

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte KWANG-JO HWANG*

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Appeal 2008-5254  
Application 11/287,188  
Technology Center 2800

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Decided: December 22, 2008

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Before BRADLEY R. GARRIS, ADRIENE LEPIANE HANLON, and  
CHARLES F. WARREN, *Administrative Patent Judges*.

HANLON, *Administrative Patent Judge*.

DECISION ON APPEAL

A. STATEMENT OF THE CASE

This is an appeal under 35 U.S.C. § 134 from an Examiner's final rejection of claims 2, 5-11, and 14-17, all of the claims pending in the application.<sup>1</sup> We have jurisdiction under 35 U.S.C. § 6(b). We REVERSE.

The following Examiner's rejection is before us for review:

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<sup>1</sup> Claims 1, 4, 12, and 13 were also finally rejected but were cancelled in an "Amendment in Response to Final Office Action" dated February 21, 2007.

Claims 2, 5-11, and 14-17 are rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of the Appellant's Admitted Prior Art<sup>2</sup> and Hirano.<sup>3</sup>

The subject matter on appeal relates to a thin film transistor (TFT) comprising an active layer and a channel formed in the active layer. The channel has a length of less than 3 µm which is said to allow the amount of charge current supplied to the pixels to be increased. *See Spec. [0001].*

Claim 8 is representative of the issue on appeal, and it reads as follows:

8. A thin film transistor (TFT) for a liquid crystal display (LCD), comprising:

a substrate with a gate electrode thereon;

an active layer formed above the gate electrode;

a source and a drain formed above the gate electrode;

a channel formed in the active layer, said channel having a length of less than 3 µm; and

a pixel electrode electrically connected with the drain so that charge current from the gate electrode can be supplied to the pixel electrode via the channel,

wherein a lateral side of the active layer is exposed without being covered by the source and the drain.

App. Br. 14-15, Claims Appendix.<sup>4</sup>

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<sup>2</sup> The Appellant's Admitted Prior Art ("APA") is paragraphs [0002] through [0016] and Figures 1A-1D and 2 in the Appellant's Specification.

<sup>3</sup> US 5,652,159 issued to Hirano on July 29, 1997.

<sup>4</sup> Appeal Brief dated June 29, 2007.

B. ISSUE

Has the Appellant shown that the Examiner reversibly erred in concluding that it would have been obvious to one of ordinary skill in the art to reduce the length of the channel disclosed in the APA device in view of the teachings in Hirano?

C. ANALYSIS

Referring to Figure 1D of the Appellant's Specification, the Examiner found that the APA discloses a TFT for a liquid crystal display comprising a substrate **1** with a gate electrode **2** thereon, an active layer **4, 5** formed above the gate electrode **2**, a channel formed in the active layer, and a source **6A** and a drain **6B**. The Examiner also found that the APA discloses that a lateral side of the active layer is exposed without being covered by the source **6A** and the drain **6B**. Ans. 3-4.<sup>5</sup>

The Examiner found that the APA device does not have a channel length less than 3  $\mu\text{m}$  as required by the claims on appeal. Ans. 3-4. However, referring to Hirano Figures 11E and 12, the Examiner found that Hirano discloses a TFT having a channel length less than 3  $\mu\text{m}$ . The Examiner concluded that it would have been obvious to one of ordinary skill in the art to reduce the channel length of the APA device in view of the teachings of Hirano. Ans. 3-4.

The Appellant argues that one of ordinary skill in the art would not have been motivated to use the method of Hirano to reduce the length of the channel in the APA device because the Hirano method eliminates a feature

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<sup>5</sup> Examiner's Answer dated November 2, 2007.

of the claimed device, i.e., an exposed lateral side of the active layer. App. Br. 8.

The Examiner does not directly respond to the Appellant's argument. Rather, citing *In re Merck & Co., Inc.*, 800 F.2d 1091 (Fed. Cir. 1986), and *In re Keller*, 642 F.2d 413 (CCPA 1981), the Examiner merely points out that "one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references." Ans. 5.

We recognize that the test for obviousness is what the combined teachings of the references would have suggested to one of ordinary skill in the art. *Keller*, 642 F.2d at 425. That being said, the Examiner bears the initial burden of showing that the combined teachings of the references would have suggested the claimed subject matter to one of ordinary skill in the art. *In re Piasecki*, 745 F.2d 1468, 1472 (Fed. Cir. 1984).

The subject matter on appeal is directed to a TFT comprising a channel having a length less than 3  $\mu\text{m}$  formed in the active layer of the device wherein a lateral side of the active layer is exposed without being covered by the source and the drain.

In describing the background of the art, the Appellant recognizes that it would be desirable to shorten the channel in a TFT. Spec., para. [0002]. However, the Appellant discloses that conventional techniques render it impossible or at least very difficult to fabricate a TFT having a channel length less than 4  $\mu\text{m}$ . See Spec., paras. [0003], [0014].

Hirano discloses a method for fabricating a TFT. The Examiner found that the TFT has a channel length less than 3  $\mu\text{m}$ . However, the Examiner did not find that the Hirano device has an exposed active layer as claimed.

On the record before us, the Examiner has failed to specifically explain how the method disclosed in Hirano could be used to make the conventional TFT illustrated in Appellant's Figure 1D wherein a lateral side of the active layer is exposed without being covered by the source and the drain. For this reason, it appears that one of ordinary skill in the art would have been discouraged from following the teachings of Hirano to shorten the channel of the APA device. *See In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994) (discussing "teaching away"). Thus, the record contains no prima facie case that the combined teachings of the APA and Hirano would have reasonably suggested the claimed subject matter to one of ordinary skill in the art.

D. CONCLUSION OF LAW

The Appellant has shown that the Examiner reversibly erred in concluding that it would have been obvious to one of ordinary skill in the art to reduce the length of the channel disclosed in the APA device in view of the teachings in Hirano.

E. DECISION

The rejection of claims 2, 5-11, and 14-17 under 35 U.S.C. § 103(a) as unpatentable over the combination of the APA and Hirano is reversed.

REVERSED

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