

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(2) is not binding precedent of the Board.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. 14

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte DOUGLAS S. GOODMAN,
CHARLES A. RUDISILL and
DANIEL J. WHITTLE

Appeal No. 95-3854
Application 07/976,162¹

ON BRIEF

Before HAIRSTON, JERRY SMITH, and CARMICHAEL, Administrative
Patent Judges.

HAIRSTON, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1
through 10.

¹ Application for patent filed November 12, 1992.

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The disclosed invention relates to a method and apparatus for projecting a three-dimensional master pattern onto at least one exposure surface of a three-dimensional image space. An illuminator illuminates the three-dimensional master pattern, and the image thereon is imaged onto the surface of the three-dimensional image space via an afocal lens system.

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

1. An imaging system including an illumination means for projecting a focused image on at least one exposure surface of a three-dimensional image space, comprising:

a) a three-dimensional master pattern bearing a desired pattern on at least one surface thereof;

b) an afocal lens system; and wherein,

c) said three-dimensional master pattern, said afocal lens system, said image space, and said illumination means are relatively disposed such that said desired image is projected onto said exposure surface.

The references relied on by the examiner are:

Bennett	2,380,210	July 10, 1945
Bennett	2,445,594	July 20, 1948
Petit	3,506,344	Apr. 14, 1970
Malsky	3,694,080	Sept. 26, 1972
Endo et al. (Endo)	4,758,864	July 19, 1988
Wakimoto et al. (Wakimoto)	4,867,545	Sept. 19, 1989

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Claims 1 through 10 stand rejected under 35 U.S.C. § 103 as being unpatentable over Malsky in view of Endo, Petit, Wakimoto and the Bennett patents.

Reference is made to the brief and the answer for the respective positions of the appellants and the examiner.

OPINION

We have carefully considered the entire record before us, and we will reverse the obviousness rejection of claims 1 through 10.

The two patents to Bennett, Endo and Wakimoto are cited by the examiner to show that it is well known to use telecentric lenses in image projection systems. According to the examiner (Answer, page 6):

it is widely known by those skilled in the art that a telecentric lens system should be used for projecting the image of the reticle onto the wafer in order to minimize the detrimental effects of a narrow depth of field.

If such a practice is known to be advantages [sic, advantageous] when projecting a two-dimensional pattern onto a two-dimensional surface, then it should go without saying that it would be even more so when projecting a three-dimensional pattern onto a three-dimensional member.

Thus, it is the examiner's position (Answer, pages 6 and 7) that:

Malsky and Petit show that the practice of projecting the image of a three-dimensional original

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onto a three-dimensional receiving member is not novel, per se, whether dealing with printed circuits or something else. So one skilled in the art would reasonably have been expected to look to the prior art for an appropriate solution. And, as pointed out above, such a solution was a telecentric lens.

Therefore, the use of an afocal lens for focusing the image of a three-dimensional master onto a three-dimensional receiving surface as recited in the claims would have been suggested by known practices as pointed out above.

Appellants argue (Brief, page 8) that "none of the references cited by the Examiner teach or suggest the desirability of combining these references to achieve Appellants' claimed imaging system and method of projecting a focused image onto an exposure surface of a three-dimensional image surface using an afocal lens system."

The examiner has made a showing that three-dimensional image projection systems, and telecentric lenses in image projection systems are both well known in the art, but appellants correctly argue that the examiner has failed to set forth a credible reason as to why the skilled artisan would have found it obvious to use the telecentric lenses of either Bennett, Endo or Wakimoto in the three-dimensional image projection systems disclosed by Malsky and Petit. Even if we assume for the sake of argument that the skilled artisan would have found it obvious to use the telecentric lenses as taught by Bennett, Endo or Wakimoto in the

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three-dimensional imaging systems of Malsky and Petit, the examiner has still failed to demonstrate that the telecentric lenses are afocal lenses. Accordingly, we agree with appellants' argument (Brief, page 9) that "[a]lthough in hindsight it is easy to look at Appellants' specification and claims and conclude that each element contained in their imaging system can be found in some prior art reference, in none of the combined references is there a teaching or suggestion of combining these disparate elements."

In view of the foregoing, the obviousness rejection of claims 1 through 10 is reversed.

DECISION

The obviousness rejection of claims 1 through 10 is reversed. Accordingly, the decision of the examiner is reversed.

REVERSED

KENNETH W. HAIRSTON
Administrative Patent Judge

JERRY SMITH
Administrative Patent Judge

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