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PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Attorney Docket No.: 117390.01

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Customer Number: 25944

**CONTINUING APPLICATION TRANSMITTAL
RULE 1.53(b)**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Transmitted herewith for filing under 37 C.F.R. §1.53(b) is a

☒ Continuation ☐ Divisional ☐ Continuation-in-Part

application of prior pending Application No. 10/676,067, filed October 2, 2003,

For (Title): ELECTRO-OPTICAL DEVICE, MATRIX SUBSTRATE AND ELECTRONIC
APPARATUS

By (Inventors): Yojiro MATSUEDA; Hayato NAKANISHI

1. ☒ A Declaration of the inventor(s) is attached. The attached Declaration is:
 - ☒ a. A copy of the Declaration from the parent application. (Used with the same or fewer inventors and (a) a copy of the prior application or (b) a revised, reformatted or edited version of the prior application that does not contain new matter.)
 - ☐ b. A new Declaration. (Used with the same, fewer or additional inventors and (a) a copy of the prior application, (b) a revised, reformatted or edited version of the prior application that does not contain new matter, or (c) a new specification.)
2. ☒ A Power of Attorney is attached. The attached Power of Attorney is:
 - ☒ a. A copy of the Power of Attorney from the parent application.
 - ☐ b. A new Power of Attorney.☐ The Power of Attorney is a General Power of Attorney.

A Transmittal of Power of Attorney and Statement Under 37 C.F.R. §3.73(b) is attached, and
A copy of the Assignment ☐ is attached to the Transmittal or ☐ was recorded at Reel _____
Frame _____.

☐ The Power of Attorney is a Specific Power of Attorney for this application.

A Transmittal of Power of Attorney and Statement Under 37 C.F.R. §3.73(b) is attached, and
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Frame _____.

☒ The Power of Attorney is in a combined Declaration/Power of Attorney.
 - ☒ a. The Power of Attorney identifies no more than ten attorneys.
 - ☐ b. The Power of Attorney identifies more than ten attorneys, and a separate Designation of Attorneys for Power of Attorney is filed herewith.
 - ☐ c. The Power of Attorney is to the attorneys associated with a Customer Number.

3. ☒ The fees due upon filing are calculated below:

**CLAIMS IN THE APPLICATION AFTER ENTRY OF
ANY PRELIMINARY AMENDMENT NOTED BELOW**

FOR:	NO. FILED	NO. EXTRA
BASIC FEE		
EXAMINATION FEE		
SEARCH FEE		
APPLICATION SIZE FEE Total pages 21 - 100 =	0 ÷ 50	= †0
TOTAL CLAIMS	6 - 20	= *0
INDEP CLAIMS	1 - 3	= *0
☐ MULTIPLE DEPENDENT CLAIMS PRESENTED		

*If the difference is less than zero, enter "0".
†round up to next integer

SMALL ENTITY

RATE	FEE
	\$ 155
	\$ 105
	\$ 255
x 130 =	\$
x 25 =	\$
x 105 =	\$
+ 185 =	\$
TOTAL	\$

**OTHER THAN A
SMALL ENTITY**

RATE	FEE
	\$ 310
	\$ 210
	\$ 510
x 260 =	\$
x 50 =	\$
x 210 =	\$
+ 370 =	\$
TOTAL	\$1030

4. ☒ Check No. 208193 in the amount of \$1,030.00 to cover the fees due upon filing is attached. The Commissioner is hereby authorized to charge any other fees that may be required to complete this filing, or to credit any overpayment, to Deposit Account No. 15-0461.
5. ☒ Application Data Sheet is attached.
6. ☒ Formal drawings (Figs. 1-8) are attached.
☐ Use Figure _____ for front page of Publication.
7. ☐ Priority of foreign application No. JP-2002-293696 filed 10/07/2002 in JAPAN is claimed under 35 U.S.C. §119 and/or §365(b).
☒ The certified copy was filed in prior Application No. 10/676,067 on 10/23/2003.
☐ An electronic copy of the above foreign application(s) was received by the PTO in prior Application No. _____.
☐ A certified copy of the above foreign application(s) is filed herewith.
☐ A copy of the priority document was transmitted by the International Bureau in prior Application No. _____.
☐ An electronic copy of the above foreign application should be automatically retrieved by the PTO in accordance with the electronic priority document exchange service.
8. ☐ Priority of U.S. Provisional Application(s) No. _____ filed _____ is claimed under 35 U.S.C. §119.
(A Preliminary Amendment is attached to reflect the claim of benefit in the specification if not already present.)
9. ☒ The prior application is assigned of record to SEIKO EPSON CORPORATION, TOKYO, JAPAN and recorded at Reel 014315, Frame 0175.

10. ☐ This application is filed by fewer than all the inventors named in the prior application (37 C.F.R §1.53(b)(1)). Delete the following inventor(s) named in the prior application:
- _____
- _____
11. ☐ A Preliminary Amendment is attached. The Preliminary Amendment amends the specification to reflect the continuation data. Claims added by this Amendment are properly numbered consecutively beginning with the number next following the highest numbered claim in the application and claims canceled are identified in the listing of claims.
12. ☒ An Information Disclosure Statement is attached.
13. ☐ Small entity status:
- ☐ a. Entitlement to small entity status is asserted.
- ☐ b. Small entity status is no longer claimed.
14. ☐ Other: _____
15. ☐ As also indicated in the attached Request, this application is NOT to be published under 35 U.S.C. 122(b). The undersigned attorney or agent hereby certifies that the invention disclosed in this application has not and will not be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication of applications 18 months after filing.
16. ☒ The claims in this continuing application differ from the claims in the parent application(s). As to each claim or claim term in this continuing application that is broader than any claim or claim term in any parent application, any previous disclaimer of claim scope made during prosecution of any parent application is rescinded. The Examiner is requested to consider such broader claims and/or claim terms in view of all of the prior art without any previous disclaimers.

Respectfully submitted,



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ELECTRO-OPTICAL DEVICE, MATRIX SUBSTRATE,
AND ELECTRONIC APPARATUS

This is a Continuation of Application No. 10/676,067 filed October 2, 2003. The disclosure of the prior application is hereby incorporated by reference herein in its entirety.

BACKGROUND OF THE INVENTION

1. Field of Invention

[0001] The present invention relates to a wiring layout suitable for an electro-optical device including electro-optical devices.

2. Description of Related Art

[0002] Organic EL devices are current-driven self-light-emitting devices, and accordingly, there are an advantage of no need to provide a backlight, as well as other advantages such as low power consumption, a wide range of vision, and a high contrast ratio, so there is high expectation for development of flat panel displays employing EL devices. The organic EL device is an electro-optical device including a light-emission layer introduced between an anode and a cathode, wherein, upon supplying forward bias current between both the electrodes, self-light-emission is effected due to the recombination energy at the time of recombination of a hole injected from the anode and an electron injected from the cathode. Accordingly, a supply of electric power from an external circuit is required in order to cause the organic EL device to emit light.

[0003] With conventional color-display active-matrix-driven display panels, an M number each of electric power lines and data lines are disposed in the column direction on a pixel matrix with an N number of columns and an M number of rows formed on a pixel region, as well as an N number of selection lines being disposed in the row direction on the aforementioned matrix. With a given pixel of such a wiring layout, a data line is disposed between the given pixel and the left-adjacent pixel, and an electric power line is disposed between the given pixel and the right-adjacent pixel. That is to say, with the lines disposed between adjacent pixels in the column direction, a layout is formed so that one data line and one electric line make up one pair. With the above-described configuration, disposed at an intersection of a scan line and a data line are: a switching transistor, a holding capacitance, a driving transistor, and an organic EL device for emitting light in one color of the RGB three primary colors, and these devices make up a pixel.

SUMMARY OF THE INVENTION

[0004] With the conventional arrangements, a light-emission layer is formed of a material corresponding to each color of the RGB three primary colors, and accordingly, the organic EL device is operated with greatly different power consumption corresponding to each color, so the optimal width of the electric power line is greatly different for each color. Accordingly, with the above-described wiring layout, while there is the need to determine the pixel pitch according to the maximal width for disposing the electric power lines, there is the need to form a pixel matrix with the same pixel pitch due to the restriction from the manufacturing process for a display, and accordingly, there is the need to determine the pixel layout at the sacrifice of the aperture ratio. On the other hand, in the event of reducing the aperture ratio, there is the need to increase the amount of electric current supplied to the organic EL device for obtaining predetermined luminance, and accordingly, there is the need to form the electric power line with a greater width, leading to further reduction of the aperture ratio from the above-described reason.

[0005] As described above, with the conventional wiring layout, the width of the electric line and the aperture ratio of the pixel are in the relation of trade off each other, and it is difficult to maintain a large aperture ratio while maintaining the electric power line with a suitable width for each color under the condition that the pixel matrix is formed with the same pixel pitch.

[0006] Accordingly, it is an object of the present invention to provide a wiring method for electric power lines, wherein the aperture ratio of the pixel can be increased while maintaining a pixel matrix with the same pixel pitch.

[0007] In order to solve the above-described problems, an electro-optical device according to the present invention comprises multiple pixels, disposed in the form of a matrix, including electro-optical devices driven by receiving electric power from an electric power supply circuit, wherein the multiple pixels make up multiple pixel groups formed of a series of pixels arrayed in at least one direction of the row direction and the column direction, and wherein line forming regions are formed between adjacent pixel groups of the multiple pixel groups, and wherein the line forming regions are formed with generally the same width. With such a configuration, the pixel pitch can be made the same.

[0008] Here, "electro-optical device" means a general electronic device for changing the optical state of light by using electric effects, and include, besides self-light-emitting

devices such as electro-luminescence devices, electronic devices for displaying grayscale by adjusting the state of the polarized light, similarly to liquid crystal devices. With the present invention, the electro-luminescence devices are preferably employed. With the present invention, the electro-luminescence devices are employed, whereby current-driven self-light-emission devices can be obtained.

[0009] Another electro-optical device according to the present invention comprises multiple scan lines, multiple data lines, multiple pixels, disposed at portions corresponding to the intersections of the scan lines and the data lines, including electro-optical devices, and multiple electric power lines for supplying driving voltage to the electro-optical devices, wherein the multiple pixels make up multiple pixel groups formed of a series of pixels arrayed in at least one direction of the row direction and the column direction, and wherein multiple line forming regions are formed between adjacent pixel groups of the multiple pixel groups, and wherein at least two lines selected from at least one electric power line of the multiple electric power lines, at least one scan line of the multiple scan lines, and at least one data line of the multiple data lines, are formed in at least one line forming region of the multiple line forming regions. With such a configuration, a pixel matrix can be formed with the same pixel pitch, and also with a high aperture ratio while forming electric power lines with the optimal width.

[0010] Another electro-optical device according to the present invention comprises multiple scan lines, multiple data lines, multiple pixels, disposed at portions corresponding to the intersections of the scan lines and the data lines, including electro-optical devices, and multiple electric power lines for supplying driving voltage to the electro-optical devices, wherein the multiple pixels make up multiple pixel groups formed of a series of pixels arrayed in at least one direction of the row direction and the column direction, and wherein multiple line forming regions are formed between adjacent pixel groups of the multiple pixel groups, and wherein both at least one electric power line of the multiple electric power lines and at least one scan line of the multiple scan lines are formed in at least one line forming region of the multiple line forming regions. With such a configuration, a pixel matrix can be formed with the same pixel pitch, and also with a high aperture ratio while forming electric power lines with the optimal width.

[0011] Another electro-optical device according to the present invention comprises multiple scan lines, multiple data lines, multiple pixels, disposed at portions corresponding to the intersections of the scan lines and the data lines, including electro-optical devices, and

multiple electric power lines for supplying driving voltage to the electro-optical devices, wherein the multiple pixels make up multiple pixel groups formed of a series of pixels arrayed in at least one direction of the row direction and the column direction, and wherein multiple line forming regions are formed between adjacent pixel groups of the multiple pixel groups, and wherein both at least one electric power line of the multiple electric power lines and at least one data line of the multiple data lines are formed in at least one line forming region of the multiple line forming regions. With such a configuration, a pixel matrix can be formed with the same pixel pitch, and also with a high aperture ratio while forming electric power lines with the optimal width.

[0012] The aforementioned line forming regions are preferably formed with generally the same width. With the present invention, the line forming regions are formed with generally the same width, whereby the pixel matrix can be formed with the same pixel pitch.

[0013] The aforementioned electro-optical device preferably includes electro-optical devices which are operated with different driving voltages, wherein the electric power lines for supplying voltage to the electro-optical devices are formed with different widths corresponding to the driving voltage. Even with such a configuration wherein the electric power lines are formed with different widths, the wiring layout is designed as described above, whereby the pixel matrix can be formed with the same pixel pitch while improving the aperture ratio.

[0014] The aforementioned electro-optical device preferably is a light-emission device, wherein the electric power lines are formed with each different width corresponding to the emission light color of the light-emission device. With the present invention, the optimal width of the electric power line is determined corresponding to the properties of the electro-optical device, thereby facilitating design of devices.

[0015] The color of the light which is to be emitted is preferably red, green, or blue. This enables full-color display.

[0016] The electro-optical device preferably is an electro-luminescence device. With the electro-luminescence device, the grayscale due to light emission can be controlled by current control.

[0017] An electronic apparatus according to the present invention comprises an electro-optical device according to the present invention. The electronic apparatus is not particularly restricted so long as it includes a display device, and can be applied to, for

example, cellular phones, video cameras, personal computers, head mount displays, projectors, facsimiles, digital cameras, portable TVs, DSP devices, PDAs, palmtops, and the like.

[0018] A matrix substrate according to the present invention comprises multiple pixel electrodes disposed in the form of a matrix, wherein the multiple pixel electrodes make up multiple pixel electrode groups formed of a series of pixel electrodes arrayed in at least one direction of the row direction and the column direction, and wherein multiple line forming regions are formed between adjacent pixel electrode groups of the multiple pixel electrode groups, and wherein the line forming regions are formed with generally the same width. With such a configuration, the pixel pitch can be made the same.

[0019] Another matrix substrate according to the present invention comprises multiple scan lines, multiple data lines, multiple pixel electrodes disposed at portions corresponding to the intersections of the scan lines and the data lines, and multiple electric power lines for supplying voltage to the multiple pixel electrodes, wherein the multiple pixel electrodes make up multiple pixel electrode groups formed of a series of pixel electrodes arrayed in at least one direction of the row direction and the column direction, and wherein multiple line forming regions are formed between adjacent pixel electrode groups of the multiple pixel electrode groups, and wherein at least two lines selected from at least one electric power line of the multiple electric power lines, at least one scan line of the multiple scan lines, and at least one data line of the multiple data lines, are formed in at least one line forming region of the multiple line forming regions. With such a configuration, the pixel matrix can be formed with the same pixel pitch, and also with a high aperture ratio, while forming the electric power lines with the optimal width.

BRIEF DESCRIPTION OF THE DRAWINGS

[0020] Fig. 1 is a plan view of an organic EL display panel according to the present invention.

[0021] Fig. 2 is a principal circuit configuration diagram of a pixel.

[0022] Fig. 3 is an explanatory diagram for describing a wiring layout according to a first embodiment.

[0023] Fig. 4 is an explanatory diagram for describing a wiring layout according to a second embodiment.

[0024] Fig. 5 is an explanatory diagram for describing a wiring layout according to a third embodiment.

[0025] Fig. 6(a) through Fig. 6(f) are explanatory diagrams for describing application examples employing the organic EL display according to the present invention;

[0026] Fig. 7 is an explanatory diagram for describing a wiring layout according to a fourth embodiment.

[0027] Fig. 8 is an explanatory diagram for describing a wiring layout according to a fifth embodiment.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[0028] The present embodiment will now be described with reference to the drawings.

[0029] Fig. 1 is an overall configuration diagram which illustrates an active-matrix organic-EL display panel 100 according to the present embodiment. As shown in the drawing, the display panel 100 comprises a display region 11 including multiple pixels 10 disposed in the form of a matrix with an N number of columns and an M number of rows, a scan line driver 12 for outputting scan signals to scan lines arrayed in the row direction which are connected to a group of pixels 10, a data line driver 13 for supplying data signals and electric power to data lines and electric power lines arrayed in the column direction which are connected to a group of pixels 10, wherein these components are disposed on a substrate 16. An organic EL device is formed on each pixel 10 for emitting light in a color of the RGB three primary colors. A cathode 14 is formed in the form of a film as a common electrode on the entire face of the display region 11, and is connected to an external circuit through cathode output electrode 15.

[0030] Note that while the organic EL display panel 100 shown in the drawing is a so-called "top-emission configuration display panel" which emits light from the side of the substrate 16, the present invention is not restricted to this arrangement, but rather, the present invention can also be applied to a bottom-emission configuration display panel which emits light from a transparent cathode.

[0031] Fig. 2 is a principal circuit configuration diagram of the pixel 10. The pixel 10 comprises a switching transistor Tr1, a driving transistor Tr2, holding capacitance C, a light-emission portion OLED, and is driven with the dual transistor method. The switching transistor Tr1 comprises an n-channel FET, wherein the gate terminal thereof is connected to the scan line V_{sel} , and the drain terminal thereof is connected to the data line I_{dat} . The driving transistor Tr2 comprises a p-channel FET, wherein the gate terminal is connected to the source terminal of the switching transistor Tr1. Furthermore, the source terminal of the

transistor Tr2 is connected to the electric power line V_{dd} , and the drain terminal thereof is connected to the light-emission portion OLED. Furthermore, holding capacitance is formed between the gate and the source of the transistor Tr2. With the above-described configuration, upon outputting a selection signal to the scan line V_{sel} , and opening the transistor Tr1, the data signals supplied through the data line I_{dat} are written to the holding capacitance C as a voltage value. Subsequently, the holding voltage written to the holding capacitance C is held during one frame period, and the conductance of the driving transistor Tr2 is determined according to the holding voltage in an analog manner, whereby forward bias current corresponding to light-emission level is supplied to the light-emission portion OLED.

[0032] Fig. 3 is a diagram for describing a wiring layout in the pixel region. In the drawing, in order to simplify description, a wiring layout for six pixels disposed with the two rows and the three columns is shown. In the drawing, reference characters R, G, and B denote the pixels 10 for emitting light in red, green, and blue, respectively, and the RGB pixels are disposed in the column direction. Furthermore, reference character V_{dd-R} denotes an electric line for a red pixel, V_{dd-G} denotes an electric line for a green pixel, V_{dd-B} denotes an electric line for a blue pixel, and 17 denotes a pixel electrode (anode) of an organic EL device. Detailed description regarding other components described above will be omitted. Furthermore, reference numeral 31 denotes a line forming region in the form of a line which is formed between a pixel group of the (m-1) column and a pixel group of the m column, and is extending in the column direction over generally the same length as the pixel array length in the column direction. In the same way, reference numeral 32 denotes a line forming region formed between pixel groups of the m column and the (m + 1) column, 33 denotes a line forming region formed between pixel groups of the (m + 1) column and (m + 2) column, and 34 denotes a line forming region formed between pixel groups of the (m + 2) column and the (m + 3) column. For convenience of description, a pixel group of the (m - 1) column and a pixel group of the (m + 3) column are not shown in the drawing. With the present embodiment, in order to determine the line forming regions 31 through 34 with the width as same as possible, two or more lines, disposed on the aforementioned line forming regions, are determined with the same total width. While the electric power line V_{dd} is formed with a width corresponding to a material of the emission layer of the organic EL device, now, for convenience of description, let us make an assumption that the width of the electric power lines increases in the order of green, red, and blue. That is to say, let us assume that the relation: width of V_{dd-G} > width of V_{dd-R} > width of V_{dd-B} , holds.

[0033] With the above-described assumption, in order to form the line forming regions 31 through 34 with the width as same as possible, a combination is determined such that the total width of the electric power line V_{dd} and the data line I_{dat} is approximately the same. For example, making an assumption that: the total width of V_{dd-G} which has the maximal width and V_{dd-B} of the minimal width; the total width of V_{dd-R} of an intermediate width and the data line I_{dat} of an intermediate width; and the total width of the two data lines I_{dat} ; are determined to be generally the same value, the combinations of these electric power lines V_{dd} and the data line I_{dat} are formed in the line forming regions 31 through 34. With the arrangement shown in the drawing, a combination of V_{dd-G} with the maximal width and V_{dd-B} with the minimal width is formed on the line forming region 33, a combination of V_{dd-R} with the intermediate width and the data line I_{dat} with the intermediate width is formed in the line forming regions 31 and 34, and a combination of the two data lines I_{dat} is formed on the line forming region 32. Note that with the line forming region 31, only the electric power line V_{dd-R} is shown in the drawing, and with the line forming region 34, only the data line I_{dat} is shown in the drawing. On the other hand, a scan line V_{sel} is disposed on each line forming region in the form of a line, between pixel groups arrayed in the row direction, with generally the same length as the pixel array length of the pixel group. The wiring layout shown in the drawing corresponds to one unit of a periodically repeating wiring pattern, and any portion of the wiring layout of the RGB pixels 10 randomly selected has the same pattern as shown in the drawing. Accordingly, in the event that an imaginary layout diagram sheet, determining the layout of the line forming regions formed along the column direction of the pixels, is folded with any line forming region of the multiple line forming regions as the center line, the line forming regions having the same configuration of the lines are overlaid on each other.

[0034] With the present embodiment, the same kind of electric power line, extending in the column direction of the pixel matrix, is formed with generally the same array pitch in the row direction, and accordingly, the pixels can be formed with the same pixel pitch, thereby facilitating design of a layout for a device, wherein power consumption is different for each color, such as an organic EL display. In particular, in the event of forming light-emission layers using the ink-jet method, the pixels are preferably formed with the same pixel pitch, and accordingly, an arrangement according to the present embodiment has the great advantage of facilitating the manufacturing process. Furthermore, with the present embodiment, the electric power line can be formed with a width suitable for each color, thereby reducing power consumption while maintaining the high aperture ratio and the optimal color balance.

[0035] Note that the above-described arrangement is only an example of the present invention, and the present invention is not restricted to the above-described arrangement. For example, three combinations of two electric power lines selected from the three RGB lines V_{dd} can be made, and accordingly, with the present embodiment, three wiring layout patterns can be made. Furthermore, while description has been made regarding a configuration wherein a scan line V_{sel} is disposed on each line forming region in the row direction, and any two lines selected from the three electric power lines V_{dd} and the three data line I_{dat} are disposed on the line forming regions 31, 32, and 33 in the column direction, the present invention is not restricted to this arrangement. Description will be made below regarding various modifications.

Second Embodiment

[0036] Fig. 4 is an explanatory diagram for describing a wiring layout according to a second embodiment of the present invention.

[0037] The present embodiment has a configuration wherein, in the event that an imaginary layout diagram sheet, determining the layout of the line forming regions formed along the row direction of the pixels, is folded with any line forming region of the multiple line forming regions as the center line, the line forming regions having the same configuration of the lines are overlaid on each other. The three electric power lines V_{dd-G} , V_{dd-R} , and V_{dd-B} make up a combination, and are disposed in the row direction on a line forming region 41 between the pixel group of the $(n - 1)$ row and the pixel group of the n row, which are arrayed in the row direction, and the two scan lines V_{sel} make up a combination, and are disposed in the row direction in a line forming region 42 between the pixel groups of the n row and the $(n + 1)$ row, which are arrayed in the row direction. The basic pattern of the wiring layout in the row direction has a configuration wherein the combination of the electric power lines V_{dd-G} , V_{dd-R} , and V_{dd-B} , and the combination of the two scan lines V_{sel} are disposed periodically and repeatedly. Accordingly, a line forming region 43 between the pixel groups of the $(n + 1)$ row and the $(n + 2)$ row, which are arrayed in the row direction, has the same wiring layout as with the line forming region 41.

[0038] On the other hand, one electric power line V_{dd} and one data line I_{dat} make up a combination, and are disposed in the column direction and are disposed on a line forming region between pixel groups arranged in the column direction. With an arrangement shown in the drawing, the electric power line V_{dd-R} and the data line I_{dat} make up a combination, and are disposed on a line forming region 51 between the R-pixel group of the m column and the

G-pixel group of the $(m + 1)$ column, which are arrayed in the column direction. In the same way, the electric power line V_{dd-G} and the data line I_{dat} make up a combination, and are disposed on a line forming region between the G-pixel group of the $(m + 1)$ column and the B-pixel group (not shown) of the $(m + 2)$ column, which are arrayed in the column direction, wherein only the electric power line V_{dd-G} is shown in the drawing for convenience of description. Furthermore, the electric power lines V_{dd-R} disposed in the row and column directions are formed in different layers, and are electrically connected with each other through contact holes h1 formed in an inter-layer insulating film. The electric power lines V_{dd-G} are electrically connected with each other through contact holes h2 in the same way.

[0039] With the present embodiment, the same kind of electric power line extending in the row direction of the pixel matrix is formed in the column direction with generally the same array pitch, and accordingly, the present embodiment has the same advantages as with the first embodiment, and furthermore, the electric power lines V_{dd-G} , V_{dd-R} , and V_{dd-B} are disposed on a pixel region in the row direction and the column direction in the form of a matrix, and accordingly, the wiring resistance of the electric power lines V_{dd-G} , V_{dd-R} , and V_{dd-B} can be reduced, thereby enabling sufficient current supply to the organic EL devices. Accordingly, occurrence of non-uniformity of luminance due to insufficient current supply to a particular electric power line can be suppressed, and furthermore, cross-talk can be reduced. In particular, a large-screen display requires sufficient and uniform current over the screen thereof, and accordingly, the present embodiment is particularly advantageous.

Third Embodiment

[0040] Fig. 5 is an explanatory diagram for describing a wiring layout according to a third embodiment of the present invention.

[0041] The present embodiment has a configuration wherein, in the event that an imaginary layout diagram sheet, determining the layout of the line forming regions formed along the row direction and the column direction of the pixels, is folded with any line forming region of the multiple line forming regions as the center line, the line forming regions having the same configuration of the lines are overlaid on each other. The three electric power lines V_{dd-G} , V_{dd-R} , and V_{dd-B} make up a combination, and are disposed in the row direction on a line forming region 61 between the pixel group (not shown) of the $(n - 1)$ row and the pixel group of the n row, which are arrayed in the row direction, and the two scan lines V_{sel} make up a combination, and are disposed in the row direction in a line forming region 62 between the pixel groups of the n row and the $(n + 1)$ row, which are arrayed in the row direction. The

basic pattern of the wiring layout in the row direction has a configuration wherein the combination of the three electric power lines V_{dd-G} , V_{dd-R} , and V_{dd-B} , and the combination of the two scan lines V_{sel} are disposed periodically and repeatedly. Accordingly, a line forming region 63 between the pixel groups of the $(n + 1)$ row and the $(n + 2)$ row, which are arrayed in the row direction, has the same wiring layout as with the line forming region 61.

[0042] On the other hand, three combinations of two lines selected from the three electric power lines V_{dd-C} , V_{dd-R} , and V_{dd-B} , and the three data lines I_{dat} are formed between the pixel groups arrayed in the column direction. With an arrangement shown in the drawing, the electric power line (not shown) and the data line I_{dat} make up a combination, and are disposed in a line forming region 71 between the B-pixel group (not shown) of the $(m - 1)$ column and the R-pixel group of the m column, which are arrayed in the column direction, and the two electric power lines V_{dd-G} and V_{dd-R} make up a combination, and are disposed on a line forming region 72 between the R-pixel group of the m column and the G-pixel group of the $(m + 1)$ column, which are arrayed in the column direction. Furthermore, the two data lines I_{dat} make up a combination, and are disposed on a line forming region 73 between the G-pixel group of the $(m + 1)$ column and the B-pixel group of $(m + 2)$ column, which are arrayed in the column direction, and the electric power line V_{dd-G} and the data line I_{dat} make up a combination, and are formed on a line forming region 74 between the B-pixel group of the $(m + 2)$ column and the R-pixel group (not shown) of the $(m + 3)$ column, which are arrayed in the column direction.

[0043] The electric power lines disposed in the column and row directions are formed in different layers, and are electrically connected with each other through the contact holes h1 formed on an inter-layer insulating film. In the same way, the electric power lines V_{dd-G} in the column and row directions, and the electric power lines V_{dd-B} in the column and row directions, are formed in different layers, and the electric power lines in the column and row directions are electrically connected with each other through the contact holes h2 and h3. With the present embodiment, a plurality of each of the contact holes h1, h2, and h3 are formed, whereby the present embodiment has the advantage of preventing wiring breakage, and furthermore has the advantage of reducing the wiring resistance.

[0044] With the present embodiment, the same kind of electric power line extending in the row direction of the pixel matrix is formed in the column direction with generally the same array pitch, the same kind of electric power line extending in the column direction of the pixel matrix is formed in the row direction with generally the same array

pitch, and accordingly, the present embodiment has the same advantages as with the first embodiment, and furthermore, the electric power lines V_{dd-G} , V_{dd-R} , and V_{dd-B} are disposed on a pixel region in the row direction and the column direction in the form of a matrix, and accordingly, the wiring resistance of the electric power lines V_{dd-G} , V_{dd-R} , and V_{dd-B} can be reduced, thereby enabling sufficient current supply to the organic EL devices. Accordingly, occurrence of non-uniformity of luminance due to insufficient current supply to a particular electric power line can be suppressed, and furthermore, the occurrence of cross-talk can be reduced. In particular, a large-screen display requires sufficient and uniform current over the screen thereof, and accordingly, the present embodiment is particularly advantageous.

Fourth Embodiment

[0045] Fig. 6(a) through Fig. 6(f) are diagrams which illustrate examples of electronic apparatuses to which the electric-optical device according to the present invention can be applied. Fig. 6(a) shows an example of application to a cellular phone, wherein the cellular phone 230 comprises an antenna unit 231, an audio output unit 232, an audio input unit 233, an operating unit 234, and the organic EL display panel 100 according to the present invention. As described above, the organic EL display panel 100 according to the present invention can be employed as a display unit of the cellular phone 230. Fig. 6(b) shows an application example to a video camera, wherein the video camera 240 comprises a TV-camera unit 241, an operating unit 242, an audio input unit 243, and the organic EL display panel 100 according to the present invention. As described above, the organic EL display panel 100 can be employed as a viewfinder or a display unit. Fig. 6(c) shows an application example to a portable personal computer, wherein the computer 250 comprises a camera unit 251, an operation unit 252, and the organic EL display panel 100 according to the present invention. As described above, the organic EL display panel 100 can be employed as a display device.

[0046] Fig. 6(d) shows an application example to a head mount display, wherein the head mount display 260 comprises a belt 261, an optical system storage unit 262, and the organic EL display panel 100 according to the present invention. As described above, the organic EL display panel 100 can be employed as an image display unit. Fig. 6(e) shows an application example to a rear projector, wherein the projector 270 comprises a casing 271, a light source 272, a synthesizing optical system 273, mirrors 274 and 275, a screen 276, and the organic EL display panel 100 according to the present invention. Fig. 6(f) shows an application example to a front projector, wherein the projector 280 comprises a casing 282, an optical system 281, and the organic EL display panel 100 according to the present invention,

wherein an image can be displayed on a screen 283. As described above, the organic EL display panel 100 can be employed as an image display unit.

WHAT IS CLAIMED IS:

1. An electro-optical device comprising:
 - a scan line extending in a direction;
 - a data line extending in a direction that intersects the scan line;
 - a pixel located corresponding to the intersection of the scan line and the data line, the pixel including a light emission layer between a first electrode and a second electrode:
 - a first power line extending in the direction in which the scan line extends;
 - a second power line extending in the direction in which the data line extends;
 - an inter-layer insulating film between the first power line and the second power line;
 - and
 - a plurality of contact holes extending through the inter-layer insulating film, the contact holes electrically connecting the first power line and the second power line to each other.
2. The electro-optical device according to claim 1, the pixel electrode having a long side and a short side that is shorter than the long side, end contact holes of the plurality of contact holes being separated from each other by a distance that is shorter than the short side of the pixel electrode.
3. The electro-optical device according to claim 2, the plurality of contact holes being aligned substantially in a line with one end contact hole being located at one end of the line and an other end contact hole being located at the other end of the line.
4. The electro-optical device according to claim 1, the scan line supplying a scan signal and the data line supplying a data signal, the light emission layer of the pixel being supplied with current from the first electric power line and the second electric power line in accordance with the data signal from the data line and at timing corresponding to the scan signal from the scan line.
5. The electro-optical device according to claim 1, further comprising an other pixel including an other light emission layer and an other electrode, the first electrode of the pixel being a common electrode for the pixel and the other pixel, the other light emission layer of the other pixel being sandwiched between the other electrode of the other pixel and the common electrode.
6. An electronic device including the electro-optical device according to claim 1.

ABSTRACT OF THE DISCLOSURE

To provide a wiring layout of electric power lines, which improves the aperture ratio of the pixel while forming pixels with the same pixel pitch. An electric-optical apparatus according to the present invention comprises multiple pixels (10) arranged in matrix including electro-optical devices driven by receiving electric power from an electric power supply circuit, wherein the aforementioned multiple pixels (10) make up multiple pixel groups formed of a series of pixels arrayed in at least one direction of the row direction and the column direction, and any of line forming regions (31, 32, 33, 34) is disposed between adjacent pixel groups of the aforementioned pixel groups, wherein the aforementioned line forming regions (31, 32, 33, 34) are formed with generally the same width.

Fig. 1

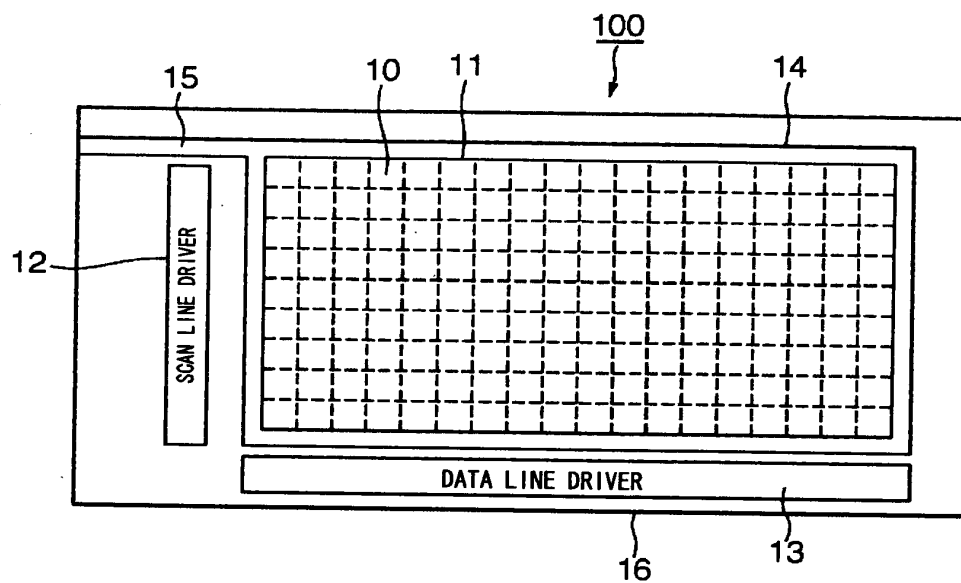


Fig. 2

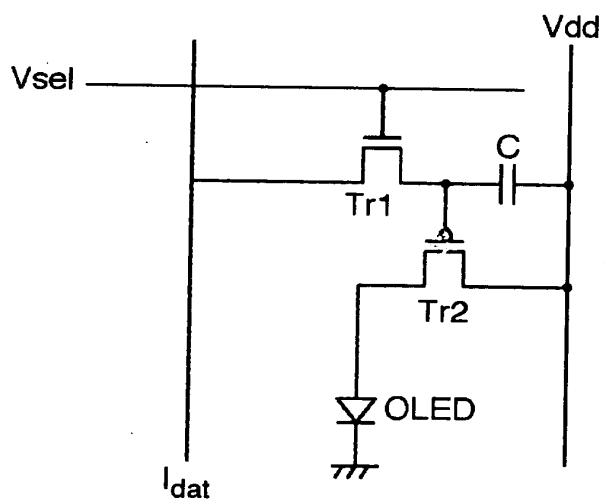


Fig. 3

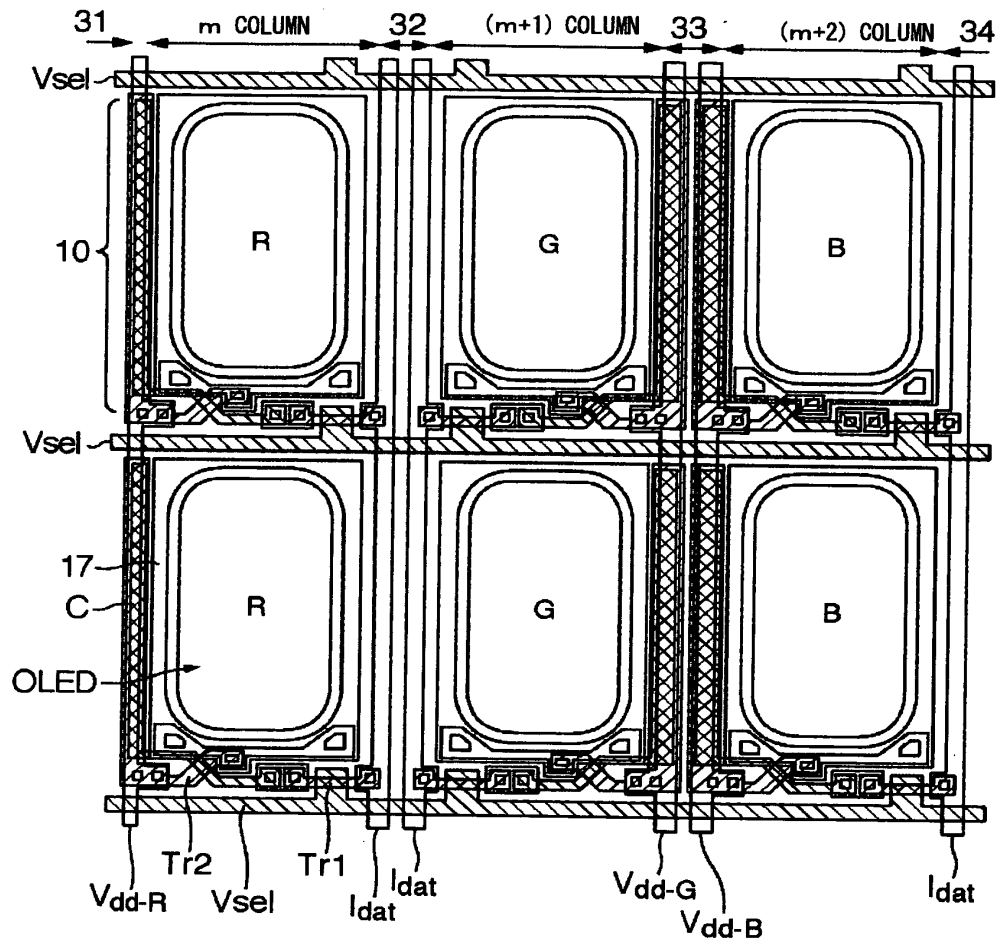


Fig. 4

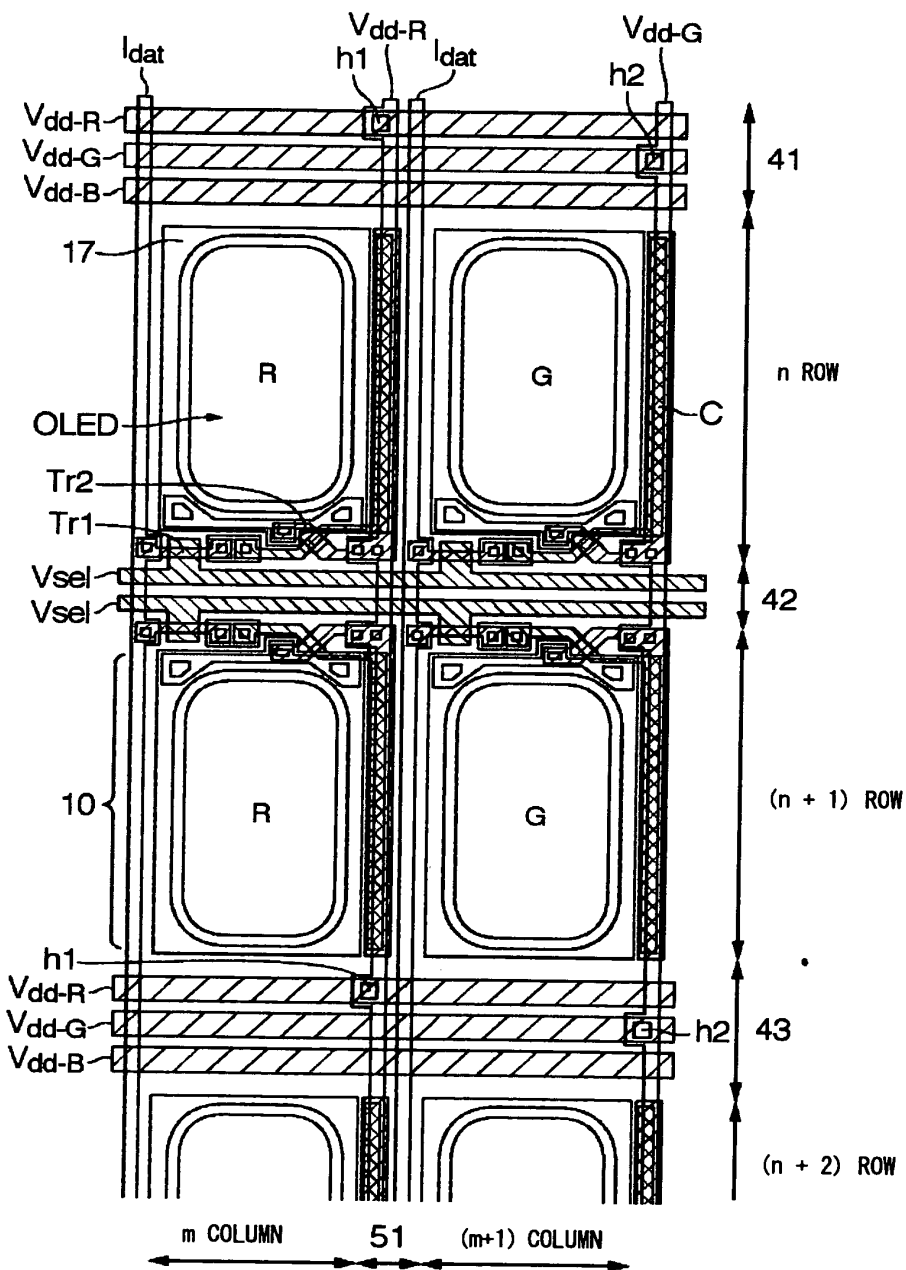
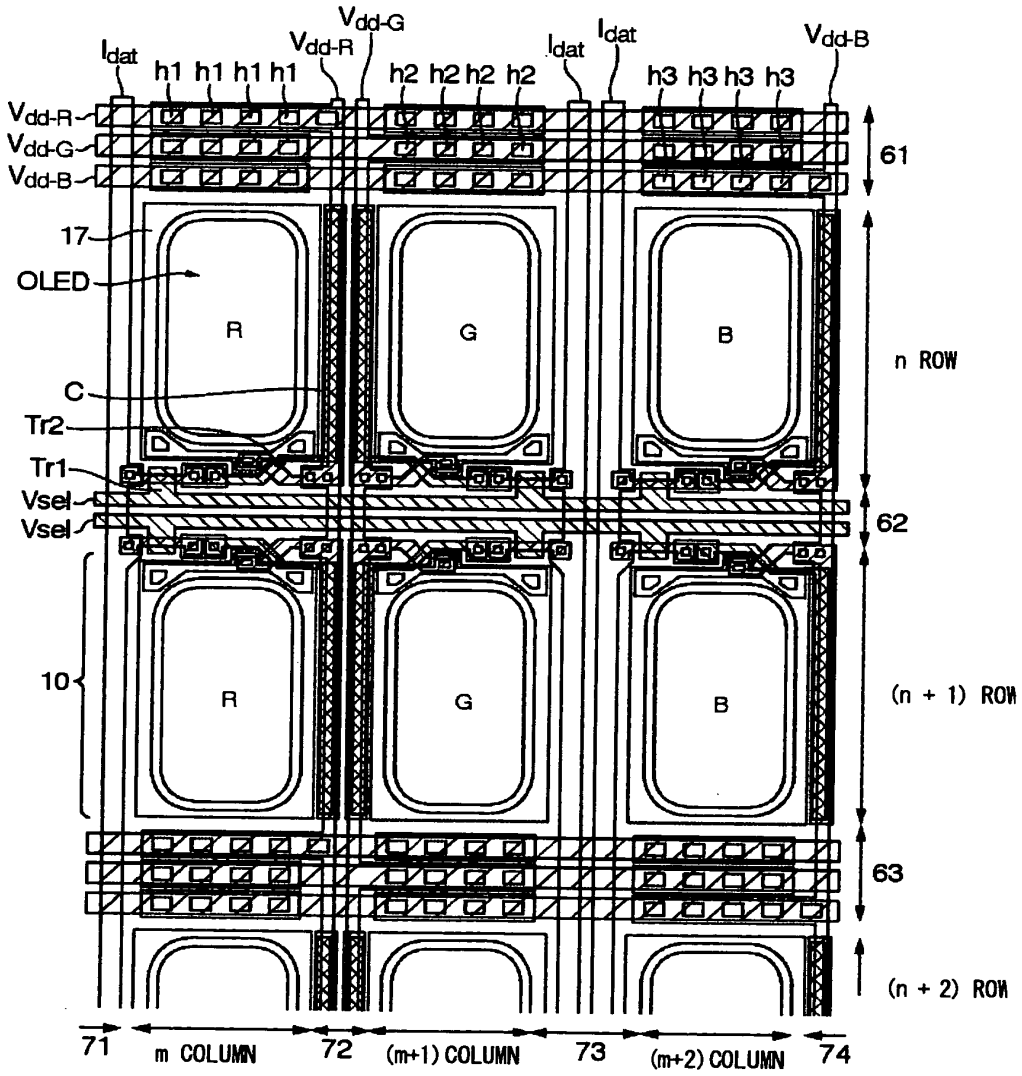


Fig. 5



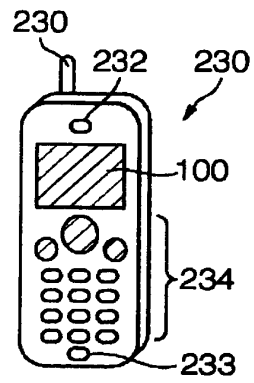


Fig. 6 A

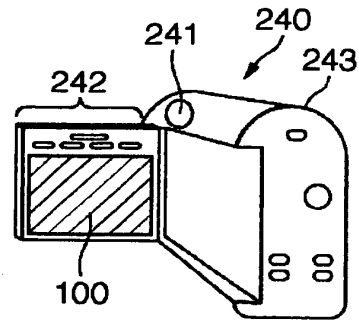


Fig. 6 B

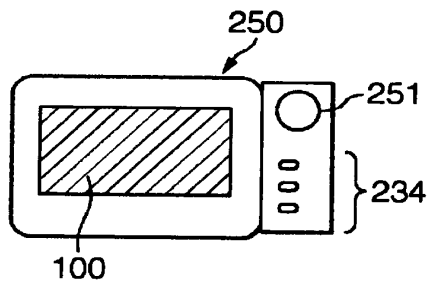


Fig. 6 C

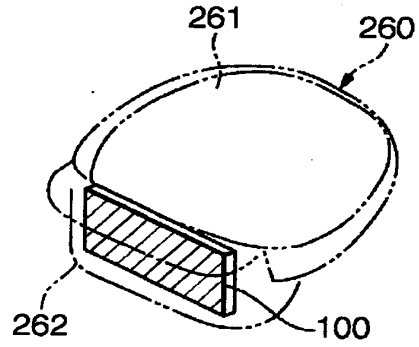


Fig. 6 D

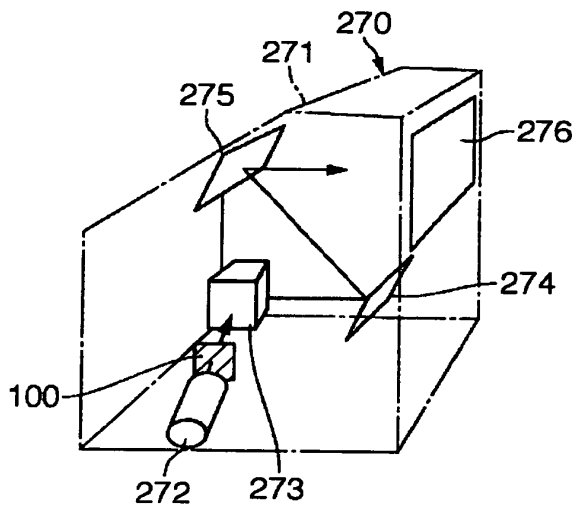


Fig. 6 E

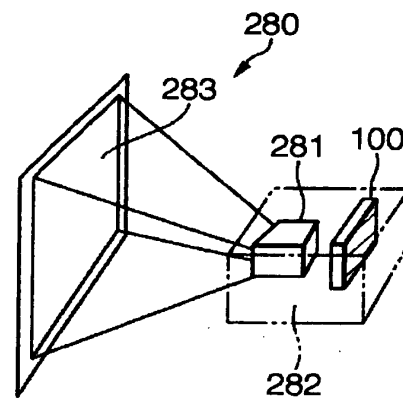


Fig. 6 F

Fig. 7

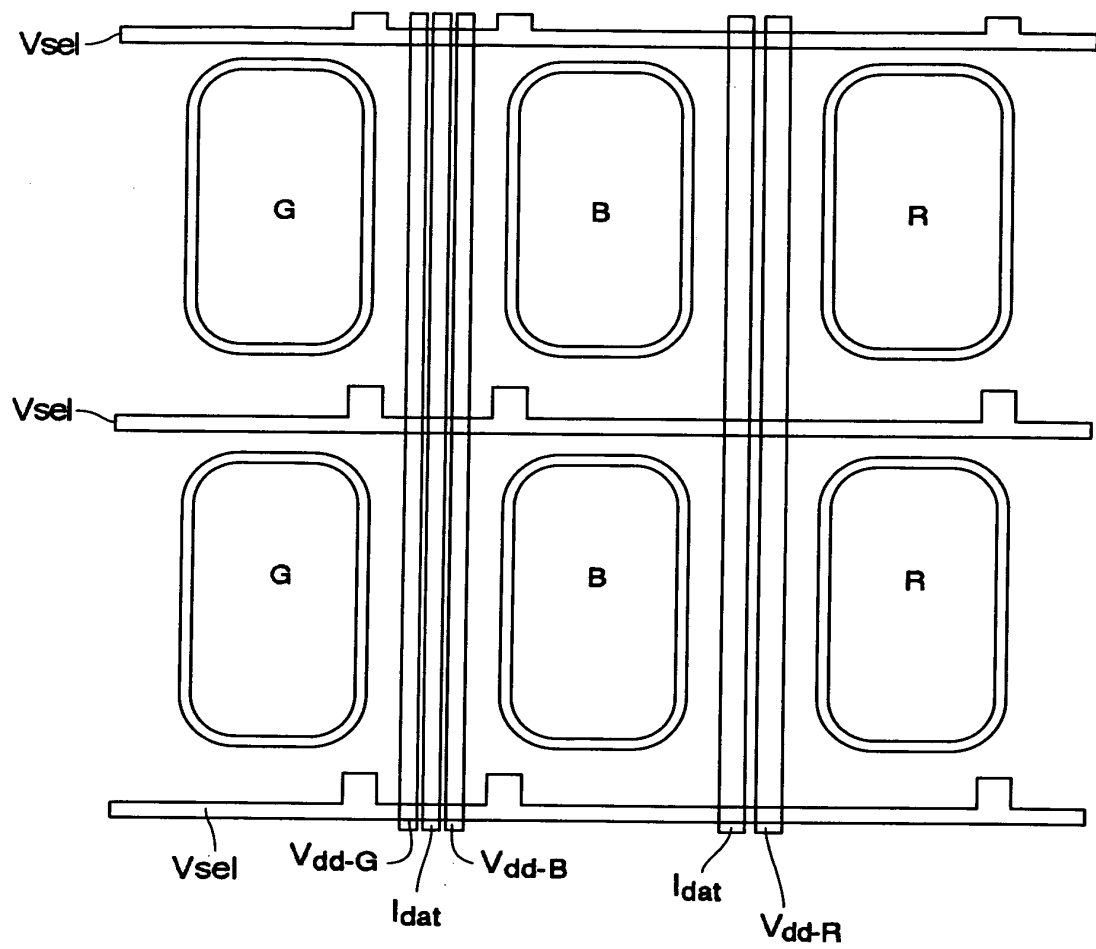
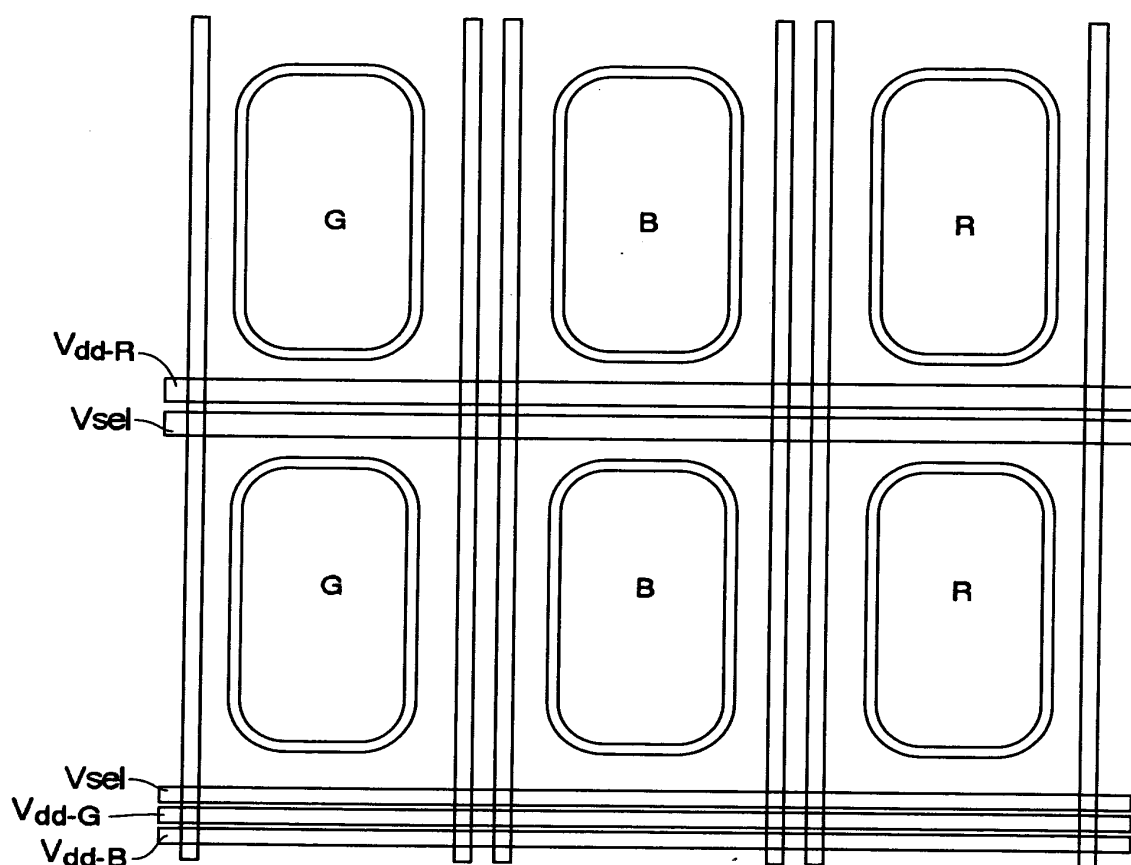


Fig. 8



Under the Paperwork Reduction Act of 1995, no persons are required to respond to collection of information unless it displays a valid OMB control number.

Seiko Epson Ref. No.: F008847US00

Attorney's Ref. No.: 117390

Declaration and Power of Attorney For Patent Application

特許出願宣言書及び委任状

Japanese Language Declaration

日本語宣言書

下記の氏名の発明者として、私は以下の通り宣言します。

As a below named inventor, I hereby declare that:

私の住所、私書箱、国籍は、下記の私の氏名の後に記載された通りです。

My residence, post office address and citizenship are as stated next to my name.

下記の名称の発明に関して請求範囲に記載され、特許出願している発明内容について、私が最初かつ唯一の発明者（下記の氏名が一つの場合）もしくは最初かつ共同発明者であると（下記の名称が複数の場合）信じています。

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

電気光学装置、マトリクス基板、及び電子機器

ELECTRO-OPTICAL DEVICE, MATRIX SUBSTRATE, AND ELECTRONIC APPARATUS

上記発明の明細書（下記の欄で×印がついていない場合は、本書に添付）は、

the specification of which is attached hereto unless the following box is checked:

☒ 2003年10月2日に提出され、米国出願番号または特許協定条約 国際出願番号を 10/676,067 とし、（該当する場合） _____ に訂正されました。

☒ was filed on October 2, 2003 as United States Application Number or PCT International Application Number 10/676,067 and was amended on _____ (if applicable).

私は、特許請求範囲を含む上記訂正後の明細書を検討し、内容を理解していることをここに表明します。

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

私は、連邦規則法典第37編第1条56項に定義されたとおり、特許資格の有無について重要な情報を開示する義務があることを認めます。

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

Page 1 of 3

Burden Hour Statement: This form is estimated to take 0.4 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner of Patents and Trademarks, Washington, DC 20231.

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Japanese Language Declaration

(日本語宣言書)

私は、米国法典第35編119条(a)-(d)項又は365条(b)項に基づき下記の、米国以外の国の少なくとも1ヶ国を指定している特許協力条約365条(a)項に基づく国際出願、又は外国での特許出願もしくは発明者証の出願についての外国優先権をここに主張するとともに、優先権を主張している、本出願の前に出願された特許または発明者証の外国出願を以下に、枠内をマークすることで、示しています。

I hereby claim foreign priority under Title 35, United States Code, Section 119 (a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application(s)

外国での先行出願

Priority Not Claimed

優先権主張なし

2002-293696

Japan

07/October/2002

(Number)

(Country)

(Day/Month/Year Filed)

(番号)

(国名)

(出願年月日)

(Number)

(Country)

(Day/Month/Year Filed)

(番号)

(国名)

(出願年月日)

私は、第35編米国法典119条(e)項に基づいて下記の米国特許出願規定に記載された権利をここに主張いたします。

I hereby claim the benefit under Title 35, United States Code, Section 119 (e) of any United States provisional application(s) listed below.

(Application No.)

(Filing Date)

(Application No.)

(Filing Date)

(出願番号)

(出願日)

(出願番号)

(出願日)

私は下記の米国法典第35編120条に基づいて下記の米国特許出願に記載された権利、又は米国を指定している特許協力条約365条(c)に基づく権利をここに主張します。また、本出願の各請求範囲の内容が米国法典第35編112条第1項又は特許協力条約で規定された方法で先行する米国特許出願に開示されていない限り、その先行米国出願書提出日以降で本出願書の日本国内または特許協力条約国際提出日までの期間中に入手された、連邦規則法典第37編1章56項で定義された特許資格の有無に関する重要な情報について開示義務があることを認識しています。

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s), or 365 (c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of application:

(Application No.)

(Filing Date)

(Status: Patented, Pending, Abandoned)

(出願番号)

(出願日)

(現況: 特許許可済、係属中、放棄済)

(Application No.)

(Filing Date)

(Status: Patented, Pending, Abandoned)

(出願番号)

(出願日)

(現況: 特許許可済、係属中、放棄済)

私は、私自身の知識に基づいて本宣言書中で私が行なう表明が真実であり、かつ私が入手した情報と私の信じているところに基づく表明が全て真実であると信じていること、さらに故意になされた虚偽の表明及びそれと同等の行為は米国法典第18編第1001条に基づき、罰金または拘禁、もしくはその両方により処罰されること、そしてそのような故意による虚偽の声明を行なえば、出願した、又は既に許可された特許の有効性が失われることを認識し、よってここに上記のごとく宣誓を致します。

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to collection of information unless it displays a valid OMB control number.

Japanese Language Declaration

(日本語宣言書)

委任状： 私は、下記の発明者として、本出願に関する一切の手続きを米特許商標局に対して遂行する弁理士または代理人として、下記の者を指名いたします。(弁護士、または代理人の氏名及び登録番号を明記のこと)

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William P. Berridge, (Reg. 30,024)
Kirk M. Hudson, (Reg. 27,562)
Thomas J. Pardini, (Reg. 30,411)
Edward P. Walker, (Reg. 31,450)
Robert A. Miller, (Reg. 32,771)
Mario A. Costantino, (Reg. 33,565)

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. (list name and registration number)

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Y.M. Oct. 29, 2003

Full name of sole or first inventor

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日付

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2003年11月29日

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(Supply similar information and signature for third and subsequent joint inventors.)

OLIFF & BERRIDGE, PLC

ATTORNEYS AT LAW

Application Data Sheet**Applicant Information**

Applicant Authority type::	Inventor
Primary Citizenship Country::	Japan
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Family Name::	MATSUEDA
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State or Province of Residence::	Nagano-ken
Country of Residence::	JAPAN

Applicant Authority Type::	Inventor
Primary Citizenship Country::	Japan
Status::	Full Capacity
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State or Province of Residence::	Toyama-ken
Country of Residence::	JAPAN

Correspondence Information

Correspondence Customer Number::	25944
----------------------------------	-------

Application Information

Application Type::	Continuation
Subject Matter::	Utility
CD-ROM or CD-R::	None
Title::	ELECTRO-OPTICAL DEVICE, MATRIX SUBSTRATE, AND ELECTRONIC APPARATUS
Attorney Docket Number::	117390.01
Total Drawing Sheets::	7
Small Entity::	No

Representative Information

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William P. Berridge, Reg. No. 30,024

Thomas J. Pardini, Reg. No. 30,411

Mario A. Costantino, Reg. No. 33,565

Domestic Priority Information			
Application::	Continuity Type::	Parent Application::	Parent Filing Date::
This Application is a	Continuation of	10/676,067	10/02/2003
Foreign Priority Information			
Country::	Application Number::	Filing Date::	Priority Claimed::
JAPAN	2002-293696	10/07/2002	Yes
Assignee Information			
Assignee Name::		SEIKO EPSON CORPORATION	
Street of mailing address::		4-1, NISHI-SHINJUKU 2-CHOME, SHINJUKU-KU	
City of mailing address::		TOKYO	
Country of mailing address::		JAPAN	
Postal or Zip Code of mailing address::		163-0811	

15992 U.S. PTO



072408

U.S. PTO
12/219592
07/24/2008

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

OLIFF & BERRIDGE, PLC
Telephone: (703) 836-6400
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Attorney Docket No.: 117390.01

Date: July 24, 2008

Customer Number: 25944

**CONTINUING APPLICATION TRANSMITTAL
RULE 1.53(b)**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Transmitted herewith for filing under 37 C.F.R. §1.53(b) is a

☒ Continuation ☐ Divisional ☐ Continuation-in-Part

application of prior pending Application No. 10/676,067, filed October 2, 2003,

For (Title): ELECTRO-OPTICAL DEVICE, MATRIX SUBSTRATE AND ELECTRONIC
APPARATUS

By (Inventors): Yojiro MATSUEDA; Hayato NAKANISHI

1. ☒ A Declaration of the inventor(s) is attached. The attached Declaration is:
 - ☒ a. A copy of the Declaration from the parent application. (Used with the same or fewer inventors and (a) a copy of the prior application or (b) a revised, reformatted or edited version of the prior application that does not contain new matter.)
 - ☐ b. A new Declaration. (Used with the same, fewer or additional inventors and (a) a copy of the prior application, (b) a revised, reformatted or edited version of the prior application that does not contain new matter, or (c) a new specification.)
2. ☒ A Power of Attorney is attached. The attached Power of Attorney is:
 - ☒ a. A copy of the Power of Attorney from the parent application.
 - ☐ b. A new Power of Attorney.☐ The Power of Attorney is a General Power of Attorney.

A Transmittal of Power of Attorney and Statement Under 37 C.F.R. §3.73(b) is attached, and
A copy of the Assignment ☐ is attached to the Transmittal or ☐ was recorded at Reel _____
Frame _____.

☐ The Power of Attorney is a Specific Power of Attorney for this application.

A Transmittal of Power of Attorney and Statement Under 37 C.F.R. §3.73(b) is attached, and
A copy of the Assignment ☐ is attached to the Transmittal or ☐ was recorded at Reel _____
Frame _____.

☒ The Power of Attorney is in a combined Declaration/Power of Attorney.
 - ☒ a. The Power of Attorney identifies no more than ten attorneys.
 - ☐ b. The Power of Attorney identifies more than ten attorneys, and a separate Designation of Attorneys for Power of Attorney is filed herewith.
 - ☐ c. The Power of Attorney is to the attorneys associated with a Customer Number.

3. ☒ The fees due upon filing are calculated below:

**CLAIMS IN THE APPLICATION AFTER ENTRY OF
ANY PRELIMINARY AMENDMENT NOTED BELOW**

FOR:	NO. FILED	NO. EXTRA
BASIC FEE		
EXAMINATION FEE		
SEARCH FEE		
APPLICATION SIZE FEE Total pages 21 - 100 =	0 ÷ 50	= †0
TOTAL CLAIMS	6 - 20	= *0
INDEP CLAIMS	1 - 3	= *0
☐ MULTIPLE DEPENDENT CLAIMS PRESENTED		

*If the difference is less than zero, enter "0".
†round up to next integer

SMALL ENTITY

RATE	FEE
	\$ 155
	\$ 105
	\$ 255
x 130 =	\$
x 25 =	\$
x 105 =	\$
+ 185 =	\$
TOTAL	\$

**OTHER THAN A
SMALL ENTITY**

RATE	FEE
	\$ 310
	\$ 210
	\$ 510
x 260 =	\$
x 50 =	\$
x 210 =	\$
+ 370 =	\$
TOTAL	\$1030

4. ☒ Check No. 208193 in the amount of \$1,030.00 to cover the fees due upon filing is attached. The Commissioner is hereby authorized to charge any other fees that may be required to complete this filing, or to credit any overpayment, to Deposit Account No. 15-0461.
5. ☒ Application Data Sheet is attached.
6. ☒ Formal drawings (Figs. 1-8) are attached.
☐ Use Figure _____ for front page of Publication.
7. ☐ Priority of foreign application No. JP-2002-293696 filed 10/07/2002 in JAPAN is claimed under 35 U.S.C. §119 and/or §365(b).
☒ The certified copy was filed in prior Application No. 10/676,067 on 10/23/2003.
☐ An electronic copy of the above foreign application(s) was received by the PTO in prior Application No. _____.
☐ A certified copy of the above foreign application(s) is filed herewith.
☐ A copy of the priority document was transmitted by the International Bureau in prior Application No. _____.
☐ An electronic copy of the above foreign application should be automatically retrieved by the PTO in accordance with the electronic priority document exchange service.
8. ☐ Priority of U.S. Provisional Application(s) No. _____ filed _____ is claimed under 35 U.S.C. §119.
(A Preliminary Amendment is attached to reflect the claim of benefit in the specification if not already present.)
9. ☒ The prior application is assigned of record to SEIKO EPSON CORPORATION, TOKYO, JAPAN and recorded at Reel 014315, Frame 0175.

10. ☐ This application is filed by fewer than all the inventors named in the prior application (37 C.F.R §1.53(b)(1)). Delete the following inventor(s) named in the prior application:
- _____
- _____
11. ☐ A Preliminary Amendment is attached. The Preliminary Amendment amends the specification to reflect the continuation data. Claims added by this Amendment are properly numbered consecutively beginning with the number next following the highest numbered claim in the application and claims canceled are identified in the listing of claims.
12. ☒ An Information Disclosure Statement is attached.
13. ☐ Small entity status:
- ☐ a. Entitlement to small entity status is asserted.
- ☐ b. Small entity status is no longer claimed.
14. ☐ Other: _____
15. ☐ As also indicated in the attached Request, this application is NOT to be published under 35 U.S.C. 122(b). The undersigned attorney or agent hereby certifies that the invention disclosed in this application has not and will not be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication of applications 18 months after filing.
16. ☒ The claims in this continuing application differ from the claims in the parent application(s). As to each claim or claim term in this continuing application that is broader than any claim or claim term in any parent application, any previous disclaimer of claim scope made during prosecution of any parent application is rescinded. The Examiner is requested to consider such broader claims and/or claim terms in view of all of the prior art without any previous disclaimers.

Respectfully submitted,



James A. Oliff
Registration No. 27,075

Moshe K. Wilensky
Registration No. 56,263

JAO:MKW/jfb

DEPOSIT ACCOUNT USE AUTHORIZATION Please grant any extension necessary for entry; Charge any fee due to our Deposit Account No. 15-0461
--

Form PTO-1449 (REV. 1/06)		US Dept. of Commerce PATENT & TRADEMARK OFFICE		ATTY DOCKET NO. 117390.01		APPLICATION NO. New U.S. Patent Application	
INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)				APPLICANT(S) Yojiro MATSUEDA et al.			
				FILING DATE July 24, 2008		GROUP	
U.S. PATENT DOCUMENTS							
Examiner Initials	Cite No.	Document Number	Date	Name			
	1	6,724,149	04/20/2004	KOMIYA et al.			
	2	7,009,345	03/07/2006	KOMIYA et al.			
	3	6,965,363	11/15/2005	SATO et al.			
	4	2006/0055643	03/16/2006	SATO et al.			
	5	2001/0048106 A1	12/06/2001	TANADA			
	6	6,825,820 B2	11/30/2004	YAMAZAKI et al.			
	7	6,633,135 B2	10/14/2003	NARA et al.			
	8	2003/0076046 A1	04/24/2003	KOMIYA et al.			
	9	US 2002/0140644 A1	10/03/2002	SATO et al.			
	10	US 5,159,476	10/27/1992	HAYASHI			
FOREIGN PATENT DOCUMENTS							
Examiner Initials	Cite No.	Document Number	Date	Country	With English Abstract	With English Translation	
	11	JP-A-2001-100654	04/13/2001	JAPAN	X	X	
	12	JP-A-2002-287663	10/04/2002	JAPAN	X	X	
	13	JP-A-2000-242196	09/08/2000	JAPAN	X	X	
	14	JP-A-2001-272930	10/05/2001	JAPAN	X	X	
	15	JP-A-2002-151276	05/24/2002	JAPAN			
OTHER DOCUMENTS							
Examiner Initials	Cite No.	Including name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.					
EXAMINER					DATE CONSIDERED		
Examiner: Initial if citation considered, whether or not citation is in conformance with M.P.E.P. 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.							

Date: July 24, 2008

PATENT APPLICATION SERIAL NO. _____

**U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE
FEE RECORD SHEET**

07/25/2008 MAHME1 00000034 12219592

01 FC:1011
02 FC:1111
03 FC:1311

310.00 OP
510.00 OP
210.00 OP

PTO-1556
(5/87)

*U.S. Government Printing Office: 2002-489-267/69033

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PATENT APPLICATION FEE DETERMINATION RECORD					Application or Docket Number 12/219,592		
Substitute for Form PTO-875							
APPLICATION AS FILED - PART I							
(Column 1)		(Column 2)		SMALL ENTITY		OR	
OTHER THAN SMALL ENTITY							
FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)	RATE (\$)	FEE (\$)	
BASIC FEE (37 CFR 1.16(e), (b), or (c))	N/A	N/A	N/A	\$155	N/A	\$310	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	\$255	N/A	\$510	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	\$105	N/A	\$210	
TOTAL CLAIMS (37 CFR 1.16(f))	6 minus 20 =	*	X \$25 =		X \$50 =	-	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	1 minus 3 =	*	X \$105 =		X \$210 =	-	
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$260 (\$130 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).		\$130		\$260		
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))			\$185		\$370		
			TOTAL		TOTAL	1030	
* If the difference in column 1 is less than zero, enter "0" in column 2.							
APPLICATION AS AMENDED - PART II							
(Column 1)		(Column 2)		SMALL ENTITY		OR	
OTHER THAN SMALL ENTITY							
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	RATE (\$)	ADDITIONAL FEE (\$)
	Total (37 CFR 1.16(i))	Minus	**	=	X \$25 =	OR	X \$50 =
	Independent (37 CFR 1.16(h))	Minus	***	=	X \$105 =	OR	X \$210 =
	Application Size Fee (37 CFR 1.16(s))					OR	
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))			\$185		OR	\$370
			TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	RATE (\$)	ADDITIONAL FEE (\$)
	Total (37 CFR 1.16(i))	Minus	**	=	X \$25 =	OR	X \$50 =
	Independent (37 CFR 1.16(h))	Minus	***	=	X \$105 =	OR	X \$210 =
	Application Size Fee (37 CFR 1.16(s))					OR	
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))			\$185		OR	\$370
			TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
 ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
 *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
 The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Yojiro MATSUEDA et al.

Application No.: New U.S. Patent Application

Filed: July 24, 2008

Docket No.: 117390.01

For: ELECTRO-OPTICAL DEVICE, MATRIX SUBSTRATE AND ELECTRONIC
APPARATUS

INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Pursuant to 37 CFR §1.56, the attention of the Patent and Trademark Office is hereby directed to the reference(s) listed on the attached PTO-1449. Unless otherwise indicated herein, one copy of each reference is attached. It is respectfully requested that the information be expressly considered during the prosecution of this application, and that the reference(s) be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

- ☒ 1. This Information Disclosure Statement is being filed (a) within three months of the U.S. filing date of this non-CPA application, OR (b) before the mailing date of a first Office Action on the merits in the present application. No certification or fee is required.
- ☒ 2. An English language Abstract of one or more non-English language reference is of record in the parent application. See References 11-14.
- ☒ 3. A computer-generated English language translation of one or more Japanese Patent Publication cited herein has been obtained from the website of the Japanese Patent Office ([<http://www.jpo.go.jp>]), and is of record in the parent application, but has not been reviewed for accuracy. See References 11-14.
- ☒ 4. One or more reference cited herein was cited by or submitted to the Office in parent application No. 10/676,067, filed October 2, 2003, which is relied upon for an earlier filing date under 35 U.S.C. §120. Thus, no copy of any such reference is attached. 37 CFR §1.98(d). See References 1-15.
- ☒ 5. References 1 and 2 correspond to reference 11.
- ☒ 6. References 3 and 4 correspond to reference 12.

- ☒ 8. Reference 6 corresponds to reference 15.

Respectfully submitted,



James A. Oliff
Registration No. 27,075

Moshe K. Wilensky
Registration No. 56,263

JAO:MKW/jfb

Date: July 24, 2008

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Alexandria, Virginia 22320-4850
Telephone: (703) 836-6400

DEPOSIT ACCOUNT USE AUTHORIZATION Please grant any extension necessary for entry; Charge any fee due to our Deposit Account No. 15-0461
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Filing Date: 07/24/08

Approved for use through 7/31/2006. OMB 0651-0032

U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

12/219,592

APPLICATION AS FILED – PART I

(Column 1)

(Column 2)

OR

OTHER THAN
SMALL ENTITY

FOR	NUMBER FILED	NUMBER EXTRA
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A
TOTAL CLAIMS (37 CFR 1.16(i))	6	0
INDEPENDENT CLAIMS (37 CFR 1.16(h))	1 minus 3 =	0
APPLICATION SIZE FEE (37 CFR 1.16(s))		

RATE (\$)	
N/A	
N/A	
N/A	
X\$ 25	
X\$100	
TOTAL	0

OR

RATE (\$)	FEE (\$)
N/A	310
N/A	510
N/A	210
X\$50	0
X\$210	0
TOTAL	1030

* If the difference in column 1 is less than zero, enter "0" in column 2.

APPLICATION AS AMENDED – PART II

(Column 1)

(Column 2)

(Column 3)

SMALL ENTITY

OR

OTHER THAN
SMALL ENTITY

AMENDMENT A		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total (37 CFR 1.16(j))	*		Minus **	=	
Independent (37 CFR 1.16(h))	*		Minus ***	=	
Application Size Fee (37 CFR 1.16(s))					
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					

RATE (\$)		ADDITIONAL FEE (\$)
X =		
X =		
N/A		
TOTAL ADD'T FEE		

OR

RATE (\$)		ADDITIONAL FEE (\$)
X =		
X =		
N/A		
TOTAL ADD'T FEE		

OR

(Column 1)

(Column 2)

(Column 3)

SMALL ENTITY

OR

AMENDMENT B		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total (37 CFR 1.16(j))	*		Minus **	=	
Independent (37 CFR 1.16(h))	*		Minus ***	=	
Application Size Fee (37 CFR 1.16(s))					
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					

RATE (\$)		ADDITIONAL FEE (\$)
X =		
X =		
N/A		
TOTAL ADD'T FEE		

OR

RATE (\$)		ADDITIONAL FEE (\$)
X =		
X =		
N/A		
TOTAL ADD'T FEE		

OR

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

日 本 国 特 許 庁
JAPAN PATENT OFFICE

別紙添付の書類に記載されている事項は下記の出願書類に記載されている事項と同一であることを証明する。

This is to certify that the annexed is a true copy of the following application as filed with this Office.

出 願 年 月 日
Date of Application: 2002年10月 7日

出 願 番 号
Application Number: 特願2002-293696

パリ条約による外国への出願
に用いる優先権の主張の基礎
となる出願の国コードと出願
番号

The country code and number
of your priority application,
to be used for filing abroad
under the Paris Convention, is

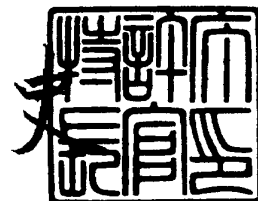
J P 2002-293696

出 願 人
Applicant(s): セイコーエプソン株式会社

2008年 8月14日

特許庁長官
Commissioner,
Japan Patent Office

鈴木 隆



【書類名】 特許願

【整理番号】 J0091837

【あて先】 特許庁長官殿

【国際特許分類】

H05B 33/04

【発明者】

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【識別番号】 100079108

【弁理士】

【氏名又は名称】 稲葉 良幸

【選任した代理人】

【識別番号】 100080953

【弁理士】

【氏名又は名称】 田中 克郎

【選任した代理人】

【識別番号】 100093861

【弁理士】

【氏名又は名称】 大賀 眞司

【手数料の表示】

【予納台帳番号】 011903

【納付金額】 21,000

【提出物件の目録】

【物件名】 明細書 1

【物件名】 図面 1

【物件名】 要約書 1

【包括委任状番号】 9808570

【プルーフの要否】 要

【書類名】 明細書

【発明の名称】 電気光学装置、マトリクス基板、及び電子機器

【特許請求の範囲】

【請求項 1】 電源回路から電源供給を受けて駆動される電気光学素子を含む、マトリクス状に配置された複数の画素を備えた電気光学装置であって、

前記複数の画素は、行方向又は列方向のうち少なくとも何れか一方向に並ぶ一連の画素からなる複数の画素群を構成しており、

前記複数の画素群の各々の画素群の間に配線形成領域が設けられ、

前記配線形成領域の幅は略等しい、

ことを特徴とする、電気光学装置。

【請求項 2】 複数の走査線と、複数のデータ線と、前記走査線と前記データ線との交差部に対応して配置された各々に電気光学素子を備えた複数の画素と、を含む電気光学装置であって、

前記電気光学素子に駆動電圧を供給する複数の電源線を含み、

前記複数の画素は、行方向又は列方向のうち少なくとも何れか一方向に並ぶ一連の画素からなる画素群を構成し、

前記複数の画素群の各々の画素群の間に複数の配線形成領域が設けられ、

前記複数の配線形成領域のうち、少なくとも 1 つの配線形成領域には、前記複数の電源線のうち少なくとも一つの電源線、前記複数の走査線のうち少なくとも一つの走査線、及び前記複数のデータ線のうち少なくとも一つのデータ線から選ばれた少なくとも二つの配線が形成されている、

ことを特徴とする、電気光学装置。

【請求項 3】 複数の走査線と、複数のデータ線と、前記走査線と前記データ線との交差部に対応して配置された各々に電気光学素子を備えた複数の画素と、を含む電気光学装置であって、

前記電気光学素子に駆動電圧を供給する複数の電源線を含み、

前記複数の画素は、行方向又は列方向のうち少なくとも何れか一方向に並ぶ一連の画素からなる画素群を構成し、

前記複数の画素群の各々の画素群の間に複数の配線形成領域が設けられ、

前記複数の配線形成領域のうち、少なくとも1つの配線形成領域には、前記複数の電源線のうち少なくとも一つの電源線と、前記複数の走査線のうち少なくとも一つの走査線がともに形成されている、

ことを特徴とする、電気光学装置。

【請求項4】 複数の走査線と、複数のデータ線と、前記走査線と前記データ線との交差部に対応して配置された各々に電気光学素子を備えた複数の画素と、を含む電気光学装置であって、

前記電気光学素子に駆動電圧を供給する複数の電源線を含み、

前記複数の画素は、行方向又は列方向のうち少なくとも何れか一方向に並ぶ一連の画素からなる画素群を構成し、

前記複数の画素群の各々の画素群の間に複数の配線形成領域が設けられ、

前記複数の配線形成領域のうち、少なくとも1つの配線形成領域には、前記複数の電源線のうち少なくとも一つの電源線と、前記複数のデータ線のうち少なくとも一つのデータ線がともに形成されている、

ことを特徴とする、電気光学装置。

【請求項5】 請求項2乃至請求項4のうち何れか1項に記載の電気光学装置であって、前記配線形成領域の幅は略等しいことを特徴とする電気光学装置。

【請求項6】 前記電気光学素子には、駆動電圧が異なる電気光学素子を含み、前記駆動電圧に応じて前記電気光学素子へ電圧を供給する電源線の幅が異なることを特徴とする請求項1乃至請求項5のうち何れか1項に記載の電気光学装置。

【請求項7】 前記電気光学素子は発光素子であり、前記電源線は前記発光素子の発光色に対応して幅が異なることを特徴とする請求項6に記載の電気光学装置。

【請求項8】 前記発光色は、赤、緑、又は青であることを特徴とする請求項7に記載の電気光学装置。

【請求項9】 前記電気光学素子はエレクトロルミネセンス素子であることを特徴とする請求項1乃至請求項8のうち何れか1項に記載の電気光学装置。

【請求項10】 請求項1乃至請求項9のうち何れか1項に記載の電気光学

装置を備える電子機器。

【請求項 1 1】 マトリクス状に配置された複数の画素電極を備えたマトリクス基板であって、

前記複数の画素電極は、行方向又は列方向のうち少なくとも何れか一方向に並ぶ一連の画素電極からなる複数の画素電極群を構成しており、

前記複数の画素電極群の各々の画素電極群の間に配線形成領域が設けられ、

前記配線形成領域の幅は略等しい、

ことを特徴とする、マトリクス基板。

【請求項 1 2】 複数の走査線と、複数のデータ線と、前記走査線と前記データ線との交差部に対応して配置された複数の画素電極と、を含むマトリクス基板であって、

前記複数の画素電極に電圧を供給するための複数の電源線を含み、

前記複数の画素電極は、行方向又は列方向のうち少なくとも何れか一方向に並ぶ一連の画素からなる画素電極群を構成し、

前記複数の画素電極群の各々の画素電極群の間に複数の配線形成領域が設けられ、

前記複数の配線形成領域のうち、少なくとも 1 つの配線形成領域には、前記複数の電源線のうち少なくとも一つの電源線、前記複数の走査線のうち少なくとも一つの走査線、及び前記複数のデータ線のうち少なくとも一つのデータ線から選ばれた少なくとも二つの配線が形成されている、

ことを特徴とする、マトリクス基板。

【発明の詳細な説明】

【0 0 0 1】

【発明の属する技術分野】

本発明は電気光学素子を備えた電気光学装に好適な配線レイアウトに関する。

【0 0 0 2】

【従来の技術】

有機 EL 素子は電流駆動型の自発光素子であるため、バックライトが不要となる上に、低消費電力、高視野角、高コントラスト比が得られるメリットがあり、

フラットパネルディスプレイの開発において期待されている。有機EL素子は陽極と陰極との間に介在する発光層を備えた電気光学素子であり、両電極間に順バイアス電流を供給することで、陽極から注入された正孔と陰極から注入された電子とが再結合する際の再結合エネルギーにより自発光する。このため、有機EL素子を発光させるためには、外部回路からの電源供給が必要となる。

【0003】

従来のカラー表示用のアクティブマトリクス駆動型ディスプレイパネルにおいては、例えば、画素領域内にN行M列のマトリクス状に配された画素マトリクスの列方向に各々M本の電源線とデータ線を敷設する一方で、同マトリクスの行方向にN本の選択線を敷設している。このような配線レイアウトでは、ある特定の画素に着目したとき、例えば、当該特定の画素に対して左に隣接する画素との間にデータ線を敷設する一方、右に隣接する画素との間に電源線を敷設している。つまり、相互に隣接する画素間に敷設されている列方向のラインに着目すると、当該ラインには1本のデータ線と1本の電源線が1組となってレイアウトされている。上記の構成において、走査線とデータ線の交差点には、スイッチングトランジスタと、保持容量と、駆動トランジスタと、RGB三原色で発光する有機EL素子とが配され、これらの素子により画素を構成している。

【0004】

【発明が解決しようとする課題】

しかし、RGB三原色の各色毎に発光層の材料が異なるため、各色の有機EL素子における消費電力も大きく異なり、結果として、電源線の最適な幅も色毎に大きく異なることとなる。上記の配線レイアウトで電源線を敷設すると、最大幅にあわせて画素ピッチを選定しなければならないところ、ディスプレイの製造プロセス上、画素ピッチを等間隔に設定する要請があるため、開口率を犠牲にして画素レイアウトを決定しなければならない。その一方で、開口率を小さくすると、所定の輝度を得るために有機EL素子に供給される電流量を大きくする必要があり、その結果、電源線の幅をさらに広くしなければならず、上記の理由によりさらに開口率を小さくする必要がある。

【0005】

このように、従来の配線レイアウトでは電源線の幅と画素の開口率はトレードオフの関係にあり、画素ピッチを等間隔にするという条件下で、各色に好適な電源線の幅を確保しつつ、開口率を大きく確保することは困難であった。

【０００６】

そこで、本発明は画素の配列ピッチを等間隔に設定しつつ、画素の開口率を高めることができる電源線の配線技術を提案することを課題とする。

【０００７】

【課題を解決するための手段】

上記の課題を解決するため、本発明の電気光学装置は、電源回路から電源供給を受けて駆動される電気光学素子を含む、マトリクス状に配置された複数の画素を備えた電気光学装置であって、前記複数の画素は、行方向又は列方向のうち少なくとも何れか一方向に並ぶ一連の画素からなる複数の画素群を構成しており、前記複数の画素群の各々の画素群の間に配線形成領域が設けられ、前記配線形成領域の幅は略等しい、ことを特徴とする。かかる構成により、画素ピッチを等間隔に設定できる。

【０００８】

ここで、「電気光学素子」とは、電気的作用により光の光学的状態を変化させる電子素子一般をいい、エレクトロルミネセンス素子などの自発光素子の他に、液晶素子のように光の偏向状態を変化させることで階調表示する電子素子を含む。本発明ではエレクトロルミネセンス素子が好適である。エレクトロルミネセンス素子を用いることで、電流駆動により自発光する電流駆動型発光素子を得ることができる。

【０００９】

本発明の電気光学装置は、複数の走査線と、複数のデータ線と、前記走査線と前記データ線との交差部に対応して配置された各々に電気光学素子を備えた複数の画素と、を含む電気光学装置であって、前記電気光学素子に駆動電圧を供給する複数の電源線を含み、前記複数の画素は、行方向又は列方向のうち少なくとも何れか一方向に並ぶ一連の画素からなる画素群を構成し、前記複数の画素群の各々の画素群の間に複数の配線形成領域が設けられ、前記複数の配線形成領域のう

ち、少なくとも1つの配線形成領域には、前記複数の電源線のうち少なくとも一つの電源線、前記複数の走査線のうち少なくとも一つの走査線、及び前記複数のデータ線のうち少なくとも一つのデータ線から選ばれた少なくとも二つの配線が形成されている、ことを特徴とする。かかる構成により、画素ピッチを等間隔に設定することができる上に、最適な電源幅を選択しつつ、画素の高開口率を得ることができる。

【0010】

本発明の電気光学装置は、複数の走査線と、複数のデータ線と、前記走査線と前記データ線との交差部に対応して配置された各々に電気光学素子を備えた複数の画素と、を含む電気光学装置であって、前記電気光学素子に駆動電圧を供給する複数の電源線を含み、前記複数の画素は、行方向又は列方向のうち少なくとも何れか一方向に並ぶ一連の画素からなる画素群を構成し、前記複数の画素群の各々の画素群の間に複数の配線形成領域が設けられ、前記複数の配線形成領域のうち、少なくとも1つの配線形成領域には、前記複数の電源線のうち少なくとも一つの電源線と、前記複数の走査線のうち少なくとも一つの走査線がともに形成されている、ことを特徴とする。かかる構成により、画素ピッチを等間隔に設定することができる上に、最適な電源幅を選択しつつ、画素の高開口率を得ることができる。

【0011】

本発明の電気光学装置は、複数の走査線と、複数のデータ線と、前記走査線と前記データ線との交差部に対応して配置された各々に電気光学素子を備えた複数の画素と、を含む電気光学装置であって、前記電気光学素子に駆動電圧を供給する複数の電源線を含み、前記複数の画素は、行方向又は列方向のうち少なくとも何れか一方向に並ぶ一連の画素からなる画素群を構成し、前記複数の画素群の各々の画素群の間に複数の配線形成領域が設けられ、前記複数の配線形成領域のうち、少なくとも1つの配線形成領域には、前記複数の電源線のうち少なくとも一つの電源線と、前記複数のデータ線のうち少なくとも一つのデータ線がともに形成されている、ことを特徴とする。かかる構成により、画素ピッチを等間隔に設定することができる上に、最適な電源幅を選択しつつ、画素の高開口率を得るこ

とができる。

【0012】

好ましくは、前記配線形成領域の幅を略等しくする。配線形成領域の幅を略等しくすることで、画素ピッチを等間隔に設定できる。

【0013】

好ましくは、前記電気光学素子には、駆動電圧が異なる電気光学素子を含み、前記駆動電圧に応じて前記電気光学素子へ電圧を供給する電源線の幅が異なる。電源線の幅が異なる場合であっても、上述のように配線レイアウトを工夫することで、開口率を高めつつ、画素ピッチを等間隔にできる。

【0014】

好ましくは、前記電気光学素子は発光素子であり、前記電源線は前記発光素子の発光色に対応して幅が異なる。電気光学素子の特性に応じた最適な電源幅を選択することにより、デバイス設計の自由度を高めることができる。

【0015】

好ましくは、前記発光色は、赤、緑、又は青である。これにより、フルカラー表示が可能となる。

【0016】

好ましくは、前記電気光学素子はエレクトロルミネセンス素子である。エレクトロルミネセンス素子によれば、電流制御により発光階調を制御できる。

【0017】

本発明の電子機器は、本発明の電気光学装置を備える。電子機器としては、表示装置を備えるものであれば特に限定はなく、例えば、携帯電話、ビデオカメラ、パーソナルコンピュータ、ヘッドマウントディスプレイ、プロジェクタ、ファックス装置、デジタルカメラ、携帯型TV、DSP装置、PDA、電子手帳などに適用できる。

【0018】

本発明のマトリクス基板は、マトリクス状に配置された複数の画素電極を備えたマトリクス基板であって、前記複数の画素電極は、行方向又は列方向のうち少なくとも何れか一方に並ぶ一連の画素電極からなる複数の画素電極群を構成し

ており、前記複数の画素電極群の各々の画素電極群の間に配線形成領域が設けられ、前記配線形成領域の幅は略等しい、ことを特徴とする。かかる構成により、画素ピッチを等間隔に設定できる。

【0019】

本発明のマトリクス基板は、複数の走査線と、複数のデータ線と、前記走査線と前記データ線との交差部に対応して配置された複数の画素電極と、を含むマトリクス基板であって、前記複数の画素電極に電圧を供給するための複数の電源線を含み、前記複数の画素電極は、行方向又は列方向のうち少なくとも何れか一方向に並ぶ一連の画素からなる画素電極群を構成し、前記複数の画素電極群の各々の画素電極群の間に複数の配線形成領域が設けられ、前記複数の配線形成領域のうち、少なくとも1つの配線形成領域には、前記複数の電源線のうち少なくとも一つの電源線、前記複数の走査線のうち少なくとも一つの走査線、及び前記複数のデータ線のうち少なくとも一つのデータ線から選ばれた少なくとも二つの配線が形成されている、ことを特徴とする。かかる構成により、画素ピッチを等間隔に設定することができる上に、最適な電源幅を選択しつつ、画素の高開口率を得ることができる。

【0020】

【発明の実施の形態】

発明の実施の形態1.

以下、各図を参照して本実施形態について説明する。

【0021】

図1は本実施形態のアクティブマトリクス型有機ELディスプレイパネル100の全体構成図である。同図に示すように、ディスプレイパネル100は基板16上にN行M列のマトリクス状に配列された複数の画素10を備える表示領域11と、行方向に並ぶ一群の画素10に接続する走査線に走査信号を出力する走査線ドライバ12と、列方向に並ぶ一群の画素10に接続するデータ線及び電源線にデータ信号及び電源電圧を供給するデータ線ドライバ13とを備えて構成されている。各々の画素10には、RGB三原色で発光する有機EL素子が形成されている。表示領域11の全面には共通電極としての陰極14が被覆成膜されて

おり、陰極取り出し電極15を介して外部回路と接続している。

【0022】

尚、同図に示す有機ELディスプレイパネル100は、基板16側から光を射出するいわゆるトップエミッション構造のタイプであるが、本発明はこれに限らず、透明陰極から光を射出するいわゆるボトムエミッション構造のタイプでもよい。

【0023】

図2は画素10の主要回路構成図である。画素10は、スイッチングトランジスタ T_{r1} と、駆動トランジスタ T_{r2} と、保持容量 C と、発光部OLEDとを備えて構成されており、2トランジスタ方式により駆動制御される。スイッチングトランジスタ T_{r1} はnチャネル型FETであり、そのゲート端子には走査線 V_{sel} が接続されており、ドレイン端子にはデータ線 I_{dat} が接続している。駆動トランジスタ T_{r2} はpチャネル型FETであり、そのゲート端子はスイッチングトランジスタ T_{r1} のソース端子に接続されている。また、同トランジスタのソース端子は電源線 V_{dd} に接続されており、ドレイン端子は発光部OLEDに接続している。さらに、同トランジスタのゲート／ソース間には保持容量が形成されている。上記の構成において、走査線 V_{sel} に選択信号を出力し、スイッチングトランジスタ T_{r1} を開状態にすると、データ線 I_{dat} を介して供給されたデータ信号は電圧値として保持容量 C に書き込まれる。すると、保持容量 C に書き込まれた保持電圧は1フレーム期間を通じて保持され、当該保持電圧によって、駆動トランジスタ T_{r2} のコンダクタンスがアナログ的に変化し、発光諧調に対応した順バイアス電流を発光部OLEDに供給する。

【0024】

図3は画素領域内における配線レイアウトを説明するための図である。同図においては、説明を簡略化するため、2行3列に配列する6画素分の配線レイアウトを図示している。図中、R、G、Bとあるのは、それぞれ赤、緑、青で発光する画素10であることを意味しており、RGBの画素群が列方向に配列している。また、 V_{dd-R} は赤の画素の電源線、 V_{dd-G} は緑の画素の電源線、 V_{dd-B} は青の画素の電源線、17は有機EL素子の画素電極（陽極）である。その他の符号の

うち上述したものについては詳細な説明を省略する。また、3 1は $(m-1)$ 列の画素群と m 列の画素群の間に形成されるライン状の配線形成領域であり、列方向の画素配列長とほぼ同程度の長さにわたって、列方向に延在している。同様に、3 2は m 列と $(m+1)$ 列の画素群の間、3 3は $(m+1)$ 列と $(m+2)$ 列の画素群の間、3 4は $(m+2)$ 列と $(m+3)$ 列の画素群の間に形成される配線形成領域である。説明の便宜上、 $(m-1)$ 列の画素群と $(m+3)$ 列の画素群は図示されていない。本実施形態においては、配線形成領域3 1～3 4の幅をできるだけ均一に設定するため、これらの配線形成領域にレイアウトされる2以上の配幅の合計を各々等しくする。電源線 V_{dd} の幅は有機EL素子の発光層の材料によって異なるが、ここでは説明の便宜上、緑、赤、青の順に電源線の幅が大きくなるものとする。つまり、 V_{dd-G} の幅 $>$ V_{dd-R} の幅 $>$ V_{dd-B} の幅と仮定する。

【0025】

上記の仮定の下では、配線形成領域3 1～3 4の幅をできるだけ均一にするため、電源線 V_{dd} とデータ線 I_{dat} の幅の合計値がほぼ等しくなるような組み合わせを選択する。例えば、最大幅を有する V_{dd-G} と最小幅を有する V_{dd-B} との幅の合計値と、中間幅を有する V_{dd-R} とデータ線 I_{dat} の幅の合計値と、データ線 I_{dat} 2本の幅の合計値とがそれぞれほぼ等しいものとする。これらの電源線 V_{dd} とデータ線 I_{dat} の組み合わせを各配線形成領域3 1～3 4上にレイアウトする。同図に示す例では、最大幅を有する V_{dd-G} と最小幅を有する V_{dd-B} とを一組にして、配線形成領域3 3上にレイアウトし、中間幅を有する V_{dd-R} とデータ線 I_{dat} とを一組にして、配線形成領域3 1及び3 4上にレイアウトし、データ線 I_{dat} 2本を一組にして、配線形成領域3 2上にレイアウトしている。但し、配線形成領域3 1については、電源線 V_{dd-R} のみを図示し、配線形成領域3 4についてはデータ線 I_{dat} のみを図示している。一方、走査線 V_{sel} については、行方向に並ぶ画素群同士の間において、当該画素群の画素配列長とほぼ同程度の長さを有するライン状の配線形成領域につき、1本ずつレイアウトされている。同図に示す配線レイアウトは周期的に繰り返す配線パターンの1単位を示すものであり、任意に選んだRGBの画素10における配線レイアウトは全て同図に示すパターンに設定されている。このため、本実施形態においては、画素の列方向に沿って

形成される配線形成領域の配置レイアウトを規定するレイアウト図を仮想的に想定して、複数の配線形成領域のうち特定の配線形成領域に着目し、当該配線形成領域を中心として前記レイアウト図を仮想的に折り返したとき、同種類の配線の組み合わせを有する配線形成領域同士が重なるようになっている。

【0026】

本実施形態によれば、画素マトリクスの列方向に延在する同種の電源線が行方向に対して略等間隔の配列ピッチで形成されているため、画素ピッチを等間隔に設定することができ、有機ELディスプレイのように色毎に消費電流の異なるデバイスにおいて設計の自由度を高めることができる。特に、インクジェット方式を利用して発光層を成膜するには、画素ピッチは等間隔であることが望ましいため、製造プロセス上のメリットが大きい。また、色毎に最適な電源線の幅を選択できるため、高開口率を維持したまま、最適な色バランスを確保しつつ、さらに消費電力を低減することができる。

【0027】

但し、上記に示した例は一例であり、上述した例に限られるものではない。例えば、RGB 3本の電源線 V_{dd} のうち何れか2本の電源配線を選択する組み合わせは全部で3通りあるため、本実施形態に示す配線レイアウトのパターンは全部で3通りとなる。また、本実施形態においては、行方向の配線形成領域に走査線 V_{sel} を1本ずつレイアウトし、列方向の配線形成領域31、32、及び33に3本の電源配線 V_{dd} と3本のデータ線 I_{dat} の中から何れか2本の組み合わせを選択してレイアウトする構成を示したが、本発明はこれに限られるものではない。以下に各種の変形例について説明する。

【0028】

発明の実施の形態2.

図4は本発明の第2の形態における配線レイアウトの説明図である。

【0029】

本実施形態においては、画素の行方向に沿って形成される配線形成領域の配置レイアウトを規定するレイアウト図を仮想的に想定して、複数の配線形成領域の

うち特定の配線形成領域に着目し、当該配線形成領域を中心として前記レイアウト図を仮想的に折り返したとき、同種類の配線の組み合わせを有する配線形成領域同士が重なるように構成されている。(n-1)行目の行方向に並ぶ画素群(図示せず)とn行目の行方向に並ぶ画素群との間の配線形成領域4-1には3本の電源線 V_{dd-G} 、 V_{dd-R} 、及び V_{dd-B} が一组となつて行方向にレイアウトされており、n行目の行方向に配列する画素群と(n+1)行目の行方向に配列する画素群との間の配線形成領域4-2には2本の走査線 V_{sel} が一组となつて行方向にレイアウトされている。行方向における配線レイアウトの基本的なパターンは3本の電源線 V_{dd-G} 、 V_{dd-R} 、及び V_{dd-B} と2本の走査線 V_{sel} をそれぞれ一组としてレイアウトし、この基本パターンを周期的に繰り返しレイアウトする構成となっている。従つて、(n+1)行目の行方向に配列する画素群と(n+2)行目の行方向に配列する画素群との間の配線形成領域4-3における配線レイアウトは配線形成領域4-1における配線レイアウトと同じである。

【0030】

一方、列方向に配列する画素群同士の間配線形成領域には、1本の電源線 V_{dd} と1本のデータ線 I_{dat} とが一组となつて列方向にレイアウトされている。同図に示す例では、m列目の列方向に配列するRの画素群と(m+1)列目の列方向に配列するGの画素群との間の配線形成領域5-1に電源線 V_{dd-R} とデータ線 I_{dat} とが一组となつてレイアウトされている。同様に、(m+1)列目の列方向に配列するGの画素群と(m+2)列目の列方向に配列するBの画素群(図示せず)との間の配線形成領域には電源線 V_{dd-G} とデータ線 I_{dat} とが一组となつてレイアウトされているが、説明の便宜上、電源線 V_{dd-G} のみ図示してある。また、行方向及び列方向にレイアウトされている電源線 V_{dd-R} は各々異なるレイヤに敷設されており、層間絶縁膜に開口するコンタクトホールh-1を介して導通している。電源線 V_{dd-G} についても同様にコンタクトホールh-2を介して導通している。

【0031】

本実施形態によれば、画素マトリクス行方向に延在する同種の電源線が列方向に対して略等間隔の配列ピッチで形成されているため、実施形態1と同様の効

果が得られる他、電源線 V_{dd-G} 、 V_{dd-R} 、及び V_{dd-B} が画素領域内においてマトリクス状に行方向及び列方向にレイアウトされているため、電源線 V_{dd-G} 、 V_{dd-R} 、及び V_{dd-B} の配線抵抗を低減させることができ、有機EL素子への電流供給を十分に行うことができる。このため、特定の電源線だけが電流供給不十分になることによる輝度ムラの発生を抑止することができ、クロストークの発生を低減できる。特に、大画面ディスプレイにおいては、画面内に十分な電流を均一に供給する必要があるため、特に効果がある。

【0032】

発明の実施の形態3.

図5は本発明の第3の形態における配線レイアウトの説明図である。

【0033】

本実施形態においては、画素の行方向及び列方向に沿って形成される配線形成領域の配置レイアウトを規定するレイアウト図を仮想的に想定して、複数の配線形成領域のうち特定の配線形成領域に着目し、当該配線形成領域を中心として前記レイアウト図を仮想的に折り返したとき、同種類の配線の組み合わせを有する配線形成領域同士が重なるように構成されている。(n-1)行目の行方向に並ぶ画素群(図示せず)とn行目の行方向に並ぶ画素群との間の配線形成領域61には3本の電源線 V_{dd-G} 、 V_{dd-R} 、及び V_{dd-B} が一組となって行方向にレイアウトされており、n行目の行方向に配列する画素群と(n+1)行目の行方向に配列する画素群との間の配線形成領域62には2本の走査線 V_{sel} が一組となって行方向にレイアウトされている。行方向における配線レイアウトの基本的なパターンは3本の電源線 V_{dd-G} 、 V_{dd-R} 、及び V_{dd-B} と2本の走査線 V_{sel} をそれぞれ一組としてレイアウトし、この基本パターンを周期的に繰り返しレイアウトする構成となっている。従って、(n+1)行目の行方向に配列する画素群と(n+2)行目の行方向に配列する画素群との間の配線形成領域63における配線レイアウトは配線形成領域61における配線レイアウトと同じである。

【0034】

一方、列方向に配列する画素群同士の間には3本の電源線 V_{dd-G} 、 V_{dd-R} 、及

び V_{dd-B} が3本のデータ線 I_{dat} の中から選ばれた2本一組からなる3通りの組み合わせでレイアウトされている。同図に示す例では、 $(m-1)$ 列目の列方向に配列するBの画素群（図示せず）と m 列目の列方向に配列するRの画素群との間の配線形成領域71に電源線 V_{dd-G} （図示せず）とデータ線 I_{dat} とが一組となってレイアウトされており、 m 列目の列方向に配列するRの画素群と $(m+1)$ 列目の列方向に配列するGの画素群との配線形成領域72には2本の電源線 V_{dd-G} 、 V_{dd-R} が一組となってレイアウトされている。また、 $(m+1)$ 列目の列方向に配列するGの画素群と $(m+2)$ 列目の列方向に配列するBの画素群との間の配線形成領域73に2本のデータ線 I_{dat} が一組となってレイアウトされており、 $(m+2)$ 列目の列方向に配列するBの画素群と $(m+3)$ 列目の列方向に配列するRの画素群（図示せず）との間の配線形成領域74には電源線 V_{dd-G} とデータ線 I_{dat} とが一組となってレイアウトされている。

【0035】

行方向及び列方向にレイアウトされている電源線 V_{dd-R} は各々異なるレイヤに敷設されており、層間絶縁膜に開口するコンタクトホールh1を介して導通している。電源線 V_{dd-G} 及び電源線 V_{dd-B} についても同様に行方向及び列方向に対して異なるレイヤに敷設されており、コンタクトホールh2及びh3を介してそれぞれ導通している。これらのコンタクトホールh1、h2、及びh3は複数形成することで、配線の断線対策に効果があり、さらに配線の低抵抗化を図ることができるメリットがある。

【0036】

本実施形態によれば、画素マトリクス行方向に延在する同種の電源線が列方向に対して略等間隔の配列ピッチで形成され、かつ、画素マトリクス列方向に延在する同種の電源線が行方向に対して略等間隔の配列ピッチで形成されるため、実施形態1と同様の効果が得られる他、電源線 V_{dd-G} 、 V_{dd-R} 、及び V_{dd-B} が画素領域内においてマトリクス状に行方向及び列方向にレイアウトされているため、電源線 V_{dd-G} 、 V_{dd-R} 、及び V_{dd-B} の配線抵抗を低減させることができ、有機EL素子への電流供給を十分に行うことができる。このため、特定の電源線だけが電流供給不十分になることによる輝度ムラの発生を抑止することができ、ク

ロストークの発生を低減できる。特に、大画面ディスプレイにおいては、画面内に十分な電流を均一に供給する必要があるため、特に効果がある。

【0037】

発明の実施の形態4.

図6は本発明の電気光学装置を適用可能な電子機器の例を示す図である。同図(a)は携帯電話への適用例であり、携帯電話230は、アンテナ部231、音声出力部232、音声入力部233、操作部234、及び本発明の有機ELディスプレイパネル100を備えている。このように本発明の有機ELディスプレイパネル100を携帯電話230の表示部として利用可能である。同図(b)はビデオカメラへの適用例であり、ビデオカメラ240は、受像部241、操作部242、音声入力部243、及び本発明の有機ELディスプレイパネル100を備えている。このように本発明の有機ELディスプレイパネル100は、ファインダーや表示部として利用可能である。同図(c)は携帯型パーソナルコンピュータへの適用例であり、コンピュータ250は、カメラ部251、操作部252、及び本発明の有機ELディスプレイパネル100を備えている。このように本発明の有機ELディスプレイパネル100は、表示装置として利用可能である。

【0038】

同図(d)はヘッドマウントディスプレイへの適用例であり、ヘッドマウントディスプレイ260は、バンド261、光学系収納部262及び本発明の有機ELディスプレイパネル100を備えている。このように本発明の有機ELディスプレイパネル100は画像表示源として利用可能である。同図(e)はリア型プロジェクターへの適用例であり、プロジェクター270は、筐体271に、光源272、合成光学系273、ミラー274、ミラー275、スクリーン276、及び本発明の有機ELディスプレイパネル100を備えている。同図(f)はフロント型プロジェクターへの適用例であり、プロジェクター280は、筐体282に光学系281及び本発明の有機ELディスプレイパネル100を備え、画像をスクリーン283に表示可能になっている。このように本発明の有機ELディスプレイパネル100は画像表示源として利用可能である。

【図面の簡単な説明】

【図 1】 本発明の有機 EL ディスプレイパネルの平面図である。

【図 2】 画素の主要回路構成図である。

【図 3】 第 1 の実施形態における配線レイアウトの説明図である。

【図 4】 第 2 の実施形態における配線レイアウトの説明図である。

【図 5】 第 3 の実施形態における配線レイアウトの平面図である。

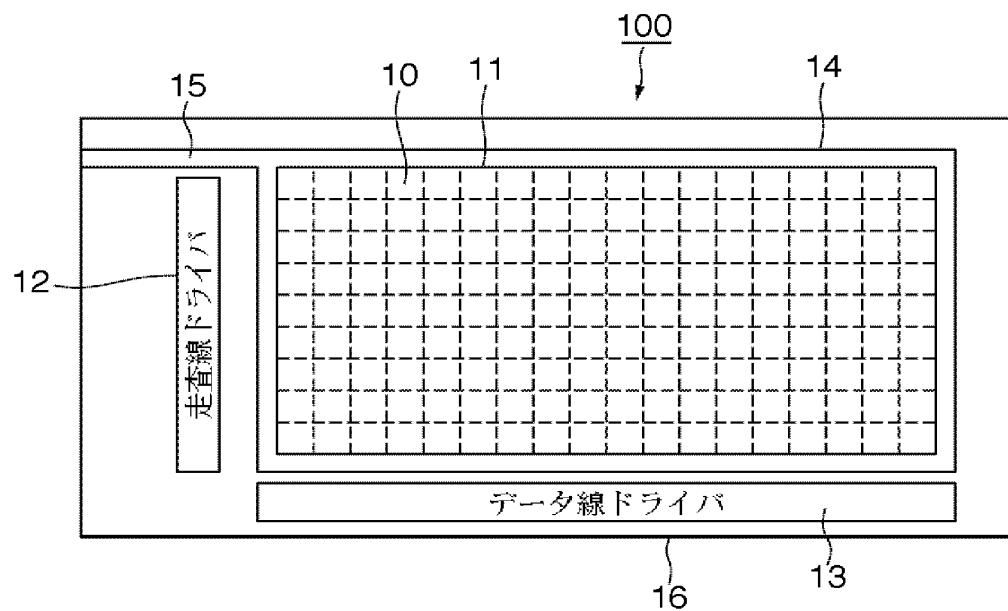
【図 6】 本発明の有機 EL ディスプレイの応用例の説明図である。

【符号の説明】

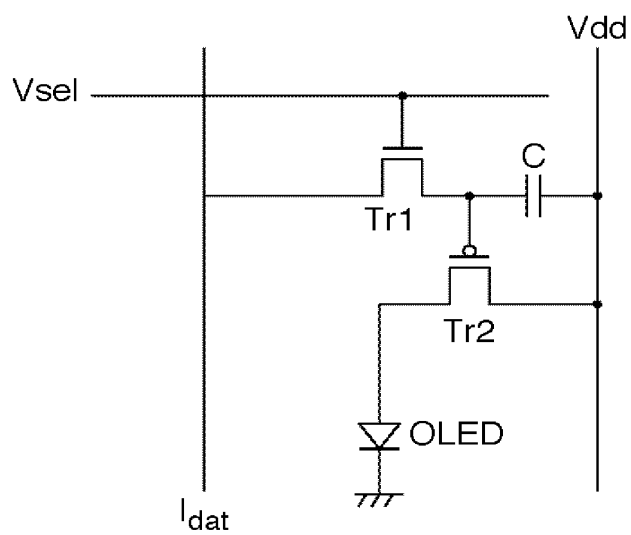
1 0…画素 1 1…画素領域 1 2…走査線ドライバ 1 3…データ線ドライバ
1 4…陰極 1 5…陰極取出電極 1 6…基板 1 7…画素電極 V_{dd} …電源
線 V_{sel} …走査線 I_{dat} …データ線 $Tr 1$ …スイッチングトランジスタ $Tr 2$ …駆動トランジスタ C …保持容量 $OLED$ …発光部

【書類名】 図面

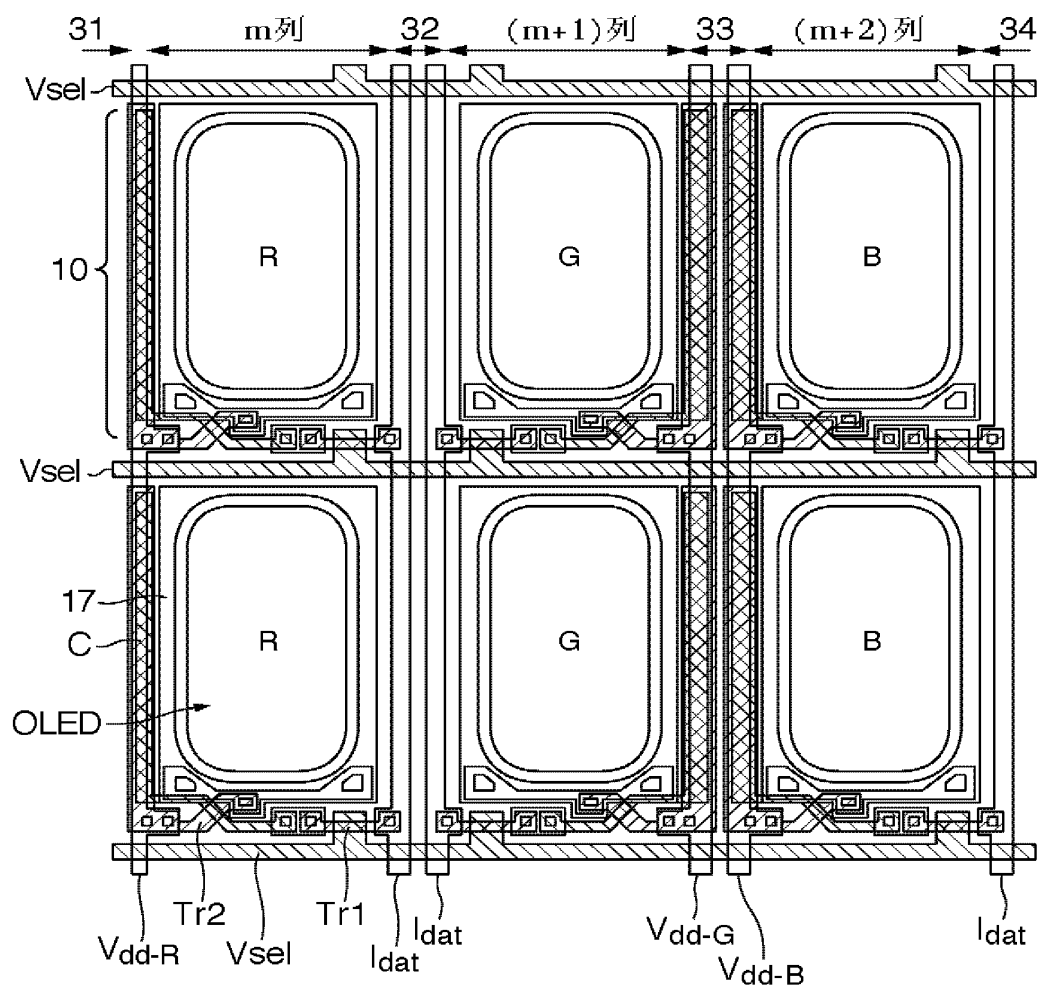
【図1】



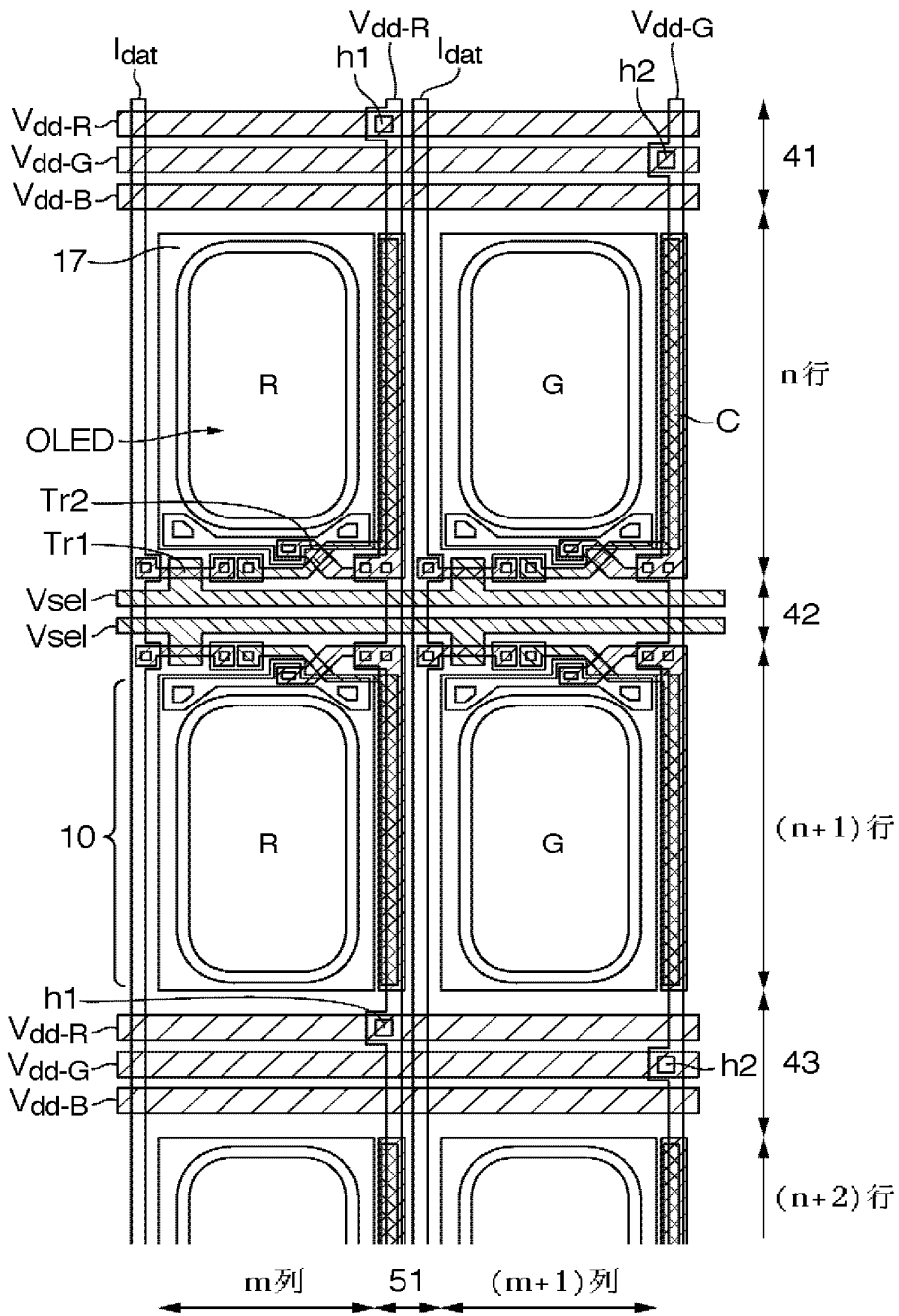
【図2】



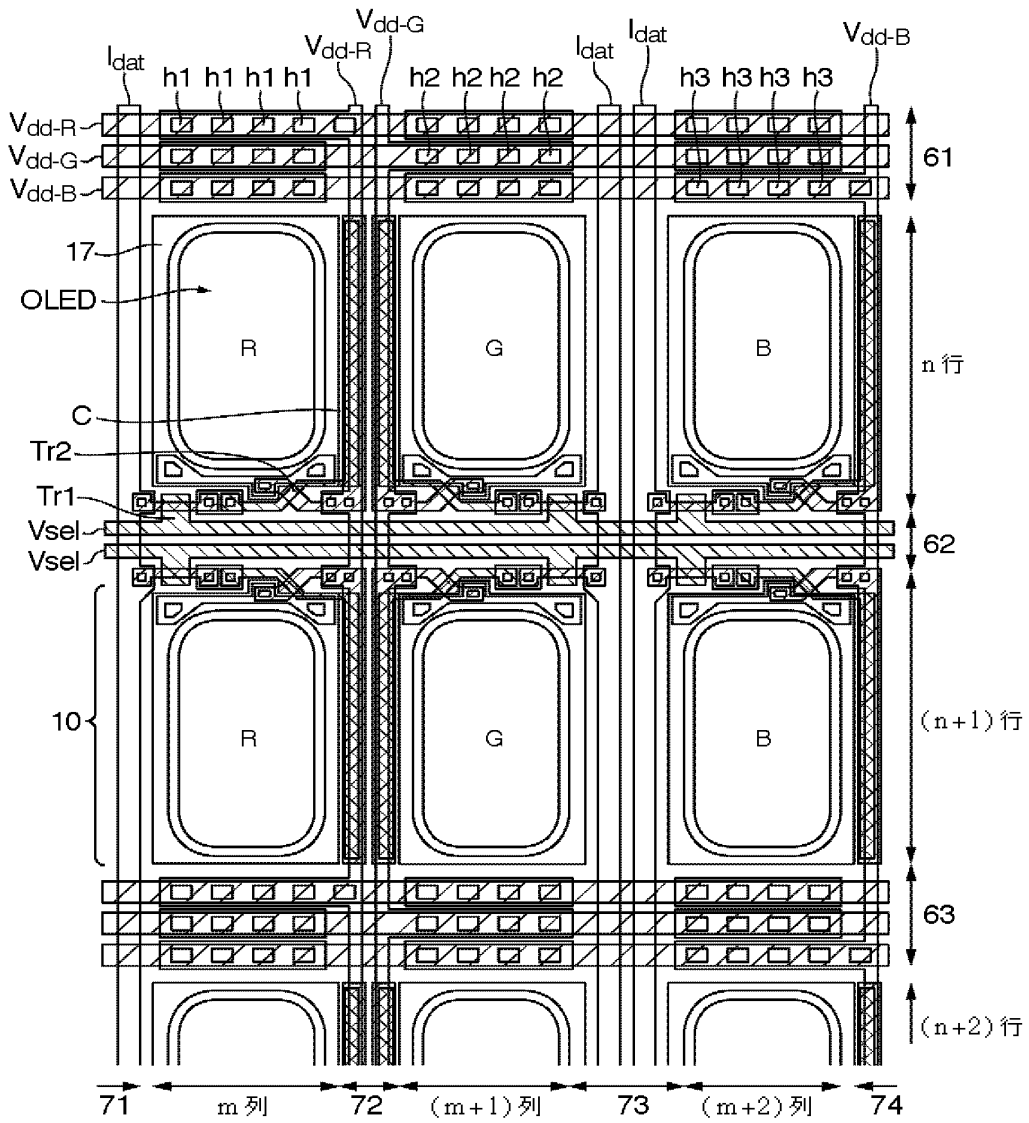
【図3】



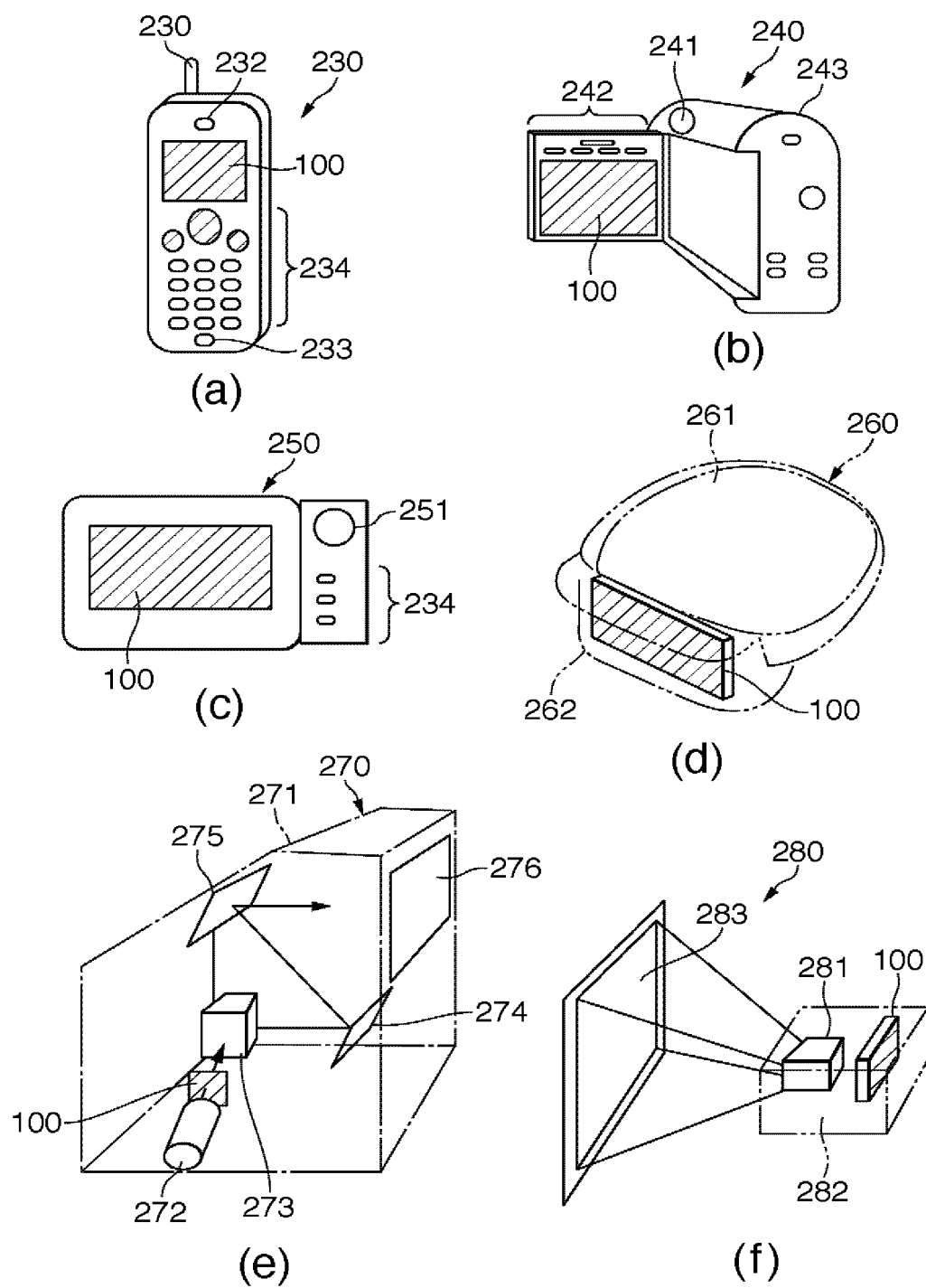
【図4】



【図5】



【図6】



【書類名】 要約書

【要約】

【課題】 画素の配列ピッチを等間隔に設定しつつ、画素の開口率を高めることができる電源線の配線レイアウトを提案する。

【解決手段】 本発明の電気光学装置は、電源回路から電源供給を受けて駆動される電気光学素子を含む、マトリクス状に配置された複数の画素（１０）を備えた電気光学装置であって、前記複数の画素（１０）は、行方向又は列方向のうち少なくとも何れか一方向に並ぶ一連の画素からなる複数の画素群を構成しており、前記複数の画素群の各々の画素群の間に配線形成領域（３１，３２，３３，３４）が設けられ、前記配線形成領域（３１，３２，３３，３４）の幅は略等しいことを特徴とする。

【選択図】 図３

【書類名】 手続補正書
【整理番号】 J009183701
【あて先】 特許庁長官殿
【事件の表示】
【出願番号】 特願2002-293696
【補正をする者】
【識別番号】 000002369
【氏名又は名称】 セイコーエプソン株式会社
【代理人】
【識別番号】 100079108
【弁理士】
【氏名又は名称】 稲葉 良幸
【補正により増加する請求項の数】 3
【手続補正1】
【補正対象書類名】 明細書
【補正対象項目名】 特許請求の範囲
【補正方法】 変更
【補正の内容】
【特許請求の範囲】

【請求項1】

電源回路から電源供給を受けて駆動される電気光学素子を含む、マトリクス状に配置された複数の画素を備えた電気光学装置であって、
前記複数の画素は、行方向又は列方向のうち少なくとも何れか一方向に並ぶ一連の画素からなる複数の画素群を構成し、
前記電気光学素子に駆動電圧を供給する複数の配線幅の異なる電源線を含み、
前記複数の画素群の各々の画素群の間に配線形成領域が設けられ、
前記配線形成領域の幅は略等しく、
少なくとも1つの前記配線形成領域には、前記複数の配線幅の異なる電源線のうち少なくとも二つの電源線が形成されている、
ことを特徴とする、電気光学装置。

【請求項2】

複数の走査線と、複数のデータ線と、前記走査線と前記データ線との交差部に対応して配置された各々に電気光学素子を備えた複数の画素と、を含む電気光学装置であって、
前記電気光学素子に駆動電圧を供給する複数の配線幅の異なる電源線を含み、
前記複数の画素は、行方向又は列方向のうち少なくとも何れか一方向に並ぶ一連の画素からなる画素群を構成し、
前記複数の画素群の各々の画素群の間に複数の配線形成領域が設けられ、
前記複数の配線形成領域のうち、少なくとも1つの配線形成領域には、前記複数の電源線のうち少なくとも一つの電源線、前記複数の走査線のうち少なくとも一つの走査線、及び前記複数のデータ線のうち少なくとも一つのデータ線から選ばれた少なくとも二つの配線であり、配線幅の異なる配線が形成されている、
ことを特徴とする、電気光学装置。

【請求項3】

複数の走査線と、複数のデータ線と、前記走査線と前記データ線との交差部に対応して配置された各々に電気光学素子を備えた複数の画素と、を含む電気光学装置であって、
前記電気光学素子に駆動電圧を供給する複数の配線幅の異なる電源線を含み、
前記複数の画素は、行方向又は列方向のうち少なくとも何れか一方向に並ぶ一連の画素からなる画素群を構成し、
前記複数の画素群の各々の画素群の間に複数の配線形成領域が設けられ、
前記複数の配線形成領域のうち、少なくとも1つの配線形成領域には、前記複数の電源線

のうち少なくとも一つの電源線と、前記複数の走査線のうち少なくとも一つの走査線であって、異なる配線幅の配線が形成されている、ことを特徴とする、電気光学装置。

【請求項 4】

複数の走査線と、複数のデータ線と、前記走査線と前記データ線との交差部に対応して配置された各々に電気光学素子を備えた複数の画素と、を含む電気光学装置であって、前記電気光学素子に駆動電圧を供給する複数の配線幅の異なる電源線を含み、前記複数の画素は、行方向又は列方向のうち少なくとも何れか一方向に並ぶ一連の画素からなる画素群を構成し、前記複数の画素群の各々の画素群の間に複数の配線形成領域が設けられ、前記複数の配線形成領域のうち、少なくとも 1 つの配線形成領域には、前記複数の電源線のうち少なくとも一つの電源線と、前記複数のデータ線のうち少なくとも一つのデータ線であって、異なる配線幅の配線が形成されている、ことを特徴とする、電気光学装置。

【請求項 5】

請求項 2 乃至請求項 4 のうち何れか 1 項に記載の電気光学装置であって、前記配線形成領域の幅は略等しいことを特徴とする電気光学装置。

【請求項 6】

前記電気光学素子には、駆動電圧が異なる電気光学素子を含み、前記駆動電圧に応じて前記電源線の幅が異なることを特徴とする請求項 1 乃至請求項 5 のうち何れか 1 項に記載の電気光学装置。

【請求項 7】

前記電気光学素子は発光素子であり、前記電源線は前記発光素子の発光色に対応して幅が異なることを特徴とする請求項 6 に記載の電気光学装置。

【請求項 8】

前記発光色は、赤、緑、又は青であることを特徴とする請求項 7 に記載の電気光学装置。

【請求項 9】

前記電気光学素子はエレクトロルミネセンス素子であることを特徴とする請求項 1 乃至請求項 8 のうち何れか 1 項に記載の電気光学装置。

【請求項 10】

請求項 1 乃至請求項 9 のうち何れか 1 項に記載の電気光学装置を備える電子機器。

【請求項 11】

マトリクス状に配置された複数の画素電極を備えたマトリクス基板であって、前記複数の画素電極は、行方向又は列方向のうち少なくとも何れか一方向に並ぶ一連の画素電極からなる複数の画素電極群を構成しており、前記画素電極に駆動電圧を供給する複数の配線幅の異なる電源線を含み、前記複数の画素電極群の各々の画素電極群の間に配線形成領域が設けられ、前記配線形成領域の幅は略等しく、少なくとも 1 つの前記配線形成領域には、前記複数の配線幅の異なる電源線のうち少なくとも二つの電源線が形成されている、ことを特徴とする、マトリクス基板。

【請求項 12】

複数の走査線と、複数のデータ線と、前記走査線と前記データ線との交差部に対応して配置された複数の画素電極と、を含むマトリクス基板であって、前記複数の画素電極に電圧を供給するための複数の配線幅の異なる電源線を含み、前記複数の画素電極は、行方向又は列方向のうち少なくとも何れか一方向に並ぶ一連の画素からなる画素電極群を構成し、前記複数の画素電極群の各々の画素電極群の間に複数の配線形成領域が設けられ、前記複数の配線形成領域のうち、少なくとも 1 つの配線形成領域には、前記複数の電源線のうち少なくとも一つの電源線、前記複数の走査線のうち少なくとも一つの走査線、及び

前記複数のデータ線のうち少なくとも一つのデータ線から選ばれた少なくとも二つの配線であり、配線幅の異なる配線が形成されている、ことを特徴とする、マトリクス基板。

【請求項 1 3】

第 1 の方向に延在する複数の走査線と、
前記複数の走査線と交差する第 2 の方向に延在する複数のデータ線と、
前記走査線と前記データ線との交差部の各々に応じて配置された複数の発光部と、
前記発光素子に駆動電圧を供給する電源線と、
を備えた発光装置であって、
前記複数の発光部の各々は、
発光素子と、
前記発光素子と前記電源線との間に接続され前記発光素子を駆動する第 1 のトランジスタと、
前記走査線にそのゲート端子が接続され前記データ線からのデータ信号を前記第 1 のトランジスタのゲート端子に供給する第 2 のトランジスタと、
を有しており、
前記複数の発光部は、前記第 2 の方向に並ぶ一連の発光部からなる複数の発光部群から構成され、
前記電源線は、前記複数の発光部群のうち第 1 の発光部群における前記発光部の前記第 1 のトランジスタに接続される第 1 の電源線と、前記複数の発光部群のうち前記第 1 の発光部群とは異なる第 2 の発光部群における前記発光部の前記第 1 のトランジスタに接続される第 2 の電源線とを有しており、
前記第 1 及び第 2 の電源線とは、互いに異なる線幅を有しており、
前記第 1 の発光部群は、前記第 2 の方向にこの順で並ぶ第 1 の発光部、第 2 の発光部、第 3 の発光部を含み、
前記第 1 の発光部の前記第 2 のトランジスタのゲート端子に接続された前記走査線と、
前記第 2 の発光部の前記第 2 のトランジスタのゲート端子に接続された前記走査線とは、
前記第 1 の発光部と前記第 2 の発光部の間に設けられ、
前記第 1 の電源線と前記第 2 の電源線とは、前記第 2 の発光部と前記第 3 の発光部の間に設けられていることを特徴とする電気光学装置。

【請求項 1 4】

前記第 1 の電源線は、前記第 1 の発光部群と前記第 2 の発光部群の間にもうけられた部分を有することを特徴とする請求項 1 3 に記載の電気光学装置。

【請求項 1 5】

第 1 の方向に延在する複数の走査線と、
前記複数の走査線と交差する第 2 の方向に延在する複数のデータ線と、
前記走査線と前記データ線との交差部の各々に応じて配置された複数の発光部と、
前記発光素子に駆動電圧を供給する電源線と、
を備えた発光装置であって、
前記複数の発光部の各々は、
発光素子と、
前記発光素子と前記電源線との間に接続され前記発光素子を駆動する第 1 のトランジスタと、
前記走査線にそのゲート端子が接続され前記データ線からのデータ信号を前記第 1 のトランジスタのゲート端子に供給する第 2 のトランジスタと、
を有しており、
前記複数の発光部は、前記第 2 の方向に並ぶ一連の発光部からなる第 1 の発光部群、第 2 の発光部群、及び第 3 の発光部群がこの順で前記第 1 の方向に繰り返し配置されており、
前記電源線は、前記第 1 の発光部群における前記発光部の前記第 1 のトランジスタに接続される第 1 の電源線と、前記第 2 の発光部群における前記発光部の前記第 1 のトランジスタ

タに接続される第 2 の電源線と、前記第 3 の発光部群における前記発光部の前記第 1 のトランジスタに接続される第 3 の電源線と、
を有しており、
前記第 1 乃至第 3 の電源線のうち、少なくとも 2 つの電源線は、互いに異なる線幅を有しており、
前記第 1 の発光部群と前記第 2 の発光部群の間には、前記第 1 の発光部群の前記第 2 のトランジスタに接続された前記データ線と、前記第 2 の発光部群の前記第 2 のトランジスタに接続された前記データ線が配置されており、
前記第 2 の発光部群と前記第 3 の発光部群の間には、前記第 2 の電源線と前記第 3 の電源線が配置されており、
前記第 3 の発光部群と前記第 1 の発光部群の間には、前記第 1 の電源線と、前記第 3 の発光部群の前記第 2 のトランジスタに接続された前記データ線とが配置されていることを特徴とする電気光学装置。

【手数料の表示】

【予納台帳番号】	011903
【納付金額】	6,000円

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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
12/219,592	07/24/2008	2821	1030	117390.01	6	1

CONFIRMATION NO. 6476

25944
OLIFF & BERRIDGE, PLC
P.O. BOX 320850
ALEXANDRIA, VA 22320-4850

FILING RECEIPT



OC000000031631337

Date Mailed: 08/20/2008

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Applicant(s)

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Hayato Nakanishi, Toyama-shi, JAPAN;

Assignment For Published Patent Application

SEIKO EPSON CORPORATION, TOKYO, JAPAN

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CON of 10/676,067 10/02/2003

Foreign Applications

JAPAN 2002-293696 10/07/2002

Request to Retrieve - This application either claims priority to one or more applications filed in an intellectual property Office that participates in the Priority Document Exchange (PDX) program or contains a proper **Request to Retrieve Electronic Priority Application(s)** (PTO/SB/38 or its equivalent). Consequently, the USPTO will attempt to electronically retrieve these priority documents.

If Required, Foreign Filing License Granted: 08/18/2008

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 12/219,592**

Projected Publication Date: 11/27/2008

Non-Publication Request: No

Early Publication Request: No

Title

Electro-optical device, matrix substrate, and electronic apparatus

Preliminary Class

315

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4158).

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NOT GRANTED

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/219,592	07/24/2008	Yojiro Matsueda	117390.01

CONFIRMATION NO. 6476

25944
OLIFF & BERRIDGE, PLC
P.O. BOX 320850
ALEXANDRIA, VA 22320-4850

PUBLICATION NOTICE



Title:Electro-optical device, matrix substrate, and electronic apparatus

Publication No.US-2008-0290807-A1

Publication Date:11/27/2008

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently <http://www.uspto.gov/patft/>.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Office of Public Records. The Office of Public Records can be reached by telephone at (703) 308-9726 or (800) 972-6382, by facsimile at (703) 305-8759, by mail addressed to the United States Patent and Trademark Office, Office of Public Records, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently <http://pair.uspto.gov/>. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/219,592	07/24/2008	Yojiro Matsueda	117390.01	6476
25944 7590 10/06/2010 OLIFF & BERRIDGE, PLC P.O. BOX 320850 ALEXANDRIA, VA 22320-4850			EXAMINER TRAN, THUY V	
			ART UNIT 2821	PAPER NUMBER
			NOTIFICATION DATE 10/06/2010	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

OfficeAction25944@oliff.com
jarmstrong@oliff.com

Office Action Summary	Application No.		Applicant(s)	
	12/219,592		MATSUEDA ET AL.	
	Examiner		Art Unit	
	THUY V. TRAN		2821	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on 24 July 2008.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) 1-6 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) 1-6 is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☒ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on 24 July 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☒ All b) ☐ Some * c) ☐ None of:

1. ☒ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. _____.

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

<p>1) ☒ Notice of References Cited (PTO-892)</p> <p>2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)</p> <p>3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>07/24/08</u>.</p>	<p>4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.</p> <p>5) ☐ Notice of Informal Patent Application</p> <p>6) ☐ Other: _____.</p>
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DETAILED ACTION

This Office Action is in response to the Applicants' communication filed on 07/24/2008.
In virtue of this communication, claims 1-6 are currently presented in the instant application.

Priority

1. Applicants' claim for the benefit of a prior-filed application under 35 U.S.C. 120 is acknowledged.
2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

3. The information disclosure statement (IDS) submitted on 07/24/2008 is NOT in compliance with the provisions of 37 CFR 1.98. The copies of the references cited Nos. 11-15 were not submitted based on the record of the file. Accordingly, the information disclosure statement is partially being considered by the examiner.

Drawings

4. The drawings submitted on 07/24/2008 are accepted.

Specification Objection

5. The specification of the submitted disclosure is objected to because of the following informalities:

Page 1, in the statement related to the parent application, after "2003", insert --, which was abandoned--;

Missing descriptions for Figs. 7-8.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-6 are rejected under 35 U.S.C. 102(e) as being anticipated by Miyazawa (U.S. Patent Bo. 6,858,991 B2).

With respect to claim 1, Miyazawa discloses an electro-optical device comprising (i) a scan line [S1, ..., S7] (see Fig. 1) extending in a direction; (ii) a data line [D1, ..., D8] (see Fig. 1) extending in a direction that intersects the scan line; (iii) a pixel [20] (see Fig. 1) located corresponding to the intersection of the scan line and the data line, the pixel including a light emission layer [13] (see Fig. 5(b)) between a first electrode and a second electrode, (iv) a first power line [L] (formed of [L1, L2]; see Fig. 8) extending in the direction in which the scan line extends; (v) a second power line [VL] extending in the direction in which the data line extends (see Fig. 8); (vi) an inter-layer insulating film [6, 8] (see Figs. 4(c, d) and 5(a, b)) between the first power line and the second power line; and (vii) a plurality of contact holes (see Figs. 4(c, d)) extending through the inter-layer insulating film, the contact holes electrically connecting the first power line and the second power line to each other.

With respect to claim 2, Miyazawa discloses the electro-optical device according to claim 1, the pixel electrode [9] having a long side and a short side that is shorter than the long side, end

contact holes of the plurality of contact holes being separated from each other by a distance that is shorter than the short side of the pixel electrode [9] (see Figs. 5(a, b)).

With respect to claim 3, Miyazawa discloses the electro-optical device according to claim 2, the plurality of contact holes being aligned substantially in a line with one end contact hole being located at one end of the line and an other end contact hole being located at the other end of the line (see Figs. 5(a, b)).

With respect to claim 4, Miyazawa discloses the electro-optical device according to claim 1, the scan line [S1, ..., S7] supplying a scan signal and the data line [D1, ..., D8] supplying a data signal, the light emission layer [13] of the pixel being supplied with current from the first electric power line [L] and the second electric power line [VL] in accordance with the data signal from the data line. and at timing corresponding to the scan signal from the scan line (see Figs. 7-8).

With respect to claim 5, Miyazawa discloses the electro-optical device according to claim 1, further comprising an other pixel including an other light emission layer and an other electrode, the first electrode of the pixel being a common electrode for the pixel and the other pixel, the other light emission layer of the other pixel being sandwiched between the other electrode of the other pixel and the common electrode (see Figs. 1, 4(a-d), and 5(a-b)).

With respect to claim 6, Miyazawa discloses an electronic device including the electro-optical device according to claim 1 (see Figs. 11-13).

Citation of relevant prior art

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Prior art Miyazawa (U.S. Patent No. 7,760,162 B2) discloses an electro-optical display device;

Prior art Hashimoto (U.S. Patent No. 6,885,356 B2) discloses an active matrix display device;

Prior art Hashimoto (U.S. Patent No. 6,633,270 B2) discloses a display device;

Prior art Ozawa (U.S. Patent No. 6,545,424 B2) discloses a display device; and

Prior art Kuribayashi et al. (U.S. Patent No. 6,175,345 B1) discloses an EL display device.

Inquiry

Any inquiry concerning this communication or earlier communications from the examiner should be directed to THUY V. TRAN whose telephone number is (571)272-1828. The examiner can normally be reached on M-F (8:00 AM -4:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglas W. Owens can be reached on (571) 272-1662. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

Application/Control Number: 12/219,592

Page 6

Art Unit: 2821

like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Thuy Vinh Tran/
Primary Examiner, Art Unit 2821
09/30/2010

Notice of References Cited	Application/Control No. 12/219,592	Applicant(s)/Patent Under Reexamination MATSUEDA ET AL.	
	Examiner THUY V. TRAN	Art Unit 2821	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-7,760,162 B2	07-2010	Miyazawa, Takashi	345/76
*	B	US-6,885,356 B2	04-2005	Hashimoto, Yoshiharu	345/77
*	C	US-6,858,991 B2	02-2005	Miyazawa, Takashi	315/169.3
*	D	US-6,633,270 B2	10-2003	Hashimoto, Yoshiharu	345/76
*	E	US-6,545,424 B2	04-2003	Ozawa, Tokuroh	315/169.3
*	F	US-6,175,345 B1	01-2001	Kuribayashi et al.	345/76
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

<p align="center"><i>Index of Claims</i></p> 	Application/Control No. 12219592	Applicant(s)/Patent Under Reexamination MATSUEDA ET AL.
	Examiner THUY V TRAN	Art Unit 2821

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47										
CLAIM		DATE								
Final	Original	09/30/2010								
	1	✓								
	2	✓								
	3	✓								
	4	✓								
	5	✓								
	6	✓								

Search Notes 	Application/Control No. 12219592	Applicant(s)/Patent Under Reexamination MATSUEDA ET AL.
	Examiner THUY V TRAN	Art Unit 2821

SEARCHED			
Class	Subclass	Date	Examiner
315	160, 161, 167, 169.2, 169.3	9/30/10	TT
313	483, 505, 506, 306	9/30/10	TT
257	40, 72, 98	9/30/10	TT

SEARCH NOTES		
Search Notes	Date	Examiner
EAST Search including text and classes/subclasses _ Search History enclosed	9/29-30/10	TT
Reviewed references cited in parent application Ser. 10/676,067	9/29/10	TT

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

--	--



UNITED STATES PATENT AND TRADEMARK OFFICE

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 Alexandria, Virginia 22313-1450
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BIB DATA SHEET

CONFIRMATION NO. 6476

SERIAL NUMBER 12/219,592	FILING or 371(c) DATE 07/24/2008 RULE	CLASS 315	GROUP ART UNIT 2821	ATTORNEY DOCKET NO. 117390.01		
APPLICANTS Yojiro Matsueda, Chino-shi, JAPAN; Hayato Nakanishi, Toyama-shi, JAPAN; ** CONTINUING DATA ***** This application is a CON of 10/676,067 10/02/2003 ABN ** FOREIGN APPLICATIONS ***** JAPAN 2002-293696 10/07/2002 ** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** 08/18/2008						
Foreign Priority claimed ☒ Yes ☐ No 35 USC 119(a-d) conditions met ☒ Yes ☐ No Verified and Acknowledged <u>/THUY VINH V TRAN/</u> Examiner's Signature		☐ Met after Allowance TT Initials	STATE OR COUNTRY JAPAN	SHEETS DRAWINGS 7	TOTAL CLAIMS 6	INDEPENDENT CLAIMS 1
ADDRESS OLIFF & BERRIDGE, PLC P.O. BOX 320850 ALEXANDRIA, VA 22320-4850 UNITED STATES						
TITLE Electro-optical device, matrix substrate, and electronic apparatus						
FILING FEE RECEIVED 1030	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:		☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit			

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L5	4572	((scan\$4 and data) near2 line) and pixel and electrode and (light\$3 near3 emi\$5) and (insulat\$3 near3 (layer or film)) and (contact nerar2 hole)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/09/30 11:00
L7	4300	315/160,161,167,169.2,169.3.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/09/30 11:10
L8	8752	313/483,505,506,306.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/09/30 11:10
L9	14494	257/40,72,98.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/09/30 11:10
L13	303	5 and ((first and second) near2 ((power or voltage) near2 line))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/09/30 11:12
L14	44	13 and 7	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/09/30 11:12
L15	39	13 and 8	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/09/30 11:12
L16	31	13 and 9	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/09/30 11:12
L17	14	("6175345").PN. OR ("6633270").URPN.	US-PGPUB; USPAT; USOCR	OR	ON	2010/09/30 11:21

S1	2247	((scan\$4 and data and (power or voltage)) near2 line) and pixel and electrode and (light\$3 near3 emi\$5) and (insulat\$3 near3 (layer or film)) and (contact nerar2 hole)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/09/29 18:13
S2	4558	((scan\$4 and data) near2 line) and pixel and electrode and (light\$3 near3 emi\$5) and (insulat\$3 near3 (layer or film)) and (contact nerar2 hole)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/09/29 18:13
S3	302	S2 and ((first and second) near2 ((power or voltage) near2 line))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/09/29 18:14
S4	52	S3 and electro-optical	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/09/29 18:14
S5	19	("20010048106" "20020140644" "20030076046" "20060055643" "5159476" "6633135" "6724149" "6825820" "6965363" "7009345").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/09/29 18:31

9/ 30/ 10 11:25:55 AM

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Receipt date: 07/24/2008

12219592 - GAU: 2821

Sheet 1 of 1

Form PTO-1449 (REV. 1/06)		US Dept. of Commerce PATENT & TRADEMARK OFFICE		ATTY DOCKET NO. 117390.01		APPLICATION NO. New U.S. Patent Application 12/219,592	
INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)				APPLICANT(S) Yojiro MATSUEDA et al.			
				FILING DATE July 24, 2008		GROUP 2821	
U.S. PATENT DOCUMENTS							
Examiner Initials	Cite No.	Document Number	Date	Name			
/T.T./	1	6,724,149	04/20/2004	KOMIYA et al.			
/T.T./	2	7,009,345	03/07/2006	KOMIYA et al.			
/T.T./	3	6,965,363	11/15/2005	SATO et al.			
/T.T./	4	2006/0055643	03/16/2006	SATO et al.			
/T.T./	5	2001/0048106 A1	12/06/2001	TANADA			
/T.T./	6	6,825,820 B2	11/30/2004	YAMAZAKI et al.			
/T.T./	7	6,633,135 B2	10/14/2003	NARA et al.			
/T.T./	8	2003/0076046 A1	04/24/2003	KOMIYA et al.			
/T.T./	9	US 2002/0140644 A1	10/03/2002	SATO et al.			
/T.T./	10	US 5,159,476	10/27/1992	HAYASHI			
FOREIGN PATENT DOCUMENTS							
Examiner Initials	Cite No.	Document Number	Date	Country	With English Abstract	With English Translation	
	11	JP-A-2001-100654	04/13/2001	JAPAN	X	X	
	12	JP-A-2002-287663	10/04/2002	JAPAN	X	X	
	13	JP-A-2000-242196	09/08/2000	JAPAN	X	X	
	14	JP-A-2001-272930	10/05/2001	JAPAN	X	X	
	15	JP-A-2002-151276	05/24/2002	JAPAN			
OTHER DOCUMENTS							
Examiner Initials	Cite No.	Including name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.					
EXAMINER				/Thuy Tran/			
				DATE CONSIDERED 09/29/2010			
Examiner: Initial if citation considered, whether or not citation is in conformance with M.P.E.P. 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.							

Date: July 24, 2008

Notes: References Cited No. 11-15 are not considered as no copies provided.



7/24

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Yojiro MATSUEDA et al.

Group Art Unit: 2821

Application No.: 12/219,592

Examiner: T. TRAN

Filed: July 24, 2008

Docket No.: 117390.01

For: ELECTRO-OPTICAL DEVICE, MATRIX SUBSTRATE AND ELECTRONIC
APPARATUS

AMENDMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In reply to the October 6, 2010 Office Action, please consider the following:

Amendments to the Specification;

Amendments to the Claims as reflected in the listing of claims; and

Remarks.

Amendments to the Specification:

Please replace the following paragraph between the title and the first line of text as follows:

This is a Continuation of Application No. 10/676,067 filed October 2, 2003, which was abandoned. The disclosure of the prior application is hereby incorporated by reference herein in its entirety.

Please add the following paragraphs:

[0047] Fig. 7 is an explanatory diagram for describing a wiring layout according to another embodiment. Specifically, combinations of lines selected from the three electric power lines V_{dd-G} , V_{dd-R} , and V_{dd-B} , and the data lines I_{dat} are formed between the pixel groups arrayed in the column direction. In addition, scan lines V_{sel} are formed between pixel groups arrayed in the row direction.

[0048] Fig. 8 is an explanatory diagram for describing a wiring layout according to another embodiment. Specifically, combinations of lines selected from the three electric power lines V_{dd-G} , V_{dd-R} , and V_{dd-B} , and the scan lines V_{sel} are formed between pixel groups arrayed in the row direction.

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) An electro-optical device comprising:
 - a scan line extending in a direction;
 - a data line extending in a direction that intersects the scan line;
 - a pixel located corresponding to the intersection of the scan line and the data line, the pixel including a light emission layer between a first electrode and a second electrode:
 - a first power line extending in the direction in which the scan line extends;
 - a second power line extending in the direction in which the data line extends;
 - an inter-layer insulating film between the first power line and the second power line; and
 - a plurality of contact holes ~~extending through the inter-layer insulating film,~~
~~the contact holes~~ electrically connecting the first power line and the second power line to each other.
2. (Original) The electro-optical device according to claim 1, the pixel electrode having a long side and a short side that is shorter than the long side, end contact holes of the plurality of contact holes being separated from each other by a distance that is shorter than the short side of the pixel electrode.
3. (Original) The electro-optical device according to claim 2, the plurality of contact holes being aligned substantially in a line with one end contact hole being located at one end of the line and an other end contact hole being located at the other end of the line.
4. (Original) The electro-optical device according to claim 1, the scan line supplying a scan signal and the data line supplying a data signal, the light emission layer of

the pixel being supplied with current from the first electric power line and the second electric power line in accordance with the data signal from the data line and at timing corresponding to the scan signal from the scan line.

5. (Original) The electro-optical device according to claim 1, further comprising an other pixel including an other light emission layer and an other electrode, the first electrode of the pixel being a common electrode for the pixel and the other pixel, the other light emission layer of the other pixel being sandwiched between the other electrode of the other pixel and the common electrode.

6. (Original) An electronic device including the electro-optical device according to claim 1.

7. (New) The electro-optical device according to claim 1, wherein the plurality of contact holes extend through the inter-layer insulating film.

8. (New) The electro-optical device according to claim 1, further comprising:
a driving transistor electrically connected between the second power line and the first electrode.

REMARKS

Claims 1-8 are pending in this application. By this Amendment, the continuity paragraph on page 1 of Applicants' specification and claim 1 are amended and paragraphs [0047] and [0048] and claims 7 and 8 are added. No new matter is added by the amendments. Support for the amendments can be found in at least Applicants' original claim 1 and Figs. 2, 7 and 8, for example. Reconsideration of this application in view of the above amendments and following remarks is respectfully requested.

I. Formal Matters

The Office Action alleges that the Information Disclosure Statement submitted on July 24, 2008 does not comply with the provisions of 37 C.F.R. §1.98. Specifically, the Office Action alleges that copies of references numbered 11-15 have not been submitted. Applicants note that the July 24, 2008 Information Disclosure Statement indicates that references numbered 11-15 were previously cited in parent Application No. 10/676,067, filed October 2, 2003, which is relied upon for an earlier filing date. In addition, references numbered 11-15 are contained in the Image File Wrapper of the parent application, and thus, references numbered 11-15 should have been considered by the Examiner. Accordingly, Applicants respectfully request that the Examiner consider references numbered 11-15 cited in the July 24, 2008 Information Disclosure Statement.

The Office Action also objects to the continuity paragraph on page 1 of Applicants' specification. By this Amendment, Applicants amend the continuity paragraph as suggested by the Examiner. Accordingly, Applicants respectfully request withdrawal of the objection.

Further, the Office Action objects to Applicants' specification for allegedly not containing descriptions for Figs. 7 and 8. The objection is respectfully traversed. Applicants' specification provides sufficient descriptions for Figs. 7 and 8. For example, paragraphs [0026] and [0027] state that Figs. 7 and 8 are exemplary diagrams of wiring layouts according

to the fourth and fifth embodiments of the invention. Further, the reference letters are described in other portions of the specification. In addition, by this Amendment, Applicants add paragraphs [0047] and [0048], which describe Figs. 7 and 8. Accordingly, Applicants respectfully request withdrawal of the objection.

II. Prior Art Rejection

The Office Action rejects claims 1-6 under 35 U.S.C. §102(e) as allegedly being anticipated by U.S. Patent No. 6,858,991 to Miyazawa. The rejection is respectfully traversed.

Miyazawa fails to disclose a plurality of contact holes electrically connecting the first power line and the second power line to each other, as recited in Applicants' amended independent claim 1. The Office Action alleges that Miyazawa's Figs. 4(c) and (d) show a plurality of contact holes extending through the inter-layer insulating films 6 and 8, which electrically connect the first power line "L" and the second power line "VL." However, Miyazawa's Figs. 4(c) and (d) show contact holes formed through the inter-layer insulating film 6 that connect the source and drain electrodes 7 and the semiconductor layer 5a of a TFT in the pixel circuit, and contact holes formed through the inter-layer insulating film 8 that connect the pixel electrode 9 and the source or drain electrode 7 of a TFT in the pixel circuit. (See Miyazawa's col. 13, lines 9-11 and 25-31 and Fig. 4(d)).

In contrast, Applicants' independent claim 1 recites a plurality of contact holes electrically connecting the first power line and the second power line to each other. According to Applicants' configuration, it is possible to prevent the first power line and the second power line from breaking and to reduce wiring resistance. (See Applicants' specification, paragraph [0043]).

In addition, the dependent claims are allowable for at least their dependence on an allowable independent claim, as well as for the additional features they recite.

Accordingly, Applicants respectfully request withdrawal of the rejection.

III. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of the claims are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



James A. Oliff
Registration No. 27,075

Bjorn G. Anderson
Registration No. 63,398

JAO:BGA/ccs

Date: January 6, 2011

OLIFF & BERRIDGE, PLC
P.O. Box 320850
Alexandria, Virginia 22320-4850
Telephone: (703) 836-6400

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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875					Application or Docket Number 12/219,592		Filing Date 07/24/2008		☐ To be Mailed	
APPLICATION AS FILED – PART I										
(Column 1)			(Column 2)			SMALL ENTITY ☐ OR		OTHER THAN SMALL ENTITY		
FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)		RATE (\$)	FEE (\$)			
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A				
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A				
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A				
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X \$ =		OR	X \$ =				
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X \$ =			X \$ =				
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).									
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))										
* If the difference in column 1 is less than zero, enter "0" in column 2.										
APPLICATION AS AMENDED – PART II										
(Column 1)			(Column 2)			SMALL ENTITY OR		OTHER THAN SMALL ENTITY		
AMENDMENT	01/06/2011	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)		RATE (\$)	ADDITIONAL FEE (\$)	
	Total (37 CFR 1.16(i))	* 8	Minus	** 20	=	0		OR	X \$2=	
	Independent (37 CFR 1.16(h))	* 1	Minus	*** 3	=	0		OR	X \$220=	
☐ Application Size Fee (37 CFR 1.16(s))										
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))										
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	0	
(Column 1)			(Column 2)			SMALL ENTITY OR		OTHER THAN SMALL ENTITY		
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)		RATE (\$)	ADDITIONAL FEE (\$)	
	Total (37 CFR 1.16(i))	*	Minus	**	=			OR	X \$ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=			OR	X \$ =	
☐ Application Size Fee (37 CFR 1.16(s))										
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))										
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE		
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.										
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".										
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".										
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.										

Legal Instrument Examiner:
/DEBORAH NASH/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.



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www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/219,592	07/24/2008	Yojiro Matsueda	117390.01	6476
25944 7590 04/04/2011 OLIFF & BERRIDGE, PLC P.O. BOX 320850 ALEXANDRIA, VA 22320-4850			EXAMINER TRAN, THUY V	
			ART UNIT 2821	PAPER NUMBER
			NOTIFICATION DATE 04/04/2011	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

OfficeAction25944@oliff.com
jarmstrong@oliff.com

DETAILED ACTION

This Office Action is in response to the Applicants' amendment filed on 01/06/2011. In virtue of this amendment, claims 7-8 are newly added; and thus, claims 1-8 are currently presented in the instant application.

Response to Applicants' Arguments

1. Applicants' arguments filed 01/06/2011 have been fully considered but they are not persuasive. Therefore, claims 1-6 remain rejected and the newly added claims 7-8 are being rejected under 35 U.S.C. 102(e) as being anticipated by Miyazawa.
2. The rejections to all claims 1-8 are being made as follows:

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-8 are rejected under 35 U.S.C. 102(e) as being anticipated by Miyazawa (U.S. Patent Bo. 6,858,991 B2).

With respect to claim 1, Miyazawa discloses an electro-optical device comprising (i) a scan line [S1, ..., S7] (see Fig. 1) extending in a direction; (ii) a data line [D1, ..., D8] (see Fig. 1) extending in a direction that intersects the scan line; (iii) a pixel [20] (see Fig. 1) located corresponding to the intersection of the scan line and the data line, the pixel including a light

emission layer [13] (see Fig. 5(b)) between a first electrode (which is [9]) and a second electrode (which is [4]), (iv) a first power line [L] (formed of [L1, L2]; see Fig. 8) extending in the direction in which the scan line extends; (v) a second power line [VL] extending in the direction in which the data line extends (see Fig. 8); (vi) an inter-layer insulating film [6, 8] (see Figs. 4(c, d) and 5(a, b)) between the first power line [L] and the second power line [VL]; and (vii) a plurality of contact holes (see Figs. 4(c, d)) electrically connecting the first power line and the second power line to each other (for clarity, see Fig. 8).

With respect to claim 2, Miyazawa discloses the electro-optical device according to claim 1, the pixel electrode [9] having a long side and a short side that is shorter than the long side, and contact holes of the plurality of contact holes being separated from each other by a distance that is shorter than the short side of the pixel electrode [9] (see Figs. 5(a, b)).

With respect to claim 3, Miyazawa discloses the electro-optical device according to claim 2, the plurality of contact holes being aligned substantially in a line with one end contact hole being located at one end of the line and an other end contact hole being located at the other end of the line (see Figs. 5(a, b)).

With respect to claim 4, Miyazawa discloses the electro-optical device according to claim 1, the scan line [S1, ..., S7] supplying a scan signal and the data line [D1, ..., D8] supplying a data signal, the light emission layer [13] of the pixel being supplied with current from the first electric power line [L] and the second electric power line [VL] in accordance with the data signal from the data line, and at timing corresponding to the scan signal from the scan line (see Figs. 7-8).

With respect to claim 5, Miyazawa discloses the electro-optical device according to claim 1, further comprising an other pixel including an other light emission layer and an other electrode, the first electrode of the pixel being a common electrode for the pixel and the other pixel, the other light emission layer of the other pixel being sandwiched between the other electrode of the other pixel and the common electrode (see Figs. 1, 4(a-d), and 5(a-b)).

With respect to claim 6, Miyazawa discloses an electronic device including the electro-optical device according to claim 1 (see Figs. 11-13).

With respect to claim 7, Miyazawa discloses the electro-optical device according to claim 1, wherein the plurality of contact holes extend through the inter-layer insulating film [6, 8] (see Fig. 4(c, d)).

With respect to claim 8, Miyazawa discloses the electro-optical device according to claim 1, further comprising a driving transistor [Q] electrically connected between the second power line [VL] (see Fig. 7) and the first electrode [9] (which is a pixel electrode shown in Fig. 5(b)).

Remarks and Conclusion

5. In response to applicants' argument on amended claim 1 concerning the claimed feature "a plurality of contact holes electrically connecting the first power line and the second power line to each other" with respect to the teaching of the cited Miyazawa reference, it is noted that the contact holes formed through the inert-layer insulating film [8] connect the pixel electrode [9] (which has been recited as the first electrode) and the source or drain electrode [7] of the TFT in the pixel circuit (shown in Figs. 4(c, d)) and apparently connect the two power lines [L; VL] as well (see Fig. 8).

6. Applicants' amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Inquiry

Any inquiry concerning this communication or earlier communications from the examiner should be directed to THUY V. TRAN whose telephone number is (571)272-1828. The examiner can normally be reached on M-F (8:00 AM -4:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglas W. Owens can be reached on (571) 272-1662. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

Art Unit: 2821

system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Thuy Vinh Tran/
Primary Examiner, Art Unit 2821
03/27/2011

<i>Index of Claims</i> 	Application/Control No. 12219592	Applicant(s)/Patent Under Reexamination MATSUEDA ET AL.
	Examiner THUY V TRAN	Art Unit 2821

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant				☐ CPA				☐ T.D.				☐ R.1.47			
CLAIM		DATE													
Final	Original	09/30/2010	03/28/2011												
	1	✓	✓												
	2	✓	✓												
	3	✓	✓												
	4	✓	✓												
	5	✓	✓												
	6	✓	✓												
	7		✓												
	8		✓												

<i>Search Notes</i> 	Application/Control No. 12219592	Applicant(s)/Patent Under Reexamination MATSUEDA ET AL.
	Examiner THUY V TRAN	Art Unit 2821

SEARCHED			
Class	Subclass	Date	Examiner
315	160, 161, 167, 169.2, 169.3	9/30/10	TT
313	483, 505, 506, 306	9/30/10	TT
257	40, 72, 98	9/30/10	TT

SEARCH NOTES		
Search Notes	Date	Examiner
EAST Search including text and classes/subclasses _ Search History enclosed	9/29-30/10	TT
Reviewed references cited in parent application Ser. 10/676,067	9/29/10	TT

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

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PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

MAIL STOP RCE

Yojiro MATSUEDA et al.

Group Art Unit: 2821

Application No.: 12/219,592

Examiner: T. TRAN

Filed: July 24, 2008

Docket No.: 117390.01

For: ELECTRO-OPTICAL DEVICE, MATRIX SUBSTRATE AND ELECTRONIC APPARATUS

**LARGE ENTITY REQUEST FOR
CONTINUED EXAMINATION UNDER 37 C.F.R. §1.114**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In accordance with the provisions of 37 C.F.R. §1.114, Applicants hereby request continued examination.

☒ Applicants further request entry and consideration of the attached submission.

(Amendment)

The above-identified application was filed on or after June 8, 1995. Thus, entry is proper under 37 C.F.R. §1.114(d).

Attached hereto is our check no. 238551 in the amount of ☒ \$810.00 as payment of the fees set forth in 37 C.F.R. §1.17(e). The Commissioner is hereby authorized to charge any additional fees or credit any overpayment associated for this filing to Deposit Account No. 15-0461.

Respectfully submitted,

James A. Oliff
Registration No. 27,075

Bjorn G. Anderson
Registration No. 63,398

JAO:BGA/ccs

Date: July 5, 2011

OLIFF & BERRIDGE, PLC
P.O. Box 320850
Alexandria, Virginia 22320-4850
Telephone: (703) 836-6400

DEPOSIT ACCOUNT USE AUTHORIZATION Please grant any extension necessary for entry of this filing; Charge any fee due to our Deposit Account No. 15-0461

07/06/2011 LNGUYEH1 00000054 12219592

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810.00 0P



PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Yojiro MATSUEDA et al.

Group Art Unit: 2821

Application No.: 12/219,592

Examiner: T. TRAN

Filed: July 24, 2008

Docket No.: 117390.01

For: ELECTRO-OPTICAL DEVICE, MATRIX SUBSTRATE AND ELECTRONIC
APPARATUS

AMENDMENT FILED WITH REQUEST FOR CONTINUED EXAMINATION

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In reply to the April 4, 2011 Office Action, and upon entry of the attached Request for
Continued Examination, please consider the following:

Amendments to the Claims as reflected in the listing of claims; and

Remarks.

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1-8. (Canceled)

9. (New) An electro-optical device comprising:

a scan line;

a data line that intersects the scan line;

a pixel disposed corresponding to an intersection of the scan line and the data line, the pixel including a light emission layer between a first electrode and a second electrode;

a first power line having a first portion extending in a first direction and a second portion extending in a second direction that intersects the first direction;

a second power line extending in the second direction, the second power line overlapping at least the second portion of the first power line;

an inter-layer insulating film being disposed between the first power line and the second power line; and

a plurality of contact holes electrically connecting the second portion of the first power line and the second power line to each other.

10. (New) The electro-optical device according to claim 9, the second portion of the first power line being positioned on one side with respect to the first portion of the first power line and not being positioned on the other side with respect to the first portion of the first power line.

11. (New) An electro-optical device comprising:

a plurality of scan lines;

a plurality of data lines that intersect the scan lines;

a plurality of pixels disposed corresponding to a plurality of intersections of the scan lines and the data lines, the pixels including a first pixel and a second pixel, the first pixel and the second pixel each having a light emission layer between a first electrode and a second electrode, the first pixel and the second pixel being aligned along a first direction in which the scan lines extend;

a first power line extending in the first direction;

a second power line extending in a second direction that intersects the first direction;

a third power line extending in the second direction; and

the first power line being electrically connected to the second power line at a first connecting portion, the first connecting portion being located in the first pixel,

the first power line being electrically connected to the third power line at a second connecting portion, the second connecting portion being located in the second pixel.

12. (New) The electro-optical device according to claim 11, the first power line being electrically connected to the first pixel and the second pixel.

13. (New) The electro-optical device according to claim 1, the second power line being electrically connected to the first electrode.

14. (New) The electro-optical device according to claim 9, the second power line being electrically connected to the first electrode.

REMARKS

Claims 9-14 are pending in this application. By this Amendment, claims 9-14 are added and claims 1-8 are canceled without prejudice to, or disclaimer of, the subject matter recited therein. No new matter is added. Support for the amendments can be found in at least Applicants' Figs. 3-5, for example. Reconsideration of this application in view of the above amendments and following remarks is respectfully requested.

Applicants appreciate the courtesies shown to Applicants' representative by Examiner Tran during the June 22, 2011 telephone interview. Applicants' separate statement of the substance of the telephone interview is incorporated into the following remarks.

I. Formal Matters

The October 6, 2010 Office Action alleged that the Information Disclosure Statement submitted on July 24, 2008 failed to comply with the provisions of 37 C.F.R. §1.98.

Specifically, the Office Action alleged that copies of references numbered 11-15 have not been submitted. As discussed in Applicants' January 6, 2011 Amendment, these references were previously cited in parent Application No. 10/676,067, filed October 2, 2003, which is relied upon for an earlier filing date. The present Office Action fails to indicate whether the July 24, 2008 Information Disclosure Statement has been entered and considered.

Accordingly, Applicants respectfully request that the Examiner enter and consider the July 24, 2008 Information Disclosure Statement.

In addition, in Applicants' January 6, 2011 Amendment, Applicants amended the specification. The present Office Action fails to indicate whether these amendments have been accepted by the Examiner. Accordingly, Applicants respectfully request that the Examiner acknowledge whether the amendments to the specification have been accepted.

II. Prior Art Rejection

The Office Action rejects claims 1-8 under 35 U.S.C. §102(e) as allegedly being anticipated by U.S. Patent No. 6,858,991 to Miyazawa. The rejection is rendered moot by the amendments.

By this Amendment, Applicants cancel claims 1-8.

Accordingly, Applicants respectfully request withdrawal of the rejection.

III. New Independent Claims 9 And 11

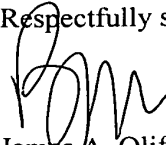
By this Amendment, Applicants add new independent claims 9 and 11. As agreed during the June 22, 2011 telephone interview, the applied references fail to disclose or render obvious the features of new independent claims 9 and 11. Accordingly, Applicants respectfully request examination and allowance of new independent claims 9 and 11, and dependent claims 10 and 12-14.

IV. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of the claims are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



James A. Oliff
Registration No. 27,075

Bjorn G. Anderson
Registration No. 63,398

JAO:BGA/mkg

Attachment:
Request for Continued Examination

Date: July 5, 2011

OLIFF & BERRIDGE, PLC
P.O. Box 320850
Alexandria, Virginia 22320-4850
Telephone: (703) 836-6400

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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875					Application or Docket Number 12/219,592		Filing Date 07/24/2008		☐ To be Mailed	
APPLICATION AS FILED – PART I										
(Column 1)			(Column 2)			SMALL ENTITY ☐ OR		OTHER THAN SMALL ENTITY		
FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)	OR	RATE (\$)	FEE (\$)			
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A				
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A				
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A				
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X \$ =			X \$ =				
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X \$ =			X \$ =				
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).									
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))			TOTAL			TOTAL				
* If the difference in column 1 is less than zero, enter "0" in column 2.										
APPLICATION AS AMENDED – PART II										
(Column 1)			(Column 2)			SMALL ENTITY OR		OTHER THAN SMALL ENTITY		
AMENDMENT	07/05/2011	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	OR	RATE (\$)	ADDITIONAL FEE (\$)	
	Total (37 CFR 1.16(i))	* 6	Minus	** 20	= 0	X \$ =		OR	X \$2=	0
	Independent (37 CFR 1.16(h))	* 2	Minus	*** 3	= 0	X \$ =		OR	X \$220=	0
	☐ Application Size Fee (37 CFR 1.16(s))							OR		
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
	TOTAL ADD'L FEE							OR	TOTAL ADD'L FEE	
AMENDMENT	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	OR	RATE (\$)	ADDITIONAL FEE (\$)		
	Total (37 CFR 1.16(i))	*	Minus	**	=	X \$ =		OR	X \$ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X \$ =		OR	X \$ =	
	☐ Application Size Fee (37 CFR 1.16(s))							OR		
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
	TOTAL ADD'L FEE							OR	TOTAL ADD'L FEE	
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.										

 Legal Instrument Examiner:
 /ANITA JOHNSON/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record

A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews

Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.

All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:

- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:

- 1) A brief description of the nature of any exhibit shown or any demonstration conducted,
- 2) an identification of the claims discussed,
- 3) an identification of the specific prior art discussed,
- 4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
- 5) a brief identification of the general thrust of the principal arguments presented to the examiner,
(The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
- 6) a general indication of any other pertinent matters discussed, and
- 7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

Continuation of Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: A teleconference was held, upon the applicants' representative request, to discuss the proposed amendment after the final office action mailed 04/04/2011, including amended claim 1 and proposed new claims 9 and 11. With regard to amended claim 1, the examiner pointed out that the cited Miyazawa prior art apparently disclosed, in Figs. 4c, 4d, 5a, 5b, 8, and 10, all the features as claimed including the proposed amended portion "the plurality of contact holes disposed corresponding to an intersection of the first power line and the second power line and disposed in the pixel" and as such the proposed amended claim 1 could not overcome the teaching of the cited Miyazawa prior art. With regard to the proposed newly added claims 9 and 11, the examiner observed no description of "the second power line overlapping at least the second portion of the first power line" as recited in the newly added proposed claim 9, and/or "a second power line ...the second connecting portion being located in the second pixel" as recited in the newly added proposed claim 11 in the cited Miyazawa reference or prior art of record. In general, in light of the submitted disclosure, the examiner advised applicants to amend the claims in reference of Figs. 4 and 5. Mr. Bjorn Anderson fully agreed with the examiner's analysis and proposed to file a RCE after this interview. The examiner informed that the interview summary form would be created and mailed out with a first office action to the RCE.



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NOTICE OF ALLOWANCE AND FEE(S) DUE

25944 7590 08/30/2011
OLIFF & BERRIDGE, PLC
P.O. BOX 320850
ALEXANDRIA, VA 22320-4850

EXAMINER

TRAN, THUY V

ART UNIT

PAPER NUMBER

2821

DATE MAILED: 08/30/2011

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/219,592	07/24/2008	Yojiro Matsueda	117390.01	6476

TITLE OF INVENTION: ELECTRO-OPTICAL DEVICE, MATRIX SUBSTRATE, AND ELECTRONIC APPARATUS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	11/30/2011

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

**Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
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or Fax (571)-273-2885**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

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Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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12/219,592	07/24/2008	Yojiro Matsueda	117390.01	6476
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TITLE OF INVENTION: ELECTRO-OPTICAL DEVICE, MATRIX SUBSTRATE, AND ELECTRONIC APPARATUS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	11/30/2011

EXAMINER	ART UNIT	CLASS-SUBCLASS
TRAN, THUY V	2821	315-169300

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.111. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
☐ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/219,592	07/24/2008	Yojiro Matsueda	117390.01	6476
25944 7590 08/30/2011 OLIFF & BERRIDGE, PLC P.O. BOX 320850 ALEXANDRIA, VA 22320-4850			EXAMINER TRAN, THUY V	
			ART UNIT	PAPER NUMBER
			2821	

DATE MAILED: 08/30/2011

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 376 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 376 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No.	Applicant(s)	
	12/219,592	MATSUEDA ET AL.	
	Examiner	Art Unit	
	THUY VINH TRAN	2821	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to RCE filed 7/5/11 & amendmnt conc. filed therewith.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.

3. ☒ The allowed claim(s) is/are 9-14.

4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____ .
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
 * Certified copies not received: ____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 1) ☐ hereto or 2) ☐ to Paper No./Mail Date ____.
 (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date ____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892) 2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948) 3. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date <u>07/24/2008</u> 4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material	5. ☐ Notice of Informal Patent Application 6. ☒ Interview Summary (PTO-413), Paper No./Mail Date <u>20110622A</u> . 7. ☒ Examiner's Amendment/Comment 8. ☒ Examiner's Statement of Reasons for Allowance 9. ☐ Other _____.
--	---

/Thuy Vinh Tran/ Primary Examiner, Art Unit 2821 08/24/2011	
---	--

DETAILED ACTION

This Office Action is in response to the applicants' request for continued examination (RCE) filed 07/05/2011 and amendment concurrently filed therewith. In virtue of this amendment, claims 1-8 are canceled; claims 9-14 are newly added; and thus, claims 9-14 are now presented in the instant application.

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicants' submission filed on 07/05/2011 has been entered.

Examiner's Amendment

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

This examiner's amendment is made to solely correct the dependency of claim 13 based upon the claimed features recited therein without changing any scope of the claimed invention. This application has been amended as follows:

Claim 13 line 1, "1" has been changed to --11--.

Allowable Subject Matter

3. Claims 9-14 are allowed.

Reasons for Allowance

4. The following is an examiner's statement of reasons for allowance:

Prior art fails to disclose or fairly suggest:

- An electro-optical device comprising a second power line extending in the second direction, the second power line overlapping at least the second portion of the first power line, in combination with the remaining claimed limitations as called for in independent claim 9 (claims 10 and 14 are allowed as being dependent upon claim 9); and
- An electro-optical device comprising a second power line extending in a second direction that intersects the first direction, a third power line extending in the second direction, the first power line being electrically connected to the third power line at a second connection portion, the second connecting portion being located in the second pixel, in combination with the remaining claimed limitations as called for in independent claim 9 (claims 10 and 14 are allowed as being dependent upon claim 9);

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Citation of relevant prior art

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Prior art Yamada (U.S. Patent No. 6,522,079 B1) discloses an electroluminescent display.

Remarks

6. The information disclosure statement (IDS) submitted on 07/24/2008 is in compliance with the provisions of 37 CFR 1.97 & 1.98. Accordingly, the information disclosure statement has been considered by the examiner.
7. The amendment to the specification filed 01/06/2011 has been accepted.

Inquiry

Any inquiry concerning this communication or earlier communications from the examiner should be directed to THUY VINH TRAN whose telephone number is (571)272-1828. The examiner can normally be reached on M-F (8:00 AM -4:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglas W. Owens can be reached on (571) 272-1662. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Thuy Vinh Tran/
Primary Examiner, Art Unit 2821
08/24/2011

Application/Control Number: 12/219,592
Art Unit: 2821

Page 5

Notice of References Cited	Application/Control No. 12/219,592	Applicant(s)/Patent Under Reexamination MATSUEDA ET AL.	
	Examiner THUY VINH TRAN	Art Unit 2821	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-6,522,079 B1	02-2003	Yamada, Tsutomu	315/169.3
	B	US-			
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.



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BIB DATA SHEET

CONFIRMATION NO. 6476

SERIAL NUMBER 12/219,592	FILING or 371(c) DATE 07/24/2008 RULE	CLASS 315	GROUP ART UNIT 2821	ATTORNEY DOCKET NO. 117390.01		
APPLICANTS Yojiro Matsueda, Chino-shi, JAPAN; Hayato Nakanishi, Toyama-shi, JAPAN; ** CONTINUING DATA ***** This application is a CON of 10/676,067 10/02/2003 ABN ** FOREIGN APPLICATIONS ***** JAPAN 2002-293696 10/07/2002 ** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** 08/18/2008						
Foreign Priority claimed ☒ Yes ☐ No 35 USC 119(a-d) conditions met ☒ Yes ☐ No Verified and Acknowledged <u>/THUY VINH V TRAN/</u> Examiner's Signature		☐ Met after Allowance TT Initials	STATE OR COUNTRY JAPAN	SHEETS DRAWINGS 7	TOTAL CLAIMS 6	INDEPENDENT CLAIMS <u>2</u>
ADDRESS OLIFF & BERRIDGE, PLC P.O. BOX 320850 ALEXANDRIA, VA 22320-4850 UNITED STATES						
TITLE Electro-optical device, matrix substrate, and electronic apparatus						
FILING FEE RECEIVED 1030	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:		☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit			

Receipt date: 07/24/2008

12219592 - GAU: 2821

Sheet 1 of 1

Form PTO-1449 (REV. 1/06)		US Dept. of Commerce PATENT & TRADEMARK OFFICE		ATTY DOCKET NO. 117390.01		APPLICATION NO. New U.S. Patent Application	
INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)				APPLICANT(S) Yojiro MATSUEDA et al.			
				FILING DATE July 24, 2008		GROUP 2821	
U.S. PATENT DOCUMENTS							
Examiner Initials	Cite No.	Document Number	Date	Name			
/T.T./	1	6,724,149	04/20/2004	KOMIYA et al.			
	2	7,009,345	03/07/2006	KOMIYA et al.			
	3	6,965,363	11/15/2005	SATO et al.			
	4	2006/0055643	03/16/2006	SATO et al.			
	5	2001/0048106 A1	12/06/2001	TANADA			
	6	6,825,820 B2	11/30/2004	YAMAZAKI et al.			
	7	6,633,135 B2	10/14/2003	NARA et al.			
	8	2003/0076046 A1	04/24/2003	KOMIYA et al.			
	9	US 2002/0140644 A1	10/03/2002	SATO et al.			
	10	US 5,159,476	10/27/1992	HAYASHI			
FOREIGN PATENT DOCUMENTS							
Examiner Initials	Cite No.	Document Number	Date	Country	With English Abstract	With English Translation	
/T.T./	11	JP-A-2001-100654	04/13/2001	JAPAN	X	X	
/T.T./	12	JP-A-2002-287663	10/04/2002	JAPAN	X	X	
/T.T./	13	JP-A-2000-242196	09/08/2000	JAPAN	X	X	
/T.T./	14	JP-A-2001-272930	10/05/2001	JAPAN	X	X	
/T.T./	15	JP-A-2002-151276	05/24/2002	JAPAN			
OTHER DOCUMENTS							
Examiner Initials	Cite No.	Including name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.					
EXAMINER				/Thuy Tran/			
				DATE CONSIDERED 08/24/2011			
Examiner: Initial if citation considered, whether or not citation is in conformance with M.P.E.P. 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.							

Date: July 24, 2008

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /T.T./

Issue Classification 	Application/Control No. 12219592	Applicant(s)/Patent Under Reexamination MATSUEDA ET AL.
	Examiner THUY VINH TRAN	Art Unit 2821

ORIGINAL						INTERNATIONAL CLASSIFICATION												
CLASS		SUBCLASS				CLAIMED					NON-CLAIMED							
315		169.3				G	0	9	G	3 / 10 (2006.01.01)								
CROSS REFERENCE(S)																		
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)																	
257	72																	
313	505	506																

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47															
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
-	1														
-	2														
-	3														
-	4														
-	5														
-	6														
-	7														
-	8														
1	9														
2	10														
4	11														
5	12														
6	13														
3	14														

NONE		Total Claims Allowed:	
		6	
(Assistant Examiner)	(Date)		
/THUY VINH TRAN/ Primary Examiner.Art Unit 2821	8/24/2011	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	4

<i>Index of Claims</i> 	Application/Control No. 12219592	Applicant(s)/Patent Under Reexamination MATSUEDA ET AL.
	Examiner THUY V TRAN	Art Unit 2821

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant					☐ CPA					☐ T.D.					☐ R.1.47				
CLAIM		DATE																	
Final	Original	09/30/2010	03/28/2011	08/24/2011															
	1	✓	✓	-															
	2	✓	✓	-															
	3	✓	✓	-															
	4	✓	✓	-															
	5	✓	✓	-															
	6	✓	✓	-															
	7		✓	-															
	8		✓	-															
	9			=															
	10			=															
	11			=															
	12			=															
	13			=															
	14			=															

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L3	3323	315/169.3.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/08/24 10:49
L4	6961	313/505,506.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/08/24 10:49
L5	4639	257/72.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/08/24 10:50
L6	437	(electro-optical or display) and ((data and scan\$4) near3 line) and intersect \$3 and ((first and second) near3 (power near2 line))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/08/24 10:51
L7	430	6 and pixel	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/08/24 10:52
L8	200	7 and (contact near3 hole)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/08/24 10:52

L9	19	3 and 8	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/08/24 10:52
L10	22	4 and 8	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/08/24 10:52
L11	16	5 and 8	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/08/24 10:52

EAST Search History (I nterference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	0	(electro-optical and device and (line near3 (scan\$4 and data)) and intersect \$3 and pixel and corresponding\$2 and disposed and (light with emission with layer) and ((first and second) near2 electrode) and ((first and second) near2 (power near2 line)) and ((first and second) near2 (portion and direction)) and extend \$3 and overlap\$4 and (inter-layer or (inter adj layer)) and insulat\$3 and (film or coat\$3) and between and plurality and (contact near2 hole) and connect\$3).clm.	US-PGPUB; USPAT; UPAD	OR	ON	2011/08/24 10:41

L2	0	(electro-optical and device and (line near3 (scan\$4 and data)) and intersect \$3 and pixel and corresponding\$2 and disposed and (light with emission with layer) and ((first and second) near2 electrode) and ((first and second and third) near2 (power near2 line)) and ((first and second) near3 (portion and direction)) and extend \$3).clm.	US-PGPUB; USPAT; UPAD	OR	ON	2011/08/24 10:45
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8/ 24/ 11 11:41:08 AM**H:\ EAST\ Workspaces\ Updated_Search_12219592.wsp**

<i>Search Notes</i> 	Application/Control No. 12219592	Applicant(s)/Patent Under Reexamination MATSUEDA ET AL.
	Examiner THUY V TRAN	Art Unit 2821

SEARCHED			
Class	Subclass	Date	Examiner
315	160, 161, 167, 169.2, 169.3	9/30/10	TT
313	483, 505, 506, 306	9/30/10	TT
257	40, 72, 98	9/30/10	TT

SEARCH NOTES		
Search Notes	Date	Examiner
EAST Search including text and classes/subclasses _ Search History enclosed	9/29-30/10	TT
Reviewed references cited in parent application Ser. 10/676,067	9/29/10	TT
Updated Search incl. interference search (text enclosed)	8/24/11	TT

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner
315	169.3	8/24/11	TT
313	505, 506	8/24/11	TT
257	72	8/24/11	TT

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PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Yojiro MATSUEDA et al.

Group Art Unit: 2821

Application No.: 12/219,592

Examiner: T. TRAN

Filed: July 24, 2008

Docket No.: 117390.01

For: ELECTRO-OPTICAL DEVICE, MATRIX SUBSTRATE AND ELECTRONIC
APPARATUS

INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

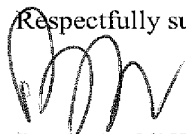
Sir:

Pursuant to 37 CFR §1.56, the attention of the Patent and Trademark Office is hereby directed to the reference(s) listed on the attached PTO-1449. Unless otherwise indicated herein, one copy of each reference is attached. It is respectfully requested that the information be expressly considered during the prosecution of this application, and that the reference(s) be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

- ☒ 1. This Information Disclosure Statement is being filed more than three months after the U.S. filing date and after the mailing date of a Final Rejection, Notice of Allowance, or other action that closes prosecution (e.g., Quayle Action), but before payment of the Issue Fee. The fees associated with this filing under 37 C.F.R. §1.17(p) are being paid electronically with this filing. The Commissioner is hereby authorized to charge any additional fee (or credit any overpayment) associated for this filing to Deposit Account No. 15-0461.
- ☒ a. I hereby certify that each item of information contained in this Information Disclosure Statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement.
37 CFR §1.97(e)(1).

- ☒ 2. An Office Action was issued in a counterpart foreign or international application. An original and English language version of the Office Action is attached as Reference 1. JP-A-2001-100654 and JP-A-2002-287663, which are cited therein, have already been made of record in this application.

Respectfully submitted,



James A. Oliff
Registration No. 27,075

Bjorn G. Anderson
Registration No. 63,398

JAO:BGA/ccs

Date: October 18, 2011

OLIFF & BERRIDGE, PLC
P.O. Box 320850
Alexandria, Virginia 22320-4850
Telephone: (703) 836-6400

**DEPOSIT ACCOUNT USE
AUTHORIZATION**

Please grant any extension
necessary for entry of this filing;
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Deposit Account No. 15-0461

Form PTO-1449 (REV. 5/11)	PATENT & TRADEMARK OFFICE	ATTY DOCKET NO. 117390.01	APPLICATION NO. 12/219,592
INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)		APPLICANT(S) Yojiro MATSUEDA et al.	
		FILING DATE July 24, 2008	GROUP 2821

U.S. PATENT DOCUMENTS				
Examiner Initials	Cite No.	Document Number	Date	Name

FOREIGN PATENT DOCUMENTS						
Examiner Initials	Cite No.	Document Number	Date	Country	With English Abstract	With English Translation

OTHER DOCUMENTS		
Examiner Initials	Cite No.	Including name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
	1	Japanese Office Action dated September 6, 2011 for Japanese Application No. 2008-212529 (with translation).

EXAMINER	DATE CONSIDERED
Examiner: Initial if citation considered, whether or not citation is in conformance with M.P.E.P. 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	

Date: October 18, 2011

Electronic Patent Application Fee Transmittal				
Application Number:		12219592		
Filing Date:		24-Jul-2008		
Title of Invention:		ELECTRO-OPTICAL DEVICE, MATRIX SUBSTRATE, AND ELECTRONIC APPARATUS		
First Named Inventor/Applicant Name:		Yojiro Matsueda		
Filer:		James Albert Oliff/Cherie Smith		
Attorney Docket Number:		117390.01		
Filed as Large Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Submission- Information Disclosure Stmt	1806	1	180	180
Total in USD (\$)				180

Electronic Acknowledgement Receipt	
EFS ID:	11210815
Application Number:	12219592
International Application Number:	
Confirmation Number:	6476
Title of Invention:	ELECTRO-OPTICAL DEVICE, MATRIX SUBSTRATE, AND ELECTRONIC APPARATUS
First Named Inventor/Applicant Name:	Yojiro Matsueda
Customer Number:	25944
Filer:	James Albert Oliff/Cherie Smith
Filer Authorized By:	James Albert Oliff
Attorney Docket Number:	117390.01
Receipt Date:	18-OCT-2011
Filing Date:	24-JUL-2008
Time Stamp:	15:26:18
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$180
RAM confirmation Number	1743
Deposit Account	150461
Authorized User	
<p>The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:</p> <p>Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)</p> <p>Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)</p>	

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Form (SB08)	117390_01_IDS_10_18_11.pdf	130632	no	3
			82bad611bb5ad9cc27faf41460658edc89368b51		
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
2	Foreign Reference	117390_01_ref_10_18_11.pdf	646518	no	16
			1f26455f8a6a346c9c8728f6a2747f5ba2233723		
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30623	no	2
			ff2f6ea3e79eecf54ed96ca6b5c53ad0f9d0f187		
Warnings:					
Information:					
Total Files Size (in bytes):			807773		
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/219,592	07/24/2008	Yojiro Matsueda	117390.01	6476
25944 7590 10/25/2011 OLIFF & BERRIDGE, PLC P.O. BOX 320850 ALEXANDRIA, VA 22320-4850			EXAMINER TRAN, THUY V	
			ART UNIT 2821	PAPER NUMBER
			NOTIFICATION DATE 10/25/2011	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

OfficeAction25944@oliff.com
jarmstrong@oliff.com



UNITED STATES DEPARTMENT OF COMMERCE
U.S. Patent and Trademark Office

Address : COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450

APPLICATION NO./ CONTROL NO.	FILING DATE	FIRST NAMED INVENTOR / PATENT IN REEXAMINATION	ATTORNEY DOCKET NO.
12/219,592	24 July, 2008	MATSUEDA ET AL.	117390.01

OLIFF & BERRIDGE, PLC P.O. BOX 320850 ALEXANDRIA, VA 22320-4850		EXAMINER	
		THUY VINH TRAN	
		ART UNIT	PAPER
		2821	20111019

DATE MAILED:

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner for Patents

1. The information disclosure statement (IDS) submitted on 10/18/2011 was filed after the mailing date of the Notice of Allowance on 08/30/2011. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.
2. If any further question concerning the subject application, please contact examiner THUY VINH TRAN at (571) 272-1828.

Enclosed:
01 Copy of PTO-1449 with examiner's initials

/Thuy Vinh Tran/
Primary Examiner, Art Unit 2821
10/19/2011

PTO-90C (Rev.04-03)

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Yojiro MATSUEDA et al.

Group Art Unit: 2821

Application No.: 12/219,592

Examiner: T. TRAN

Filed: July 24, 2008

Docket No.: 117390.01

For: ELECTRO-OPTICAL DEVICE, MATRIX SUBSTRATE AND ELECTRONIC
APPARATUS

INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Pursuant to 37 CFR §1.56, the attention of the Patent and Trademark Office is hereby directed to the reference(s) listed on the attached PTO-1449. Unless otherwise indicated herein, one copy of each reference is attached. It is respectfully requested that the information be expressly considered during the prosecution of this application, and that the reference(s) be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

- ☒ 1. This Information Disclosure Statement is being filed more than three months after the U.S. filing date and after the mailing date of a Final Rejection, Notice of Allowance, or other action that closes prosecution (e.g., Quayle Action), but before payment of the Issue Fee. The fees associated with this filing under 37 C.F.R. §1.17(p) are being paid electronically with this filing. The Commissioner is hereby authorized to charge any additional fee (or credit any overpayment) associated for this filing to Deposit Account No. 15-0461.
- ☒ a. I hereby certify that each item of information contained in this Information Disclosure Statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement.
37 CFR §1.97(e)(1).

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /T.T./

Receipt date: 10/18/2011

12219592 - GAU: 2821
Application No. 12/219,592

- ☒ 2. An Office Action was issued in a counterpart foreign or international application. An original and English language version of the Office Action is attached as Reference 1. JP-A-2001-100654 and JP-A-2002-287663, which are cited therein, have already been made of record in this application.

Respectfully submitted,



James A. Oliff
Registration No. 27,075

Bjorn G. Anderson
Registration No. 63,398

JAO:BGA/ccs

Date: October 18, 2011

OLIFF & BERRIDGE, PLC
P.O. Box 320850
Alexandria, Virginia 22320-4850
Telephone: (703) 836-6400

**DEPOSIT ACCOUNT USE
AUTHORIZATION**

Please grant any extension
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Deposit Account No. 15-0461

Receipt date: 10/18/2011

12219592 - GAU: 2821

Sheet 1 of 1

Form PTO-1449 (REV. 5/11) PATENT & TRADEMARK OFFICE INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)	ATTY DOCKET NO. 117390.01	APPLICATION NO. 12/219,592
	APPLICANT(S) Yojiro MATSUEDA et al.	
	FILING DATE July 24, 2008	GROUP 2821

U.S. PATENT DOCUMENTS				
Examiner Initials	Cite No.	Document Number	Date	Name

FOREIGN PATENT DOCUMENTS						
Examiner Initials	Cite No.	Document Number	Date	Country	With English Abstract	With English Translation

OTHER DOCUMENTS		
Examiner Initials	Cite No.	Including name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
/T.T./	1	Japanese Office Action dated September 6, 2011 for Japanese Application No. 2008-212529 (with translation).

EXAMINER	/Thuy Tran/	DATE CONSIDERED 10/19/2011
Examiner:	Initial if citation considered, whether or not citation is in conformance with M.P.E.P. 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	

Date: October 18, 2011

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /T.T./

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Yojiro MATSUEDA et al.

Group Art Unit: 2821

Application No.: 12/219,592

Examiner: T. TRAN

Filed: July 24, 2008

Docket No.: 117390.01

For: ELECTRO-OPTICAL DEVICE, MATRIX
SUBSTRATE AND ELECTRONIC
APPARATUS

MAIL STOP RCE

**LARGE ENTITY REQUEST FOR
CONTINUED EXAMINATION UNDER 37 C.F.R. §1.114**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In accordance with the provisions of 37 C.F.R. §1.114, Applicant(s) hereby request(s) continued examination.

☒ Applicants further request entry and consideration of the attached submission.

The above-identified application was filed on or after June 8, 1995. Thus, entry is proper under 37 C.F.R. §1.114(d).

The fees associated with this filing are being paid electronically with this filing. The Commissioner is hereby authorized to charge any additional fee (or credit any overpayment) for this filing to Deposit Account No. 15-0461.

Respectfully submitted,

James A. Oliff
Registration No. 27,075

Justin T. Lingard
Registration No. 61,276

JAO:CLM/kjb

Date: November 30, 2011

OLIFF & BERRIDGE, PLC
P.O. Box 320850
Alexandria, Virginia 22320-4850
Telephone: (703) 836-6400

**DEPOSIT ACCOUNT USE
AUTHORIZATION**

Please grant any extension
necessary for entry;
Charge any fee due to our
Deposit Account No. 15-0461

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Group Art Unit: 2821

Yojiro MATSUEDA et al.

Application No.: 12/219,592

Examiner: T. TRAN

Filed: July 24, 2008

Docket No.: 117390.01

For: ELECTRO-OPTICAL DEVICE, MATRIX SUBSTRATE AND ELECTRONIC
APPARATUS

AMENDMENT FILED WITH REQUEST FOR CONTINUED EXAMINATION

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Further to the August 30, 2011 Notice of Allowance, and upon entry of the attached
Request for Continued Examination, please consider the following:

Amendments to the Claims as reflected in the listing of claims;

Remarks.

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1-8. (Canceled)

9. (Currently Amended) An electro-optical device comprising:

a scan line;

a data line that intersects the scan line;

~~a pixel disposed corresponding to an intersection of the scan line and the data line, the pixel including a light emission layer between a first electrode and a second electrode~~

a first electrode;

a second electrode;

a light emission layer that is disposed between the first electrode and the second electrode;

a first power line ~~having that has~~ a first portion extending in a first direction and a second portion extending in a second direction that intersects the first direction;

a second power line ~~extending that extends~~ in the second direction, the second power line overlapping at least a part of the second portion of the first power line; and

an inter-layer insulating film ~~being that is~~ disposed between the first power line and the second power line; and line,

~~a plurality of contact holes electrically connecting the second portion of the first power line and being electrically connected to the second power line to each other through~~
a plurality of contact holes.

10. (Currently Amended) The electro-optical device according to claim 9, the second portion of the first power line extending from the first portion along the second direction to only one side,

the second portion being positioned on one side of the first portion of the first power line with respect to the first portion of the first power line ~~and~~, and

the second portion not being positioned on the other side with respect to the first portion of the first power line.

11. (Currently Amended) An electro-optical device comprising:

a plurality of scan lines;

a plurality of data lines that intersect the plurality of scan lines;

a plurality of pixels that is disposed corresponding to a plurality of intersections of the plurality of scan lines and the data lines, each of the plurality of pixels including a first pixel and a second pixel, each of the first pixel and the second pixel each having a light emission layer between a first electrode and a second electrode, the first pixel and the second pixel being aligned along a first direction ~~in along~~ which the plurality of scan lines extend;

a first power line ~~extending in that extends along~~ the first direction;

a second power line ~~extending in that extends along~~ a second direction that intersects the first direction; and

a third power line ~~extending in that extends along~~ the second direction; and direction.

the first power line being electrically connected to the second power line at a first connecting portion,

the first connecting portion being located in the first pixel,

the first power line being electrically connected to the third power line at a second connecting portion, and

the second connecting portion being located in the second pixel.

13. (Previously Presented) The electro-optical device according to claim 11, the second power line being electrically connected to the first electrode.
14. (Previously Presented) The electro-optical device according to claim 9, the second power line being electrically connected to the first electrode.
15. (New) The electro-optical device according to claim 9, the plurality of contact holes extending along the first direction.

REMARKS

Claims 9-15 are pending in this application. By this Amendment, claims 9-11 are amended for clarity and claim 15 is added. No new matter is added.

In view of the foregoing, it is respectfully submitted that this application remains in condition for allowance. Prompt allowance of claims 9-15 is earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,

James A. Oliff
Registration No. 27,075

Justin T. Lingard
Registration No. 61,276

JAO:CLM/kjb

Attachment:

Request for Continued Examination

Date: November 30, 2011

OLIFF & BERRIDGE, PLC
P.O. Box 320850
Alexandria, Virginia 22320-4850
Telephone: (703) 836-6400

<p>DEPOSIT ACCOUNT USE AUTHORIZATION Please grant any extension necessary for entry of this filing; Charge any fee due to our Deposit Account No. 15-0461</p>

Electronic Patent Application Fee Transmittal				
Application Number:		12219592		
Filing Date:		24-Jul-2008		
Title of Invention:		ELECTRO-OPTICAL DEVICE, MATRIX SUBSTRATE, AND ELECTRONIC APPARATUS		
First Named Inventor/Applicant Name:		Yojiro Matsueda		
Filer:		James Albert Oliff/Kristin Bennett		
Attorney Docket Number:		117390.01		
Filed as Large Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Request for continued examination	1801	1	930	930
Total in USD (\$)				930

Electronic Acknowledgement Receipt	
EFS ID:	11512719
Application Number:	12219592
International Application Number:	
Confirmation Number:	6476
Title of Invention:	ELECTRO-OPTICAL DEVICE, MATRIX SUBSTRATE, AND ELECTRONIC APPARATUS
First Named Inventor/Applicant Name:	Yojiro Matsueda
Customer Number:	25944
Filer:	James Albert Oliff/Kristin Bennett
Filer Authorized By:	James Albert Oliff
Attorney Docket Number:	117390.01
Receipt Date:	30-NOV-2011
Filing Date:	24-JUL-2008
Time Stamp:	16:17:48
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$ 930
RAM confirmation Number	3205
Deposit Account	150461
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
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1	Request for Continued Examination (RCE)	11739001_RCE.pdf	46953 000173a29dbb054232501a34f55b22a93d88e414	no	1
Warnings:					
This is not a USPTO supplied RCE SB30 form.					
Information:					
2		11739001_Amendment.pdf	174916 114d58d4e4d483905d23891bb59f87fb3201259e	yes	5
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Amendment Submitted/Entered with Filing of CPA/RCE		1	1	
	Claims		2	4	
	Applicant Arguments/Remarks Made in an Amendment		5	5	
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30658 2e9ad0f7a1df3c4a9b39eddaeb5a1b024e4d0c72	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			252527		
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

25944 7590 12/19/2011
OLIFF & BERRIDGE, PLC
P.O. BOX 320850
ALEXANDRIA, VA 22320-4850

EXAMINER

TRAN, THUY V

ART UNIT

PAPER NUMBER

2821

DATE MAILED: 12/19/2011

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/219,592	07/24/2008	Yojiro Matsueda	117390.01	6476

TITLE OF INVENTION: ELECTRO-OPTICAL DEVICE, MATRIX SUBSTRATE, AND ELECTRONIC APPARATUS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1740	\$300	\$0	\$2040	03/19/2012

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

**Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

25944 7590 12/19/2011
OLIFF & BERRIDGE, PLC
P.O. BOX 320850
ALEXANDRIA, VA 22320-4850

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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12/219,592	07/24/2008	Yojiro Matsueda	117390.01	6476
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TITLE OF INVENTION: ELECTRO-OPTICAL DEVICE, MATRIX SUBSTRATE, AND ELECTRONIC APPARATUS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1740	\$300	\$0	\$2040	03/19/2012

EXAMINER	ART UNIT	CLASS-SUBCLASS
TRAN, THUY V	2821	313-505000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
☐ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.



UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/219,592	07/24/2008	Yojiro Matsueda	117390.01	6476
25944	7590	12/19/2011	EXAMINER	
OLIFF & BERRIDGE, PLC			TRAN, THUY V	
P.O. BOX 320850			ART UNIT	PAPER NUMBER
ALEXANDRIA, VA 22320-4850			2821	

DATE MAILED: 12/19/2011

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 376 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 376 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Examiner-Initiated Interview Summary	Application No.		Applicant(s)	
	12/219,592		MATSUEDA ET AL.	
	Examiner		Art Unit	
	THUY VINH TRAN		2821	

All participants (applicant, applicant's representative, PTO personnel):

(1) THUY VINH TRAN. (3) ____.

(2) Brian Kauffman (Reg. No. 63199). (4) ____.

Date of Interview: 13 December 2011.

Type: ☒ Telephonic ☐ Video Conference
☐ Personal [copy given to: ☐ applicant ☐ applicant's representative]

Exhibit shown or demonstration conducted: ☐ Yes ☒ No.
If Yes, brief description: ____.

Issues Discussed ☐ 101 ☐ 112 ☐ 102 ☐ 103 ☒ Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: Claim 12 missing in the submitted amendment.

Identification of prior art discussed: none.

Substance of Interview
(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

A teleconference was held on 12/13/2011, initiated by the examiner, to discuss the status of claim 12, which is missing from the submitted amendment. Mr. Brian Kauffman authorized the examiner to make an examiner's amendment to reinstate claim 12 as follows:
--Claim 12 (previously presented): The electro-optical device according to claim 11, the first power line being electrically connected to the first pixel and the second pixel.--

Applicant recordation instructions: It is not necessary for applicant to provide a separate record of the substance of interview.

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

☐ Attachment

/Thuy Vinh Tran/ Primary Examiner, Art Unit 2821 12/13/2011	
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Notice of Allowability	Application No.	Applicant(s)	
	12/219,592	MATSUEDA ET AL.	
	Examiner	Art Unit	
	THUY VINH TRAN	2821	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to RCE & amendment filed 11/30/2011.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.

3. ☒ The allowed claim(s) is/are 9-15.

4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____ .
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
 * Certified copies not received: ____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 1) ☐ hereto or 2) ☐ to Paper No./Mail Date ____.

 (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date ____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892) 2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date ____ 4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material	5. ☐ Notice of Informal Patent Application 6. ☒ Interview Summary (PTO-413), Paper No./Mail Date <u>20111213</u> . 7. ☒ Examiner's Amendment/Comment 8. ☒ Examiner's Statement of Reasons for Allowance 9. ☐ Other ____
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/Thuy Vinh Tran/ Primary Examiner, Art Unit 2821 12/13/2011	
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DETAILED ACTION

This office action is in response to the applicants' Request for Continued Examination (RCE) filed 11/30/2011 and amendment accompanied concurrently therewith. In virtue of this amendment, claims 1-8 were previously canceled; claim 15 is newly added; claim 12 is mistakenly dropped out but being reinstated by examiner's amendment; and thus, claims 9-15 are being presented in the instant application.

Response to Applicants' Request for Continued Examination (RCE)

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after allowance. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicants' submission filed on 11/30/2011 has been entered.

Examiner's Amendment

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Brian Kauffman (Reg. No. 63199) on 12/13/2011.

The subject application has been amended as follows:

In the list of claims, page 4, between claim 11 and claim 13, add:

--Claim 12 (previously presented): The electro-optical device according to claim 11, the first power line being electrically connected to the first pixel and the second pixel.--.

Reasons for Allowance

3. Claims 9-15 are allowed.
4. The following is an examiner's statement of reasons for allowance:

The reasons for allowance provided in the office action mailed 08/30/2011 are still valid; therefore, they are not reiterated herein.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Citation of relevant prior art

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Prior art Kobashi (Pub. No.: US 2002/0158573 A1) discloses an electro-optical device.

Inquiry

Any inquiry concerning this communication or earlier communications from the examiner should be directed to THUY VINH TRAN whose telephone number is (571)272-1828. The examiner can normally be reached on M-F (8:00 AM -4:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglas W. Owens can be reached on (571) 272-1662. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2821

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Thuy Vinh Tran/
Primary Examiner, Art Unit 2821
12/13/2011

Notice of References Cited	Application/Control No. 12/219,592	Applicant(s)/Patent Under Reexamination MATSUEDA ET AL.	
	Examiner THUY VINH TRAN	Art Unit 2821	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2002/0158573 A1	10-2002	Kobashi, Yutaka	313/498
	B	US-			
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Search Notes 	Application/Control No. 12219592	Applicant(s)/Patent Under Reexamination MATSUEDA ET AL.
	Examiner THUY V TRAN	Art Unit 2821

SEARCHED			
Class	Subclass	Date	Examiner
315	160, 161, 167, 169.2, 169.3	9/30/10	TT
313	483, 505, 506, 306	9/30/10	TT
257	40, 72, 98	9/30/10	TT
257	99	12/13/11	TT

SEARCH NOTES		
Search Notes	Date	Examiner
EAST Search including text and classes/subclasses _ Search History enclosed	9/29-30/10	TT
Reviewed references cited in parent application Ser. 10/676,067	9/29/10	TT
Updated Search incl. interference search (text enclosed)	8/24/11	TT
Updated Search including text and classes/subclasses - Search History enclosed	12/13/11	TT
Interference Search update	12/13/11	TT

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner
315	169.3	8/24/11	TT
313	505, 506	8/24/11	TT
257	72, 99	8/24/11	TT

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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	5436	257/99.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/13 09:31
L2	1054	(electro-optical near2 (device or apparatus)) and ((scan\$4 and data) near2 line) and ((first and second) near2 electrode)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/13 09:32
L3	435	2 and ((light near2 emi\$5) with layer)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/13 09:33
L4	313	3 and (contact near2 hole)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/13 09:33
L5	4	1 and 4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/13 09:33
S1	3138	(electro-optical near2 (device or apparatus)) and ((scan\$4 and data) near2 line) and electrode	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/12 21:35
S2	1833	S1 and (light near2 emi\$5)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/12 21:36
S3	922	S2 and (contact near2 hole)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/12 21:36
S4	701	S3 and ((first or second or third or red or green or blue) near4 (power or	US-PGPUB; USPAT;	OR	ON	2011/12/12 21:38

		line))	USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S5	700	S4 and pixel	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/12 21:39
S6	1053	(electro-optical near2 (device or apparatus)) and ((scan\$4 and data) near2 line) and ((first and second) near2 electrode)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/12 21:40
S7	434	S6 and ((light near2 emi\$5) with layer)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/12 21:40
S8	312	S7 and (contact near2 hole)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/12 21:40
S9	244	S8 and ((first or second or third or red or green or blue) near4 (power or line))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/12 21:41
S10	243	S9 and pixel	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/12 21:41
S11	4532	315/160,161,167,169.3,169.2.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/12 21:42
S12	18214	257/40,72,98.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/12 21:43
S13	7171	313/505,506.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/12 21:43
S14	14	S10 and S11	US-PGPUB; USPAT;	OR	ON	2011/12/12 21:44

			USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S15	38	S10 and S12	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/12 21:44
S16	11	S10 and S13	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/12 21:44
S17	16	S5 and S11	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/12 21:44
S18	106	S5 and S12	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/12 21:44
S19	16	S5 and S13	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/12 21:45

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S20	0	(electro-optical and (device or apparatus) and ((scan\$4 and data) near2 line) and intersect\$3 and (((first and second) near2 electrode) and (light near2 emi\$5) and layer and ((first and second) near2 (power adj line)) and ((first and second) near2 (direction and portion)) and overlap\$4 and inter-layer and insulat\$3 and (film or layer) and electrical\$2 and connect\$3 and plurality and (contact adj hole)).clm.	US-PGPUB; USPAT; UPAD	OR	ON	2011/12/12 22:11
S21	0	(electro-optical and (device or apparatus) and plurality and ((scan\$4 and data) near2 line) and intersect\$3 and ((first and second) near2 (electrode and pixel)) and align\$3 and (light near2 emi\$5) and layer and extend\$3 and ((first and second) near2 (power adj line)) and ((first and second) near4 (direction and portion))).clm.	US-PGPUB; USPAT; UPAD	OR	ON	2011/12/12 22:16

12/ 13/ 2011 9:35:56 AM**C:\Users\ttran10\Documents\EAST\Workspaces\EAST_Search_PostSecondRCE_12219592.wsp**



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 P.O. Box 1450
 Alexandria, Virginia 22313-1450
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BIB DATA SHEET

CONFIRMATION NO. 6476

SERIAL NUMBER 12/219,592	FILING or 371(c) DATE 07/24/2008 RULE	CLASS 313 315	GROUP ART UNIT 2821	ATTORNEY DOCKET NO. 117390.01		
APPLICANTS Yojiro Matsueda, Chino-shi, JAPAN; Hayato Nakanishi, Toyama-shi, JAPAN; ** CONTINUING DATA ***** This application is a CON of 10/676,067 10/02/2003 ABN ** FOREIGN APPLICATIONS ***** JAPAN 2002-293696 10/07/2002 ** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** 08/18/2008						
Foreign Priority claimed ☒ Yes ☐ No 35 USC 119(a-d) conditions met ☒ Yes ☐ No Verified and Acknowledged /THUY VINH V TRAN/ Examiner's Signature		☐ Met after Allowance TT Initials	STATE OR COUNTRY JAPAN	SHEETS DRAWINGS 7	TOTAL CLAIMS 7 6	INDEPENDENT CLAIMS 2 1
ADDRESS OLIFF & BERRIDGE, PLC P.O. BOX 320850 ALEXANDRIA, VA 22320-4850 UNITED STATES						
TITLE ELECTRO-OPTICAL DEVICE, MATRIX SUBSTRATE, AND ELECTRONIC APPARATUS						
FILING FEE RECEIVED 1030	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:		☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit			

<i>Index of Claims</i> 	Application/Control No. 12219592	Applicant(s)/Patent Under Reexamination MATSUEDA ET AL.
	Examiner THUY VINH TRAN	Art Unit 2821

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant						☐ CPA		☐ T.D.		☐ R.1.47	
CLAIM		DATE									
Final	Original	09/30/2010	03/28/2011	08/24/2011	12/13/2011						
	1	✓	✓	-	-						
	2	✓	✓	-	-						
	3	✓	✓	-	-						
	4	✓	✓	-	-						
	5	✓	✓	-	-						
	6	✓	✓	-	-						
	7		✓	-	-						
	8		✓	-	-						
	9			=	=						
	10			=	=						
	11			=	=						
	12			=	=						
	13			=	=						
	14			=	=						
	15				=						

Issue Classification 	Application/Control No. 12219592	Applicant(s)/Patent Under Reexamination MATSUEDA ET AL.
	Examiner THUY VINH TRAN	Art Unit 2821

ORIGINAL						INTERNATIONAL CLASSIFICATION												
CLASS		SUBCLASS				CLAIMED					NON-CLAIMED							
313		505				H	0	1	J	1 / 62 (2006.01.01)								
CROSS REFERENCE(S)																		
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)																	
257	72	99																
313	506																	

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47															
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
-	1														
-	2														
-	3														
-	4														
-	5														
-	6														
-	7														
-	8														
1	9														
2	10														
5	11														
6	12														
7	13														
3	14														
4	15														

NONE		Total Claims Allowed:	
		7	
(Assistant Examiner)	(Date)		
/THUY VINH TRAN/ Primary Examiner.Art Unit 2821	12/13/2011	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	4

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
 or **Fax (571)-273-2885**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

25944 7590 12/19/2011
OLIFF & BERRIDGE, PLC
P.O. BOX 320850
ALEXANDRIA, VA 22320-4850

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/219,592	07/24/2008	Yojiro Matsueda	117390.01	6476

TITLE OF INVENTION: ELECTRO-OPTICAL DEVICE, MATRIX SUBSTRATE, AND ELECTRONIC APPARATUS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1740	\$300	\$0	\$2040	03/19/2012

EXAMINER	ART UNIT	CLASS-SUBCLASS
TRAN, THUY V	2821	313-505000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OK, alternatively, 1 Oliff & Berridge, PLC
 (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

Seiko Epson Corporation

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Tokyo, Japan

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☒ Issue Fee
☒ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number 15-0461 (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature Shahid Khan

Date March 19, 2012

Typed or printed name Shahid K. Khan

Registration No. 60,984

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Electronic Patent Application Fee Transmittal				
Application Number:		12219592		
Filing Date:		24-Jul-2008		
Title of Invention:		ELECTRO-OPTICAL DEVICE, MATRIX SUBSTRATE, AND ELECTRONIC APPARATUS		
First Named Inventor/Applicant Name:		Yojiro Matsueda		
Filer:		James Albert Oliff/Mariana Lennox		
Attorney Docket Number:		117390.01		
Filed as Large Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl issue fee	1501	1	1740	1740
Publ. Fee- early, voluntary, or normal	1504	1	300	300

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				2040

Electronic Acknowledgement Receipt	
EFS ID:	12336801
Application Number:	12219592
International Application Number:	
Confirmation Number:	6476
Title of Invention:	ELECTRO-OPTICAL DEVICE, MATRIX SUBSTRATE, AND ELECTRONIC APPARATUS
First Named Inventor/Applicant Name:	Yojiro Matsueda
Customer Number:	25944
Filer:	James Albert Oliff/Mariana Lennox
Filer Authorized By:	James Albert Oliff
Attorney Docket Number:	117390.01
Receipt Date:	19-MAR-2012
Filing Date:	24-JUL-2008
Time Stamp:	15:45:17
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$2040
RAM confirmation Number	2483
Deposit Account	150461
Authorized User	
<p>The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:</p> <p>Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)</p> <p>Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)</p>	

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	11739001_Issue_Fee-Trans.pdf	91208	no	1
			e5e0c079d1780decaecc416afe1498b5ea4be5f7		
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	32087	no	2
			89685487a7eb8433a6c5558fcb8a92b9e5682a36		
Warnings:					
Information:					
Total Files Size (in bytes):			123295		
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					



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www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/219,592	04/24/2012	8164267	117390.01	6476

25944 7590 04/04/2012
OLIFF & BERRIDGE, PLC
P.O. BOX 320850
ALEXANDRIA, VA 22320-4850

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment is 376 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site <http://pair.uspto.gov> for additional applicants):

Yojiro Matsueda, Chino-shi, JAPAN;
Hayato Nakanishi, Toyama-shi, JAPAN;

AO 120 (Rev. 08/10)

TO: Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
---	---

In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court _____ for the Eastern District of Texas, Marshall Division _____ on the following

☐ Trademarks or ☒ Patents. (☐ the patent action involves 35 U.S.C. § 292.);

DOCKET NO. 2:22-cv-00118	DATE FILED 4/18/2022	U.S. DISTRICT COURT for the Eastern District of Texas, Marshall Division
PLAINTIFF Element Capital Commercial Company PTE. LTD		DEFENDANT BOE Technology Group Co., Ltd; Beijing BOE Display technology Co., Ltd; and Motorola (Wuhan) Mobility Technologies Communication Co., Ltd.
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1 7,259,736	8/21/2007	Element Capital Commercial Company PTE. LTD
2 8,164,267	4/24/2012	Element Capital Commercial Company PTE. LTD
3 8,525,760	9/3/2013	Element Capital Commercial Company PTE. LTD
4		
5		

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading		
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK	
1			
2			
3			
4			
5			

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT		
CLERK	(BY) DEPUTY CLERK	DATE

Copy 1—Upon initiation of action, mail this copy to Director Copy 3—Upon termination of action, mail this copy to Director
 Copy 2—Upon filing document adding patent(s), mail this copy to Director Copy 4—Case file copy

AO 120 (Rev. 08/10)

TO: Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
---	---

In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court for the Eastern District of Texas, Marshall Division on the following

☐ Trademarks or ☒ Patents. (☐ the patent action involves 35 U.S.C. § 292.);

DOCKET NO. 2:22-cv-00118	DATE FILED 4/18/2022	U.S. DISTRICT COURT for the Eastern District of Texas, Marshall Division
PLAINTIFF Element Capital Commercial Company PTE. LTD		DEFENDANT BOE Technology Group Co., Ltd; Beijing BOE Display technology Co., Ltd; and Motorola (Wuhan) Mobility Technologies COmmunication Co., Ltd.
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1 7,259,736	8/21/2007	Element Capital Commercial Company PTE. LTD
2 8,164,267	4/24/2012	Element Capital Commercial Company PTE. LTD
3 8,525,760	9/3/2013	Element Capital Commercial Company PTE. LTD
4		
5		

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY		
	☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading		
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK	
1			
2			
3			
4			
5			

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT		
CLERK	(BY) DEPUTY CLERK	DATE

Copy 1—Upon initiation of action, mail this copy to Director Copy 3—Upon termination of action, mail this copy to Director
 Copy 2—Upon filing document adding patent(s), mail this copy to Director Copy 4—Case file copy