

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 24

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MASUMITSU INO and TOSHIKAZU MAEKAWA

Appeal No. 2002-0128
Application No. 08/878,588

HEARD: FEBRUARY 5, 2003

Before KRASS, RUGGIERO, and BARRY, Administrative Patent Judges.
RUGGIERO, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on the appeal from the final rejection of claims 1-6 and 17-22, which are all of the claims pending in the present application. Claims 7-16 have been canceled.

The claimed invention relates to a process for fabricating a thin film semiconductor in which a laser annealing treatment is used to locally heat and melt a semiconducting thin film on an insulating substrate. During a cooling step, the thin film

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crystalizes and forms thin film transistors arranged with a specific pitch in a lateral direction. More particularly, the laser annealing treatment involves moving a laser beam, formed in a band shape, relative to the insulating substrate in a lateral direction with a specific movement pitch to form partially overlapping irradiated regions. According to Appellants (specification, pages 10-13), in order to ensure that the overlapping irradiated regions where crystal defects are likely to occur are not formed in the active layers of the transistors, the laser beam is moved at a movement pitch in the lateral direction which is set at value which is equal to or an integer multiple of the arrangement pitch of the transistors.

Claim 1 is illustrative of the invention and reads as follows:

1. A process of fabricating a thin film semiconductor device, comprising the steps of:

- forming a semiconducting thin film on the surface of an insulating substrate to spread in both a longitudinal direction and a lateral direction;

- laser-annealing the semiconductor thin film by intermittently irradiating a pulsed laser beam formed in a band-shape along the longitudinal direction of the insulating substrate to cause crystallizing of the semiconducting thin film; and

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OPINION

We have carefully considered the subject matter on appeal, the rejection advanced by the Examiner, the arguments in support of the rejection and the evidence of obviousness relied upon by the Examiner as support for the rejection. We have, likewise, reviewed and taken into consideration, in reaching our decision, Appellants' arguments set forth in the Briefs along with the Examiner's rationale in support of the rejection and arguments in rebuttal set forth in the Examiner's Answer.

It is our view, after consideration of the record before us, that the evidence relied upon and the level of skill in the particular art would not have suggested to one of ordinary skill in the art the invention as set forth in claims 1-6 and 17-22. Accordingly, we reverse.

In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the Examiner to establish a factual basis to support the legal conclusion of obviousness. See In re Fine, 837 F.2d 1071, 1073-74, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the Examiner is expected to make the factual determinations set forth in Graham v. John Deere Co., 383 U.S. 1, 17-18, 148 USPQ 459, 467 (1966), and to provide a reason why one

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having ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir.), cert. denied, 488 U.S. 825 (1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985), cert. denied, 475 U.S. 1017 (1986); ACS Hosp. Sys., Inc. v. Montefiore Hosp., 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). These showings by the Examiner are an essential part of complying with the burden of presenting a prima facie case of obviousness. Note In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992).

With respect to the Examiner's 35 U.S.C. § 103(a) rejection of independent claims 1 and 17 based on Chae, Appellants assert that the Examiner has failed to establish a prima facie case of obviousness since all of the limitations of claims 1 and 17 are not taught or suggested by the applied Watanabe reference. In particular, Appellants contend (Brief, page 16; Reply Brief,

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pages 5 and 6), that Chae lacks any teaching or suggestion of the movement of the laser beam with a movement pitch that is related to the arrangement pitch of the transistors.

After careful review of the Chae reference, in light of the arguments of record, we are in general agreement with Appellants' position as stated in the Briefs. We find no disclosure in Chae of any relationship between the movement pitch of the scanning beam and the arrangement pitch of the transistors on the substrate, let alone the particular relationship set forth in independent claims 1 and 17. Although the Examiner suggests (Answer, pages 4 and 9) the inherency of controlling the movement pitch of the scanning beam in Chae so that overlapping regions do not fall in the channel region of the transistor, we find no evidence on the record to support such an assertion. To establish inherency, evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference and would be recognized as such by persons of ordinary skill. In re Robertson, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999) citing Continental Can Co. v. Monsanto Co., 948 F.2d 1264, 1268, 20 USPQ2d 1746, 1749 (Fed. Cir. 1991). "Inherency, however, may not be established by

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probabilities or possibilities. The mere fact that a certain thing *may* result from a given set of circumstances is not sufficient." Id. citing Continental, 948 F.2d at 1269, 20 USPQ2d at 1749.

We further find to be unfounded the Examiner's reliance on the illustrations in Figures 5 and 9 of Chae as supporting the conclusion that the beam movement pitch and transistor arrangement pitch are related as in Appellants' claims. Although Chae's Figure 5b shows the defect regions as falling outside of the transistor channel regions in the particular illustrated transistors, there is no indication anywhere in Chae that this will occur throughout the transistor layout on the substrate or would occur as a result of the control of beam movement pitch in a particular relationship to transistor arrangement pitch. Similarly, in our view, the Figure 9 illustration in Chae does not support the Examiner's assertion, since it merely illustrates the overlapping boundary regions spaced apart according to the movement pitch of the beam. The Examiner must not only make requisite findings, based on the evidence of record, but must also explain the reasoning by which the findings are deemed to

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support the asserted conclusion. See In re Lee, 277 F.3d 1338, 1343, 61 USPQ2d 1430, 1433-34 (Fed. Cir. 2002).

Since all of the claim limitations are not taught or suggested by the applied prior art, it is our opinion that the Examiner has not established a prima facie case of obviousness with respect to the claims on appeal. Accordingly, we do not sustain the Examiner's 35 U.S.C. § 103(a) rejection of independent claims 1 and 17, nor of claims 2-6 and 18-22 dependent thereon. Therefore, the Examiner's decision rejecting claims 1-6 and 17-22 is reversed.

REVERSED

ERROL A. KRASS)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
JOSEPH F. RUGGIERO)	APPEALS AND
Administrative Patent Judge)	INTERFERENCES
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LANCE LEONARD BARRY)	
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