

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 30

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte DENNIS R. HOLLARS, DELBERT F. WALTRIP,
ROBERT B. ZUBECK, JOSEF BONIGUT, ROBERT M. SMITH
and GARY L. PAYNE

Appeal No. 1997-3172
Application 08/045,989

ON BRIEF

Before WINTERS, OWENS and ROBINSON, *Administrative Patent Judges*.

OWENS, *Administrative Patent Judge*.

DECISION

This is an appeal from the examiner's refusal to allow claims 1, 6, 7 and 12-15 as amended after final rejection. These are all of the claims remaining in the application.

THE INVENTION

Appellants claim a magnetron sputtering apparatus which includes a shield for shielding substrates from obliquely incident deposition. Claim 1 is illustrative and reads as follows:

1. A high throughput sputtering apparatus for providing a single or multi-layer coating to the surface of a plurality of substrates, said apparatus comprising:

a plurality of buffer and sputtering chambers, said sputtering chambers including:

a plurality of planar cathodes, each with first and second surfaces, wherein the cathodes are mounted within said sputtering chambers in a plane oriented substantially parallel to a plane including the plurality of substrates,

a plurality of targets positioned on the first surfaces to provide sources for films to be sputtered,

magnet means for generating magnetic flux lines over the first surfaces and the targets, which lines are sufficient to support sputtering and form substantially horizontal flux paths parallel to the first surfaces and the targets, and

a shield for shielding the substrates from obliquely incident deposition from the targets, the shield including flanges extending from the cathodes and projecting toward the substrates.

THE REFERENCES

Flint et al. (Flint)	4,749,465	Jun. 7,
1988 Bloomquist et al. (Bloomquist)	4,790,921	Dec.
13, 1988		
Welty	4,892,633	Jan. 9,
1990		

Appeal No. 1997-3172
Application 08/045,989

Hedgcoth 1990	4,894,133	Jan. 16,
Yazawa 1990	4,939,046	Jul. 3,

THE REJECTIONS

Claims 1, 6, 7 and 12-15 stand rejected under 35 U.S.C. § 103 as being unpatentable over Flint or Hedgcoth, in view of Welty, Bloomquist and Yazawa.¹

OPINION

We have carefully considered all of the arguments advanced by appellants and the examiner and agree with appellants that the aforementioned rejections are not well founded. Accordingly, we reverse these rejections.

Both of appellants' independent claims, i.e., claims 1 and 15, require "a shield for shielding the substrates from obliquely incident deposition from the targets, the shield including flanges extending from the cathodes and projecting toward the substrates." This is the only limitation argued by appellants in their briefs. The examiner argues that such a

¹Rejections over Leybold, Welty '708, Arita, Nagao, Hughes and Clarke are withdrawn in the examiner's answer (pages 3-4).

shield is disclosed by Flint (answer, page 4). In the rejection over Hedgcoth in view of the secondary references, the examiner relies upon Flint for a disclosure of appellants' shield (answer, page 6). That is, the examiner's rejection actually is over Hedgcoth in view of Flint and the other secondary references. Thus, with respect to the issue of whether appellants' shield is disclosed or suggested by the applied prior art, we need to discuss only Flint.

Flint states (col. 6, lines 50-54) that "[s]putter shields **53** are installed within the process chamber **12** above and below the sputtering sources **48** to collect sputtered particles in order to reduce particulate contamination of adjacent processing stations." These shields are shown in Flint's figure 2.

The examiner argues that Flint discloses "shielding means 53 having flanges for shielding the substrate from oblique deposition from the target" (answer, page 4). This argument does not appear to be supported by the reference. As indicated by the above excerpt from Flint, the reference does not disclose that the shields shield the substrate from

oblique deposition, but, rather, teaches that the shields collect sputtered particles so as to reduce particulate contamination of adjacent processing stations. If, when the Flint apparatus is used, the only particles which have a direction which is oblique to the substrate are those which emanate from the outer portion of the sputtering sources and travel toward the shields, then Flint's shields may shield substrates located in adjacent processing stations from obliquely incident deposition. Flint, however, does not describe his sputtering sources. Appellants' figure 27A indicates that it is possible for a sputtering source to produce particles which travel obliquely from the central portion of the target. Flint does not indicate that his apparatus excludes such a sputtering source. The examiner has not established that at the time of appellants' invention, a sputtering source was available which did not produce particles which travel obliquely from the central portion of the target. Even if, however, such a sputtering source were available, it does not appear that Flint would have led one of ordinary skill in the art to select it because Flint does not disclose that oblique deposition is a problem. If a

sputtering source such as that in appellants' figure 27A were used in Flint's apparatus, it does not appear that Flint's shields around the outside of the sputtering source would shield the substrate in front of the sputtering source from oblique deposition emanating from the central portion of the target.²

The examiner argues that "figure 2 of Flint also indicates that oblique deposition is prevented by the shield since only perpendicular particles shown by the arrows are deposited onto the substrate 26" (answer, page 7). Flint, however, provides no teaching that the arrows represent particle travel which is perpendicular to the substrate, but, rather, appears to merely indicate that the direction of travel is from the sputtering sources toward the substrate. The examiner's interpretation of the reference, in this regard, is based purely on hindsight from appellants' disclosure, which is improper. See *W.L. Gore & Associates v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 USPQ 303, 312-13 (Fed.

²Appellants use shield extension 2231 to provide such shielding (page 56, lines 21-23; figures 23 and 27A).

Appeal No. 1997-3172
Application 08/045,989

Cir. 1983), *cert. denied*, 469 U.S. 851 (1984); *In re Rothermel*, 276 F.2d 393, 396, 125 USPQ 328, 331 (CCPA 1960).

For the above reasons, we find that the examiner has not set forth a factual basis which is sufficient for supporting a conclusion of obviousness of the invention recited in any of appellants' claims. Consequently, we reverse the examiner's rejections.

DECISION

The rejections of claims 1, 6, 7 and 12-15 under 35 U.S.C. § 103 over Flint or Hedgcoth, in view of Welty, Bloomquist and Yazawa, are reversed.

REVERSED

SHERMAN D. WINTERS)
Administrative Patent Judge)
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)
) BOARD OF PATENT
TERRY J. OWENS)
Administrative Patent Judge) APPEALS AND
)
) INTERFERENCES
)
DOUGLAS W. ROBINSON)

Appeal No. 1997-3172
Application 08/045,989

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