

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* TOKUROH OZAWA

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Appeal 2008-0347  
Application 10/457,446  
Technology Center 2600

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Decided: March 24, 2008

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Before KENNETH W. HAIRSTON, ROBERT E. NAPPI, and JOHN A. JEFFERY, *Administrative Patent Judges*.

NAPPI, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. §§ 134 and 6(b) of the Final Rejection of claims 1, 5, 9, and 10. Claims 2 through 4, 6 through 8, and 11 through 13 are not subject to a rejection before us.<sup>1</sup> We heard the

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<sup>1</sup> We note the Final Rejection identifies claims 1 through 13 as being rejected under the judicially created doctrine of Obviousness Double Patenting. However, a terminal disclaimer was filed in this application on July 21, 2004 obviating the rejection.

appeal on March 13, 2008. For the reasons stated *infra*, we reverse the Examiner's rejection of these claims.

At the outset we note, as identified by Appellant (Br. 2) and the Examiner (Answer 2), this appeal is related to an appeal in Application 10/367,849 (Appeal No. 2006-3013). On September 19, 2007, we issued a decision on that related appeal, reversing the Examiner and instituting a new rejection of the appealed claims. The issues on appeal in that application are substantially identical to the issues in this case. As in our September 19, 2007 decision on Application 10/367,849 (Appeal No. 2006-3013), we likewise reverse the Examiner's rejection.

However, as the Examiner is aware of our rejection in Application 10/367,849, we do not deem it necessary to institute a new rejection in the instant application under appeal. Our decision not to institute a new rejection of the claims in the current application should *not* be construed as finding that the claims are allowable. *See* MPEP § 1213.02.

## INVENTION

The invention is directed to an active matrix display. Specifically, it relates to a layout that optimizes the display. See page 1 of Appellant's Specification. Claim 1 is representative of the invention and reproduced below:

1. A display apparatus comprising:  
a plurality of scanning lines;  
a plurality of data lines;  
a plurality of power-feed lines; and

a plurality of pixels formed in display section, the plurality of pixels being formed corresponding to intersections of the plurality of scanning lines and the plurality of data lines, each pixel of the plurality of pixels comprising a first transistor, a second transistor, and a light-emission element having a pixel electrode and a counter electrode,

the first transistor being controlled by one scanning line of the plurality of scanning lines,

a gate electrode of the second transistor being at a potential corresponding to a signal supplied from one data line of the plurality of data lines through the first transistor, and

the light-emission element emitting a light when a current flows between the counter electrode and one power-feed line of the plurality of power-feed lines through the pixel electrode,

the line width of a portion of the one power-feed line being set to be wider than that of a portion of the one scanning line, and the portion of the one power-feed line and the portion of the one scanning line being in the display section.

## REFERENCES

The references relied upon by the Examiner are:

Utsugi	US 5,670,792	Sep. 23, 1997
Kawaguchi	US 5,670,994	Sep. 23, 1997
Dingwall	US 5,903,246	May 11, 1999

## REJECTIONS AT ISSUE

Claims 1, 5 and 9 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Dingwall in view of Kawaguchi. The Examiner's rejection is on pages 3 and 4 of the Answer.

Claim 10 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Dingwall in view of Kawaguchi and Utsugi. The Examiner's rejection is on page 4 of the Answer.

## ISSUES

Appellant contends that the Examiner's rejection under 35 U.S.C. § 103(a) is in error. Appellant argues that it is not obvious to modify Dingwall using Kawaguchi's teachings. Appellant reasons Kawaguchi involves liquid crystal devices which do not need a power feed line and that Kawaguchi teaches increasing the width of connecting terminals to reduce connection resistance and not line width within the display area as claimed. (Br. 10). Appellant argues that "Kawaguchi never discloses, teaches or suggests a line width of a portion of the one power-feed line being set to be wider than that of a portion of the one scanning line, the portion of the one power-feed line and the portion of the one scanning- line being in the display section, as set forth in independent claims 1, 5 and 9." (Br. 10 and 11)(emphasis omitted). Finally, Appellant argues that the Examiner's reasoning as to why one would be motivated to combine the references is based upon hindsight reasoning as the references do not provide the motivation asserted by the Examiner (Br. 12 and 13).

The Examiner asserts that the rejection is proper. The Examiner states that Kawaguchi was cited to show that the resistance of a power line will be reduced when the width of the power line is increased. (Answer 5). Further, the Examiner states:

Even though Kawaguchi does not teach a line width of a portion of the one power-feed line being set to be wider than that of a portion of the one scanning line, Kawaguchi teaches the width of power feed line would be increased in order to reduce the resistance of the power fee[d] line (see column 15, lines 24-32). There are only three width relationships between the power feed line and a scanning line in a display device: a) the width of power feed line is wider than a scanning line; b) the width of power feed line is same as a scanning line and c) the width of power feed line is narrower than a scanning line. Even though Dingwall does not point out the width relationship between the power feed line and a scanning line, Dignwall [sic] should choose the width of power feed line is wider than a scanning line lines to save more power without decrease a display area since the power supply lines(VDD) consume more power than the scanning lines since the power supply lines(VDD) needs [sic] to drive transistors(TR) and LEDs and the scanning lines(row lines) only drive transistors(T) (see Dingwall's figure 2 and Kawaguchi's column 15, lines 24-32) and this decision is generally recognized as being within in the level of ordinary skill in the art. On the other hand, there is no one or no rule to restrict that the power-feed line can not wider than a scanning line in a display device; and Dingwall can choose any one of the above three choices.

(Answer 5 and 6). Further in the statement of the rejection, the Examiner concludes that modifying Dingwall would be obvious since:

it is well known in the art that the resistance of a power supply line can be reduced by increasing the width of the power line according to the teaching of Kawaguchi et al and a formal [sic] of  $R=\psi I/A$ , wherein A is the cross sectional area; I is the length of the wire and  $\psi$  is the resistively of the material; the width of power supply lines are wider than the scanning lines would be save more power without decrease a display area since the power supply lines(VDD) consume more power than the scanning lines since the power supply lines(VDD) needs to drive transistors(TR) and LEDs and the scanning lines(row lines) only drive transistors(T) (see Dingwall's figure 2 and Kawaguchi's column 15, lines 24-32).

(Answer 4).

Thus, the issues before us are whether:

- a) the combination of Dingwall and Kawaguchi teaches or suggests a display where the power line portions on the display are wider than the data line portions as claimed;
- b) the combination of Dingwall and Kawaguchi teaches or suggests the advantages realized by the device;
- c) the Examiner has properly established that one skilled in the art would combine the teachings of Dingwall and Kawaguchi.

#### FINDINGS OF FACT

1. Dingwall teaches a circuit for driving a column of pixels in a display using organic light emitting diodes (O-LEDs). (Abstract).
2. Dingwall's circuit has scan lines (lines titled ROW\_1, ROW\_2, etc.), data lines (lines titled COL1, COL2, etc) and power feed lines (lines titled VDD). Fig. 2, column 4, lines 47-56.
3. At the intersection of each of the row and column lines (claimed scan and data lines) is a pixel circuit. The pixel circuit consists of two transistors a capacitor and O-LED (e.g. pixel P1 consists, of transistor T1, TR1, C1 and an O-LED). Dingwall, Fig. 2.
4. Each column (i.e. the claimed data line) also contains a reference pixel, or dummy pixel circuit. The reference pixel circuit contains a transistor and O-LED and is appended to the last pixel circuit in the column. Dingwall, Fig. 2 (items 212, PR), column 4, lines 57-60.

5. The reference pixel is used to establish the proper current for each pixel circuit in the column. The pixel circuits for the other pixels in the column mirror (via a current mirror) the current on the column line (claimed data line), i.e., the current draw from the power line by the other pixel circuits mirrors the current draw of the reference pixel circuit. Dingwall, column 4, lines 65-67, column 5, lines 11-24.

#### PRINCIPLES OF LAW

On the issue of obviousness, the Supreme Court has recently stated that “the obviousness analysis can not be confined by a formalistic conception of the words teaching, suggestion and motivation.” *KSR Int’l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1741 (2007). Further, the court stated “[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *Id.* at 1739.

When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. . . . [A] court must ask whether the improvement is more than the predictable use of prior art elements according to their established functions.

*Id.* at 1740. “One of the ways in which a patent’s subject matter can be proved obvious is by noting that there existed at the time of the invention a

known problem for which there was an obvious solution encompassed by the patent's claims." *Id.* at 1742.

## ANALYSIS

We will address the third issue first as it is dispositive of our holding to reverse the Examiner's rejection. Independent claim 1 recites a display apparatus which includes scanning, data and power lines, and these lines connect to a plurality of pixel circuits that contain two transistors and a light emission element. Claim 1 also recites that a portion of the power feed line, in the display section, is wider than the data line in the display section. Independent claims 5 and 9 recite similar limitations concerning the display.

The Examiner has found that it is well known that the resistance of a power line can be reduced by increasing the width of the power line. (Answer 4). The Examiner relies upon Kawaguchi for this teaching. (Answer 4). We concur with the Appellant that the teachings of Kawaguchi, which the Examiner's rejection cites, discuss making connection portions wider to decrease contact resistance and not making conductive lines on the display wider, as claimed. Nonetheless, we concur with the Examiner's underlying finding that it is well known in the art that the resistance of a power supply line can be reduced by increasing the width of the power line. *See, e.g.*, our September 19, 2007 decision in Appeal No. 2006-3013 (Application 10/367,849). Further, we concur with the Examiner's statement that there can only be three possible relationships between the size of the power lines and the data leads, i.e., they can either be the same size, narrower or wider. In our view, a skilled artisan would

choose the width of the power lead based upon the particular requirements of a given circuit arrangement (e.g., the current load on the circuit). Thus, we concur with the Examiner's finding that one skilled in the art would be motivated to size the lines on the display based upon the current load on the line.

However, we disagree with the Examiner's finding that, in Dingwall's display panel, sizing the line based upon the current would result in the power line being wider than the data line. The Examiner's rationale is that the data lead (COL1) only has the load of the transistor T1, and therefore has a lower current load than the power lead which has the load of transistors TR and the LED. (Answer 4). We disagree with the Examiner's finding. The data line also has the load of the reference pixel. (Fact 4). Further, Dingwall teaches that the pixel drive circuit which is powered by the power line is a current mirror, i.e. the current mirror caused the current in the power line to mirror (be the same) as the current in the data line. (Fact 5). Based upon the current being the same in both the data and the power line, we do not conclude that one skilled in the art would make the power lines wider based upon differences in the load on the lines. Thus, we do not reach the other issues a) and b), as, based upon this issue c), we will not sustain the Examiner's rejection of claims 1, 5, and 9 as unpatentable over Dingwall in view of Kawaguchi.

The Examiner's rejection of independent claim 10 similarly relies upon the combination of Dingwall in view of Kawaguchi and further adds Utsugi. Independent claim 10 recites limitations concerning the display, similar to those discussed with respect to claim 1. The Examiner has not

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found, nor do we find, that Utsugi teaches modifying the device of Dingwall and Kawaguchi to overcome the above-noted deficiency. Accordingly, we reverse the Examiner's rejection of claim 10 for the reasons discussed with respect to claim 1.

## CONCLUSION

Appellant's contentions have convinced us of error in the Examiner's rejections of claims 1, 5, 9 and 10 under 35 U.S.C. § 103(a), and we therefore reverse these rejections.

## ORDER

The decision of the Examiner is reversed.

REVERSED

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gvw

OLIFF & BERRIDGE, P.L.C.  
P. O. BOX 320850  
ALEXANDRIA, VA 22320