

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 14

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte NEIL C. BIRD and
ALAN G. KNAPP

Appeal No. 96-1378
Application 08/096,626¹

ON BRIEF

Before MARTIN, BARRETT and LEE, Administrative Patent Judges.

MARTIN, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision in an appeal under 35 U.S.C. ' 134 from the examiner's final rejection of claims 1-23, which are all of appellants' pending claims, under 35 U.S.C. '' 103 and 103. We reverse.

The claimed invention relates to active matrix display devices having display elements which are controlled by respective TFTs (TFT means Thin Film Technology). In the prior art display devices described in appellants' specification (at 1-2), digital video signals are converted to analog signals which are applied to the column conductors via the TFTs, which operate as

¹ Application for patent filed July 21, 1993.

switches to transfer analog voltages to the display elements. In appellants invention, the digital video signals are converted to pulse width signals that control TFTs which are biased to operate as current sources, thereby causing the display elements to be charged to voltage levels determined by the duration of the respective pulse width signals.

Claim 1, which is representative, reads as follows:

1. A method of driving an active matrix display device having sets of row and column conductors and an array of display elements each comprising first and second electrodes with electro-optical material therebetween, the first electrodes being connected to the drain of a respective TFT whose source and gate are connected respectively to a column and a row conductor, in which selection signals are applied to the row conductors and in which video information signals are converted into corresponding time dependent signals, characterised in that the time dependent signals are applied to the column conductors and in that during the application of a selection signal to a row of TFTs the TFTs are biased to act as current sources such that their associated display elements are charged to a level dependent on the duration of the applied time dependent signal.

The examiner relies on the following references:

Ohwada et al. (Ohwada)	4,750,813	Jun. 14, 1988
Young	5,095,304	Mar. 10, 1992

A. The ' 102(b) rejection

Claims 1-12 and 16-23 stand rejected under 35 U.S.C. ' 102(b) as anticipated by Young. Since appellants have indicated (Brief at 7) that all of these claims stand or fall together, we will consider only claim 1.

Young discloses a matrix display device whose construction permits a pair of rows of display elements 12 to share a single row conductor 14. Referring to Figure 1, this is accomplished by using n-channel TFTs 11 and p-channel TFTs 12 to control the display devices in the upper and lower rows, respectively, of each pair, thereby permitting the upper row to be selected by applying a positive pulse to the conductor and the lower row to be selected by a negative pulse (Fig. 2). We do not agree with the examiner that Young

anticipates the claim. Even assuming for the sake of argument that the video voltages stored in analog shift register 22 and applied in parallel to the column conductors can be considered to be "time dependent signals" (i.e., each stored voltage took a different amount of time to reach its position in the shift register), Young does not use the TFTs as current sources for charging the display elements to levels dependent on the duration of the applied time dependent signals, as required by the claim. Instead, the TFTs apply analog voltages to the display elements for fixed time intervals which correspond to the row selection time period TL (Fig. 2). Young explains that "each switching transistor 11 of the addressed row is switched on for a time T1 ["TL" in Fig. 2] during which the video information signals are transferred from the column conductors 15 to the display elements 12" (col. 5, lines 22-26) and that "[t]he gating signals applied to Ri comprise a positive pulse which turns on the row of n-channel TFTs enabling their associated picture elements to be loaded with [the] video signal voltage[s] then present on the column conductors 15" (col. 6, lines 31-36).

For the foregoing reason, the ' 102(b) rejection of claim 1 is reversed, as is the ' 102(b) rejection of claims 2-12 and 16-23, which stand or fall therewith.

B. The ' 103 rejection

Dependent claims 13-15 stand rejected under 35 U.S.C. ' 103 as being unpatentable over Young considered with Ohwada. In view of appellants' indication that these claims stand or fall together (Brief at 7), we will consider only claim 13, which calls for resetting the TFTs to a predetermined level prior to biasing them for current source operation. Ohwada does not cure the above-noted deficiency in Young with respect to claim 1, on which claim 13 depends through claim 2. As a result, the rejection of claims 13 is

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reversed, as is the rejection of claims 14 and 15, which stand or fall
therewith.

REVERSED

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JOHN C. MARTIN)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
LEE E. BARRETT)	
Administrative Patent Judge)	APPEALS AND
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)	INTERFERENCES
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