

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 12

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte HUNTER B. BRUGGE

Appeal No. 96-1179
Application 08/190,622¹

ON Brief

Before KIMLIN, METZ and WALTZ, Administrative Patent Judges.

KIMLIN, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1, 2, 7 and 8. The examiner's final rejection of claims 3-6 and 9-11, the other claims remaining in the present application, has been

¹Application for patent filed February, 1, 1994.

withdrawn.² Claims 3-6 and 9-11 have been indicated to be allowable by the examiner. Claim 1 is illustrative:

1. A system for sputtering material on a substrate, said system comprising:

a chamber for establishing and confining a plasma;

a target holder for holding a target of material to be sputtered within said chamber;

a wafer holder for holding a wafer on which said material is to be sputtered, said wafer being held within said chamber;

a collimator for blocking atoms moving relatively obliquely toward said wafer and permitting atoms moving relatively orthogonal to said wafer to reach said wafer, said atoms being of said material and being dislodged from said target by said plasma; and

drive means for moving and removing said collimator into and out of a position between said target and said wafer;

whereby,

when said collimator is not between said target and said wafer, atoms with relatively oblique trajectories and atoms with relatively orthogonal trajectories are deposited on said wafer, and

when said collimator is between said target and said wafer, a greater proportion of the atoms

²See page 3 of the Answer.

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deposited on said wafer arrive with orthogonal trajectories.

The examiner relies upon the following references as evidence of obviousness:

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| Hanfmann 1975 | 3,904,503 | Sep. 09, |
| Riley 1976 | 3,939,052 | Feb. 17, |
| Ohji et al. (Ohji) 16, 1982 | 4,315,960 | Feb. |
| Talieh et al. (Talieh) 1992 | 5,171,412 | Dec. 15, |

Appellant's claimed invention is directed to a system for sputtering material on a substrate comprising a drive means for moving and removing a collimator into and out of a position between the target, which is the source of plasma atoms, and the wafer onto which the sputtered atoms are deposited. The system is used to effect a first, collimated deposition step and a second, non-collimated deposition step.

Appellant's principal and reply briefs fail to set forth an argument that can be reasonably considered to be specific to any of the rejected claims 1, 2, 7 and 8. Accordingly, the

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appealed claims stand or fall together with claim 1. In re Nielson, 816 F.2d 1567, 1572, 2 USPQ2d 1525, 1528 (Fed. Cir. 1987); Ex parte Schier, 21 USPQ2d 1016, 1018-19 (Bd. Pat. App. & Int. 1991). See also 37 CFR 1.192 c(7) and c(8).

Appealed claims 1, 2, 7 and 8 stand rejected 35 U.S.C. § 103 as being unpatentable over Talieh in view of either of Hanfmann, Ohji or Riley.

We have thoroughly reviewed each of appellant's arguments for patentability as they appear in the principal and reply briefs. However, we concur with the examiner that the claimed subject matter would have been obvious to one of ordinary skill in the art within the meaning of § 103 in view of the applied prior art. Accordingly, we will sustain the examiner's rejection for essentially those reasons expressed in the Answer.

Appellant states the following at page 12 of the principal brief:

The major elements of Claim 1 are a chamber, a target holder, a wafer holder, a collimator, and a drive means. Appellant hereby stipulates that the first five elements,

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considered independently of the sixth, read on elements disclosed or suggested by Talieh. It should be understood however, that the recitation of the drive means implies limitations that the chamber accommodate the drive means and that the collimator be mobile. Appellant further stipulates that the words in the preamble (before "comprising") and in the "whereby" clause are not words of limitation.

Appellant's stipulation regarding the first five elements of claim 1, "considered independently of the sixth," is confusing since appellant list only five major elements of claim 1: (1) a chamber, (2) a target holder, (3) a wafer holder, (4) a collimator, and (5) a drive means. However, in view of the main thrust of appellant's briefs and the examiner's rejection, we understand appellant's stipulation to be a concession that Talieh discloses the major elements of claim 1 with the singular exception of a "drive means for moving and removing said collimator into and out of a position between said target and said wafer." We note that appellant also acknowledges that the preambular language, as well as the "whereby" clause, do not constitute claim limitations.

For purposes of this appeal the most relevant disclosure

of Talieh appears at col. 3, lines 13-18, which reads as follows:

The second step of the deposition process is generally depicted in FIG. 3. This second deposition step is preferably, although not necessarily, conducted in a different chamber from the first deposition step, and is conducted in a similar manner to the prior art deposition processes.

There is apparently no dispute that Talieh, like appellant, teaches a first deposition step through a collimator and a second, non-collimated deposition. Indeed, appellant acknowledges at page 14 of the principal brief that one of ordinary skill in the art would have understood that Talieh teaches a preference "that the second step be preformed without collimation." (lines 4 and 5). A central issue on appeal is whether Talieh, in conjunction with the secondary references,

would have suggested performing the second, non-collimated deposition in the same chamber wherein the collimated deposition takes place, thereby necessitating a movable collimator. Although Talieh teaches a non-preferable embodiment of performing the second deposition in the same

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chamber where the first, collimated deposition occurs, the reference does not explicitly state whether or not such non-preferred second deposition is collimated. Appellant urges that Talieh teaches that if the same chamber is used for the first and second deposition steps, the collimator is used for both depositions.

While appellant's position is not without merit, it is our judgement that based upon the collective teachings of the applied prior art as a whole, one of ordinary skill in the art would have found it *prima facie* obvious to perform both the collimated and non-collimated depositions of Talieh in the same chamber by providing a drive means for moving the collimator before the second deposition. Appellant does not deny that one of ordinary skill in the art would be motivated to employ a first, collimated deposition followed by a second, non-collimated deposition. This much is acknowledged in the section of the present specification entitled Background Of The Invention (see, specifically, page 2, lines 27-31). Since Talieh teaches that the second deposition may be conducted in the same chamber as the first, collimated deposition, we agree

with the examiner that it would have been obvious for one of ordinary skill in the art to move the collimator after the first deposition to a location that does not influence the sputtered atoms during the second deposition step. We also agree with the examiner that it also would have been obvious for one of ordinary skill in the art to employ drive means of the type disclosed in the secondary references to effect moving the collimator of Talieh after the first deposition step. As acknowledged by appellant at page 12 of the principal brief, the level of skill in this art is relatively high, i.e., "[p]rocess engineers can have degrees ranging from a bachelor's degree to doctoral degrees [and] process technicians tend to have some technical background." In our view, such highly skilled artisans would have found it obvious to utilize drive means of the type disclosed by the secondary references to render the collimator of Talieh movable and, thereby, obtain the art-recognized benefit of a non-collimated second deposition step. Appellant advances no objective evidence or compelling reasoning which establishes that the drive means of the secondary references are incapable of effectively moving a collimator in a deposition chamber.

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Appellant simply offers that "[t]he mechanisms used by Riley to move a mask and Hanfmann to move a shield probably would not suffice to move a collimator" (page 5 of reply brief, emphasis added). Also, we note that none of claims 1, 2, 7 and 8 defines any specific structure for the drive means.

As a final point, we note that appellant bases no argument upon objective evidence of nonobviousness, such as unexpected results.

In conclusion, based on the foregoing, the examiner's decision rejecting the appealed claims is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

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| EDWARD C. KIMLIN |) | |
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| ANDREW H. METZ |) | APPEALS AND |
| Administrative Patent Judge |) | INTERFERENCES |
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THOMAS A. WALTZ)
Administrative Patent Judge)

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