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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 19

UNITED STATES PATENT AND TRADEMARK OFFICE

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BOARD OF PATENT APPEALS
AND INTERFERENCES

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte SHUNPEI YAMAZAKI,
MASAAKI HIROKI, YASUHIKO TAKEMURA,
and EIJI SATO

Appeal No. 95-2048
Application 07/916,620[1]

HEARD: 4 December 1996

Before HARKCOM, Vice Chief Administrative Patent Judge, KRASS and TORCZON, Administrative Patent Judges.

TORCZON, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1-5 and 11-15 under 35 U.S.C. § 103. Appellants argue claims 1-5 separately from claims 11-15.

[1] Application for patent filed 22 July 1992. Appellants claim the benefit, pursuant to 35 U.S.C. § 119, of Japanese Patent Application 3-209870, filed 27 July 1991.

We reverse.

BACKGROUND

The subject matter of the invention is an opto-electrical display device with circuitry for compensating for variations in brightness. (Specification ("Sp") at 1.) A signal intended for display is modified by predetermined values for each pixel in the display to compensate for unavoidable variations in the display output.

Claim 1 defines the invention as a method:

1. A method of driving a liquid crystal electro-optical display device comprising the steps of:

multiplying digital original data by digital amendment data which are dependent on addresses of pixels of said liquid crystal electro-optical display device in order to compensate for variation of electric characteristics of said pixels; and

sending the products of said digital original data and said digital amendment data to said pixels to drive said pixels

Claim 11 defines the invention as an apparatus:

11. An electro-optical device comprising:

an active matrix liquid crystal electro-optical device;

a memory device comprising storage regions each of which stores data therein;

a device for converting an analog image signal into a digital image signal; and

an arithmetic unit for amending said digital image signal in accordance with the data stored in said storage regions to compensate for different responses of pixels of said electro-optical device with respect to a predetermined voltage being applied to each of said pixels.

The examiner relied on the following reference in support of the rejection under section 103:

Kanayama	4,897,639	Jan. 30, 1990

Kanayama teaches the use of a compensation circuit to compensate for variations in light intensity in a light-emitting diode ("LED") array. First, a compensation value is determined for each LED and stored in look-up table. This value is used to modify a signal sent to the LED to adjust the length of the signal. The signal is modified bit-by-bit using shift registers and logical AND gates. The brightness of the LED is thus modulated as a function of the period during which current is supplied. (cols. 5-6.) Kanayama does not teach the use of a liquid crystal display (LCD), an active matrix LCD, an analog-to-digital converter (ADC), or multiplier circuitry.[2]

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[2] In their reply brief, appellants provide an undated (continued...)

DISCUSSION

Appellants argue that Kanayama is not analogous art and that one of ordinary skill would not have been motivated to modify Kanayama to produce the claimed inventions. We have considered the briefs of the appellants and the examiner and the evidence of record and incorporate them by reference. We find Kanayama to be analogous, but find insufficient motivation for all of the modifications necessary to meet the language of the claims.

"In order to rely on a reference as a basis for rejection of the applicant's invention, the reference must either be in the field of the applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned." In re Oetiker, 977 F.2d 1443, 1447, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992) (citing In re Deminski, 796 F.2d 436, 442, 230 USPQ 313, 325 (Fed. Cir. 1986)). Appellants urge that one skilled in the LCD art would not look to the LED recorder art. This is too narrow a view of what constitutes analogous art. As the Court of Appeals for the Federal Circuit has noted, it is

[2](...continued)
reference showing that multiplier circuits are well-known in the art.

sufficient for the art to be reasonably pertinent to the particular problem facing the inventor. In the present case, both appellants and Kanayama are principally concerned with providing a compensating circuit in opto-electrical devices. Although appellants point to a number of differences in LCD and LED circuitry, none would prevent the use of a solution like Kanayama's compensation circuit in an LCD context.[3] Even appellants' argument that an active-matrix LCD requires different circuitry is misplaced since Kanayama's specific circuit need not be physically integrated into an LCD device. In re Etter, 756 F.2d 852, 859, 225 USPQ 1, 6 (Fed. Cir. 1985).

Although we find Kanayama to be analogous art, the burden remains with the examiner to show a motive to modify the art. In re Fritch, 972 F.2d 1260, 1265, 23 USPQ2d 1780, 1783 (Fed. Cir. 1992). It is not sufficient that one skilled in the art *could* have modified Kanayama; rather, the state of the art at the time must suggest the desirability of the modification. In re Beattie, 974 F.2d 1309, 1312, 24 USPQ2d 1040, 1042 (Fed. Cir.

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[3] Indeed, appellants' note in their specification that the scope of their invention is not limited to LCD technology. (Sp.18.)

1992). Nothing in Kanayama, alone or in the context of the examiner's averments about the state of the art at the time of this invention, teaches or suggests modification of Kanayama's compensation circuit to use LCDs, a multiplier, or an ADC. Without a suggestion to make these substitutions, we cannot sustain the rejection under section 103.

The examiner argues that Kanayama's AND function directly teaches appellants' multiplied digital signals in claim 1. Claim 1 is written in step-plus-function language, but both the claim and the specification clearly call for multiplying. (Claim 1 & Sp.8.) An AND gate and a multiplier perform different functions in significantly different ways. Thus, the substitution of a multiplier for an AND gate would require modification of Kanayama's circuit beyond the scope of equivalents permitted under 35 U.S.C. § 112 ¶ 6. Valmont Indus. v. Reinke Mfg., 983 F.2d 1039, 1042, 25 USPQ2d 1451, 1454 (Fed. Cir. 1993).

The other missing elements, the examiner argues, were well known at the time of the invention. Assuming, *arguendo*, the

examiner is correct, there is still no suggestion that all of the necessary substitutions would be desirable. Without this suggestion, the subject matter of the invention would not have been obvious.

CONCLUSION

For the reasons stated above, the examiner's decision to reject claims 1 through 5 and 11 through 15 under 35 U.S.C. § 103 is reversed.

REVERSED

GARY V. HARKCOM, Vice Chief Administrative Patent Judge	)
ERROL A. KRASS Administrative Patent Judge	) BOARD OF PATENT APPEALS AND INTERFERENCES
RICHARD TORCZON Administrative Patent Judge	)

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