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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 20

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte PAUL G. CAREY, PATRICK M. SMITH
THOMAS W. SIGMON and RANDY C. ACEVES

Appeal No. 2001-2042
Application No. 09/025,006[1]

ON BRIEF

Before PAK, WALTZ and DELMENDO, Administrative Patent Judges.

PAK, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134 from the examiner's refusal to allow claims 17, 18 and 23-33 which are all the claims pending in this application. Claim 33 has been amended after the final office action dated August 1, 2000, Paper No. 14.

[1] Application for patent filed February 17, 1998.

APPEALED SUBJECT MATTER

The subject matter on appeal is directed toward a thin film transistor on a low-temperature plastic substrate. Details of the appealed subject matter are provided in representative claim 17 below:

17. A thin film transistor, consisting of:

a substrate composed of low-temperature plastic,

said low-temperature plastic substrate being not capable of withstanding sustained processing temperatures greater than about 250^0C,

an insulating layer of SiO_2 on the plastic,

a layer of silicon on the insulating SiO_2 layer, said layer of silicon being composed of sections of doped silicon and undoped silicon,

said layer of silicon including sections of poly-silicon,

a gate dielectric layer of SiO_2 on at least a section of the layer of silicon,

a layer of gate metal on at least a section of the gate dielectric layer of SiO_2,

a layer of oxide on sections of said layer of silicon and said layer of gate metal, and

metal contacts on sections of said layer of silicon and said layer of gate metal, defining source, gate, and drain contacts and interconnects.

PRIOR ART

The examiner relies on the following prior art references:

Kaschmitter et al. (Kaschmitter)	5,346,850	Sep. 13, 1994
Kwo	5,523,587	Jun. 4, 1996

The appellants' admission at page 9 of the specification (hereinafter referred to as "admitted prior art").

REJECTIONS

1) Claims 17,18, and 23-33 under 35 U.S.C. § 103 as unpatentable over the combined teachings of Kaschmitter and Kwo; and

2) Claims 17, 18, and 23-33 under 35 U.S.C. § 103 as unpatentable over the combined teachings of Kaschmitter, Kwo and the admitted prior art.

OPINION

We have carefully reviewed the arguments presented by both the examiner and the appellants in support of their respective positions. In so doing, we find ourselves in agreement with the appellants that the examiner has not established a *prima facie* case of obviousness within the meaning of 35 U.S.C. § 103. Accordingly, we reverse the examiner's Section 103 rejections and remand this application to the examiner for appropriate action consistent with our instructions below. Our reasons for this determination follow.

The examiner correctly finds that Kaschmitter discloses a low temperature plastic substrate wherein the plastic substitute is incapable of withstanding sustained processing temperatures of higher than about180^{o}C. coated with an insulating layer of SiO_2. See the Answer, page 2, together with Kaschmitter, column 2. Although Kaschmitter indicates that this substrate can be used to form thin-film devices, inclusive of thin film transistors, it does not specify employing the claimed silicon layer, gate dielectric layer, gate metal layer, oxide layer and metal contacts. See, e.g., column 2, lines 47-52 in conjunction with column 1, lines 25-30.

To remedy these deficiencies, the examiner asserts that such features are well known thin-film transistor features[2] as shown by Kwo. See the Answer, pages 3, 4 and 10. The dispositive

[2] The examiner cannot take official notice of these asserted technical facts since they are directed to "specific 'knowledge' of the prior art, which might be peculiar to a particular art". *In re Ahlert*, 424 F.2d 1088, 1091, 165 USPQ 418, 420 (CCPA 1970). That is, we determine that the so-called "well known thin film transistor features" are directed to specific prior art

(continued...)

question is, therefore, whether employing the above missing transistor features taught in Kwo in the low-temperature plastic substrate of the type described in Kaschmitter would have been within the ordinary skill of one in this art.[3] On this record, we answer this question in the negative.

As our reviewing court has often stated, "virtually all [inventions] are combinations of old elements." *Environmental Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 698, 218 USPQ. 865, 870 (Fed. Cir. 1983); *see also Richdel, Inc. v. Sunspool Corp.,* 714 F.2d 1573, 1579-80, 219 USPQ 8, 12 (Fed. Cir. 1983) ("Most, if not all, inventions are combinations and mostly of old elements.") If identification of each claimed element in the prior art alone were sufficient to negate patentability, very few patents would ever issue. Therefore, "[w]hen determining the patentability of a claimed invention which combines two known elements, 'the question is whether there is something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination.'" *See In re Beattie*, 974 F.2d 1309, 1311-12, 24 USPQ2d 1040, 1042 (Fed. Cir. 1992) (*quoting Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 1462, 221 USPQ 481, 488 (Fed. Cir. 1984)).

Here, as indicated *supra*, Kaschmitter teaches, *inter alia*, the deposition of an amorphous silicon layer over a low-temperature plastic substrate that can only withstand process temperatures of up to 180^0 C. See column 2, lines 24-30. Although Kwo discloses the remaining thin film transistor features recited in claim 17, see Kwo, Figure 4, it teaches using

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[2](...continued)
knowledge which is peculiar to the thin film transistor art. *Compare Ahlert*, 424 F.2d at 1091, 165 USPQ at 420-21.

[3] The admitted prior art is not relied upon to cure these deficiencies.

those features together with a zirconium oxide layer (rather than an amorphous silicon layer as taught by Kaschmitter), see Kwo, column 1, lines 30-35 and lines 49-55. It is apparent from the disclosure of Kwo that its invention resides in employing a zirconium oxide layer, which is deposited at 300ºC to a plastic or glass substrate. See Kwo, column 1, line 49 to column 2, line 11 and column 2, lines 35-64. Therefore, we determine that Kwo not only teaches away from depositing an amorphous silicon layer, but also suggests using a plastic substrate capable of withstanding a temperature higher than that taught in Kaschmitter. Thus, we are of the view that one of ordinary skill in the art would not have been led to arrive at the claimed invention based on the combined teachings of Kaschmitter and Kwo. To combine the above features in the manner suggested by the examiner is to destroy the invention on which Kwo is based. *See Ex parte Hartmann*, 186 USPQ 366, 367 (Bd. App. 1974). It follows that the examiner has not carried the initial burden of establishing a *prima facie* case of obviousness.

OTHER ISSUE

As indicated *supra*, Kaschmitter discloses a low temperature plastic substrate incapable of withstanding sustained processing temperatures of higher than about 180º C., which is provided with an insulating layer of SiO_2. See the Answer, page 2, together with Kaschmitter, column 2. Although Kaschmitter does not specify employing the claimed thin film transistor features, i.e., the claimed silicon layer, gate dielectric layer, gate metal layer, oxide layer and metal contacts, it specifically teaches that its substrate can be used to form thin-film devices, such as thin film transistors. See, e.g., column 2, lines 47-52 in conjunction with column 1, lines 25-30. Kaschmitter then refers to those conventional thin film transistors in various prior art references at column 1, lines 25-40.

Upon return of this application, the examiner is advised to review those prior art references cited in Kaschmitter, column 1, lines 25-40 to determine whether they, together with Kaschmitter, affect the patentability of the claimed subject matter.

CONCLUSION

For the reasons set forth above, we reverse the examiner's Section 103 rejections and remand this application to the examiner to determine the patentability of the claimed subject matter therein based on the above-mentioned prior art references.

This application, by virtue of its "special" status, requires an immediate action. Manual of Patent Examining Procedure § 708.01 (7th ed., rev. 1, February 2000). It is important that the Board be informed promptly of any action affecting the appeal in this case.

REVERSED/REMANDED

CHUNG K. PAK Administrative Patent Judge	)	
THOMAS WALTZ Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
ROMULO DELMENDO Administrative Patent Judge	)	

CKP/dal

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