

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today
(1) was not written for publication in a law journal and
(2) is not binding precedent of the Board.

Paper No. 21

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ISAO TAKITA,
TSUTOMU FURUHASHI, HIROYUKI NITTA, TOSHIO FUTAMI
and
SATORU TSUNEKAWA

Appeal No. 1997-0830
Application 08/132,998¹

HEARD: November 16, 1999

¹ Application for patent filed October 7, 1993.

Appeal No. 1997-0830
Application 08/132,998

Before FLEMING, RUGGIERO and LALL, **Administrative Patent Judges**.

FLEMING, **Administrative Patent Judge**.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 5 through 18, 27 through 50, and 64 through 77, all of the claims pending in the present application. Claims 1 through 4, 19 through 26, and 51 through 63 have been cancelled.

The invention relates to a liquid-crystal driving circuit for use in a liquid-crystal display system.

Independent claim 64 is reproduced as follows:

64. A liquid-crystal display system for tonal displays, including:

a liquid-crystal panel having a plurality of scanning lines and a plurality of data lines;

a Y driver circuit by which one of the plurality of scanning lines to have a voltage applied thereto is selected, and which transmits the voltage to the selected one of the plurality of scanning lines;

Appeal No. 1997-0830
Application 08/132,998

an X driver circuit which is supplied with display data, and which transmits a voltage corresponding to the display data to each of the plurality of data lines;

a power source, which supplies voltages to the Y driver circuit and the X driver circuit, the supply voltages of the X driver circuit being n voltages having different n voltage levels;

a control signal generator circuit for generating a time signal which divides one horizontal scanning cycle into a first period and a subsequent second period;

wherein said X driver circuit includes a voltage divider circuit which generates m voltages having m different voltage levels from said n voltages of n different voltage levels

supplied from said power source ($n < m$, wherein n and m are integers greater than 2) and outputs a voltage selected from said m voltages; and

a control circuit, supplied with said time signal and a signal corresponding to said display data, which controls said voltage divider circuit so that a first voltage is selected from said m voltages in said first period, and a second voltage is selected in said second period from said m voltages, in response to said time signal and said signal corresponding to said display data, in a manner that a time constant, when said first voltage is output to the data lines, is smaller than a time constant when said second voltage is output to the data lines, said second voltage corresponding to said display data;

wherein said X driver circuit outputs said first voltage and said second voltage, as selected, to each of the data lines in said first period and said second period, respectively.

The Examiner relies on the following references:

Appeal No. 1997-0830
Application 08/132,998

Yamazaki	5,214,417	May 25, 1993
Takahara et al. (Takahara) (European Patent Application)	0,478,371	Apr. 1, 1992

Claims 64 through 77 stand rejected under 35 U.S.C. § 103 as being unpatentable over Yamazaki. Claims 27 through 50 stand rejected under 35 U.S.C. § 103 as being unpatentable over Takahara. Claims 5 through 10 and 13 through 18 stand rejected under 35 U.S.C. § 103 as being unpatentable over Yamazaki in view of Takahara.²

² We note that the Examiner in the final rejection rejected claims 5 through 18, 27 through 50, and 64 through 77 under 35 U.S.C. § 112, first paragraph, and rejected claims 11, 12 and 64 through 77 under 35 U.S.C. § 112, second paragraph. The Examiner has withdrawn these rejections as indicated in the advisory action of November 14, 1995. Thus, claims 11 and 12 have not been rejected on the record.

Appeal No. 1997-0830
Application 08/132,998

Rather than reiterate the arguments of Appellants and the Examiner, reference is made to the briefs³ and answers⁴ for the respective details thereof.

OPINION

We will not sustain the rejection of claims 5 through 10, 13 through 18, 27 through 50, and 64 through 77 under 35 U.S.C. § 103.

The Examiner has failed to set forth a ***prima facie*** case. It is the burden of the Examiner to establish why one having ordinary skill in the art would have been led to the claimed invention by the express teachings or suggestions found

³ Appellants filed an appeal brief on February 13, 1996. Appellants filed a reply brief on July 15, 1996. In the supplemental Examiner's answer mailed October 2, 1996, the examiner states that the reply brief has been entered and considered by the Examiner.

⁴ The Examiner filed an Examiner's answer on May 14, 1996. The Examiner filed a supplemental Examiner's answer on October 2, 1996.

Appeal No. 1997-0830
Application 08/132,998

in the prior art, or by implications contained in such teachings or suggestions. ***In re Sernaker***, 702 F.2d 989, 995, 217 USPQ 1, 6 (Fed. Cir. 1983). "Additionally, when determining obviousness, the claimed invention should be considered as a whole; there is no legally recognizable 'heart' of the invention." ***Para-Ordnance Mfg. v. SGS Importers Int'l, Inc.***, 73 F.3d 1085, 1087, 37 USPQ2d 1237, 1239 (Fed. Cir. 1995), ***cert. denied***, 519 U.S. 822 (1996) ***citing W. L. Gore & Assoc., Inc. v. Garlock, Inc.***, 721 F.2d 1540, 1548, 220 USPQ 303, 309 (Fed. Cir. 1983), ***cert. denied***, 469 U.S. 851 (1984).

Claims 64 through 77 stand rejected under 35 U.S.C. § 103 as being unpatentable over Yamazaki. On pages 5 through 8 of the brief, Appellants argue that Yamazaki fails to teach or suggest a control circuit for controlling the voltage divider circuit so that a first voltage is selected from said m voltages in said first period, and a second voltage is selected in said second period from said m voltages, in response to said time signal and said signal corresponding to said display data, in a manner that a time constant, when said first voltage is output to the data lines, is smaller than a

time constant when said second voltage is output to the data lines. Appellants point out that

independent claims 64, 67, 70 and 75 set forth the above limitations in that a voltage is applied to the pixels during the first time period having a smaller time constant than a second time period, thus enabling the voltage to be applied to the pixels at a high rate of speed.

The Examiner responds to Appellants' arguments on page 10 of the answer stating that this argument is not persuasive since none of the advantages presented by the Appellants is recited in the claims. On page 11 of the answer, the Examiner states that Yamazaki clearly suggests the claim limitations in that the selected voltage applied in period t6 of data signal has a time period smaller than the non-selected voltage applied in period T1-T6 as shown in figure 9a.

Appellants further argue on pages 3 through 5 of the reply brief that Yamazaki fails to teach or suggest providing a first voltage to the pixels during the first time period having a smaller time constant than the second time period.

Appeal No. 1997-0830
Application 08/132,998

The Examiner responds in the supplemental answer with the same argument as set forth in the Examiner's answer in that the advantages of the invention are not claimed and that Yamazaki clearly teaches that the first voltage has a time constant smaller than the second

voltage in that the first period is shown to be smaller in figure 9a of Yamazaki.

We note that Appellants' claim 64 recites

a control circuit . . . which controls said voltage divider circuit so that a first voltage is selected . . . and a second voltage is selected . . . in a manner that a time constant, when said first voltage is output to the data lines, is smaller than a time constant when said second voltage is output to the data lines.

We note that claim 67 recites similar claim language. Appellants recite in claim 70

a plurality of control circuits . . . selecting a first voltage in a manner that an output impedance of said voltage divider circuit is smaller in said first period than an output impedance in said second period.

Appeal No. 1997-0830
Application 08/132,998

We note that claim 75 recites a similar limitation.

On page 35 of Appellants' specification, lines 2 through 5, Appellants state that

since the liquid-crystal panel is a capacitive load, the charging/discharging time period thereof differs depending upon a resistance which intervenes between a capacitance portion and an external voltage.

On page 35, lines 5 through 7, of Appellants' specification, Appellants state that as the intervening resistance is higher,

the charging/discharging time period becomes longer. Thus, Appellants disclose that the first voltage is provided with a smaller time constant by controlling the voltage divider circuit so that the impedance is smaller in the first period than the impedance in the second period. Therefore, Appellants' claims 64, 67, 70 and 75 are providing a control circuit for controlling the voltage divider circuit in a manner that a voltage is applied to the pixels during the first time period having a smaller time constant than a second time period.

Appeal No. 1997-0830
Application 08/132,998

Upon our careful review of Yamazaki, we fail to find that Yamazaki teaches shortening the time constant or providing a smaller impedance during the first period. Turning to figure 9a, we agree with the Examiner that t_6 shows a smaller period than periods T1-T6. However, we fail to find that the Examiner has pointed to any evidence that Yamazaki teaches applying a voltage to the pixels during the first time period having a smaller time constant than a second time period. In addition, we fail to find that the Examiner has pointed to any evidence in Yamazaki that teaches a control circuit which controls the voltage divider circuit to select a first voltage in a manner that an output impedance of said voltage divider circuit is smaller in said first period than the output impedance in said second period. In addition, we fail to find that Yamazaki provides any suggestion to modify the Yamazaki circuits to provide these limitations.

The Federal Circuit states that "[t]he mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification." **In**

Appeal No. 1997-0830
Application 08/132,998

re Fritch, 972 F.2d 1260, 1266 n.14, 23 USPQ2d 1780, 1783-84 n.14 (Fed. Cir. 1992), *citing In re Gordon*, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984).

Therefore, we will not sustain the Examiner's rejection of claims 64 through 77 under 35 U.S.C. § 103.

Claims 27 through 50 stand rejected under 35 U.S.C. § 103 as being unpatentable over Takahara. On pages 14 through 16 of Appellants' brief, Appellants argue that Takahara fails to suggest the claimed first and second selector circuits as set forth in independent claims 27 and 35. In particular, Appellants point out that Takahara discloses first and second selector circuits 21 and 22 in figure 9b in parallel with one another. Appellants argue that independent claims 27 and 35 recite a first selector circuit and a second selector circuit connected in series and not in parallel.

On page 14 of the Examiner's answer, the Examiner responds to Appellants' arguments stating that the claims do not require the serial connection between first and second selectors. Appellants respond to the Examiner in the reply

Appeal No. 1997-0830
Application 08/132,998

brief stating that independent claims 27 and 35 require the output of the first selector circuit to be inputted into the second selector circuit. In particular, on page 10 of the reply brief, Appellants quote from claims 27 and 35 showing that the claimed language does require that the output of the first selector circuit is then inputted into the second selector circuit.

Upon our review of Appellants' claims 27 through 50, we agree with Appellants that the claims do require a serial connection between the first and second selector circuits in that they recite that the output of the first selector circuit is inputted into the second selector circuit. Turning to figure 9b of Takahara, we note that Takahara discloses a first selector circuit 21 and a second selector circuit 22 which are in parallel and thereby do not meet Appellants' claimed language. Therefore, we will not sustain the Examiner's rejection of claims 27 through 50 under 35 U.S.C. § 103.

Claims 5 through 10 and 13 through 15 stand rejected under 35 U.S.C. § 103. We find that Takahara fails to provide

Appeal No. 1997-0830
Application 08/132,998

the deficiencies of Yamazaki. Therefore, we will not sustain the Examiner's rejection of claims 5 through 10 and 13 through 15 for the same reasons as stated above.

In view of the foregoing, we have not sustained the rejection of claims 5 through 10, 13 through 18, 27 through 50 and 64 through 77 under 35 U.S.C. § 103. Accordingly, the Examiner's decision is reversed.

REVERSED

	MICHAEL R. FLEMING)	
	Administrative Patent Judge)	
)	
)	
)	BOARD OF
PATENT)	
	JOSEPH F. RUGGIERO)	APPEALS AND
	Administrative Patent Judge)	
INTERFERENCES)	
)	
)	
	PARASHOTAM S. LALL)	
	Administrative Patent Judge)	

Appeal No. 1997-0830
Application 08/132,998

MRF:psb

Appeal No. 1997-0830
Application 08/132,998

Antonelli, Terry, Stout & Kraus
Suite 1800
1300 North Seventeenth Street
Arlington, VA 22209