。源极驱动器(14)通过源极信号线(18)向EL器件(15)输出比对应于图像信号的电流高的电流。该操作对存在于源信号线(18)中的寄生电容进行充电/放电。在EL器件(15)和源极驱动器(14)之间形成的晶体管(11d)工作,使得EL器件(15)仅在一帧周期的一部分被馈送电流。结果,E1装置(15)仅在该周期的一部分中发光。

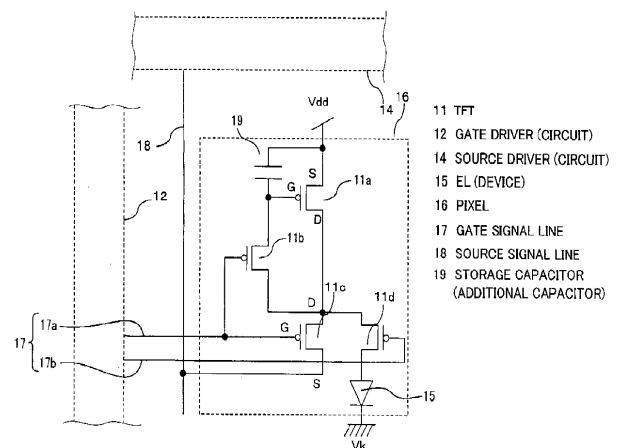


FIG. 1