

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 22

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte PHILIP A. CONGDON, LILY Y. PANG, and GARY A. EVANS

Appeal No. 96-3813
Application No. 08/248,937¹

ON BRIEF

Before JERRY SMITH, BARRETT, and GROSS, Administrative Patent Judges.

GROSS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1, 3, and 11 through 23. Claims 4 through 10 have been withdrawn from consideration as being directed to nonelected claims. An amendment filed concurrently with the reply brief has been approved for entry by the examiner.

¹ Application for patent filed May 25, 1994.

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The appellants' invention relates to an optical coupler between a semiconductor waveguide and a dielectric waveguide.

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

1. A coupler between a semiconductor waveguide and a dielectric waveguide, comprising:

(a) a grating between a rectangular semiconductor waveguide and a dielectric waveguide with a roughly square core, wherein said grating has a mechanical wave vector equal to the difference between a propagation vector of said semiconductor waveguide and a propagation vector of said dielectric waveguide.

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Fukushima et al. (Fukushima)	5,070,488	Dec.
03, 1991		
Laybourn et al. (Laybourn)	GB 1535171	Dec. 06, 1978
Nobuhara	JP 3-263010 ²	Nov. 22, 1991

Claims 1, 3, and 11 through 23 stand rejected under 35 U.S.C. § 103 as being unpatentable over Laybourn in view of Nobuhara, and further in view of Fukushima for claims 12, 13, 17, 18, 22, and 23.

² Our understanding of this reference is based upon a translation provided by the Scientific and Technical Information Center of the Patent and Trademark Office. A copy of the translation is enclosed with this decision.

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In the Examiner's Answer (page 4), the examiner added a new ground of rejection under 35 U.S.C. § 112, first paragraph. Appellants filed an amendment to the claims with the Reply Brief on August 12, 1996. In a letter dated March 18, 1999, the examiner entered the amendment and stated that the amendment overcomes the new ground of rejection. Accordingly, the rejection under 35 U.S.C. § 112, first paragraph is not before the Board as the examiner has withdrawn the rejection.

Reference is made to the Examiner's Answer (Paper No. 17, mailed June 13, 1996) and the Supplemental Examiner's Answer (Paper No. 19, mailed October 10, 1996) for the examiner's complete reasoning in support of the rejections, and to the appellants' Brief (Paper No. 16, filed April 18, 1996) and Reply Brief (Paper No. 18, filed August 12, 1996) for the appellants' arguments thereagainst.

OPINION

We have carefully considered the claims, the applied prior art references, and the respective positions articulated by the appellants and the examiner. As a consequence of our

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review, we will reverse the obviousness rejection of claims 1,3, and 11 through 23.

The examiner combines the teachings of Nobuhara and Laybourn for a coupler between a semiconductor waveguide and a dielectric waveguide with a grating in between having a mechanical wave vector equal to the difference between propagation vectors of the two waveguides. Appellants do not contest the combination of references.

Appellants do contend that Nobuhara and Laybourn teach a round dielectric waveguide rather than a rectangular one. In particular, appellants state (Brief, page 4) that "optical fibers are round" and "Laybourn et al. teach a coupling between a round transmission waveguide and a planar waveguide." The examiner asserts (Supplemental Answer, page 2) that "it would have been an obvious matter of design choice to utilize a dielectric waveguide with a roughly square cross section since changes on size are recognized as being within the level of ordinary skill in the art." The examiner continues (Supplemental Answer, page 3) with

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dielectric waveguides of roughly square cross section would have been recognized by one of ordinary skill in the art as a mere change in shape. Applicants have failed to disclose any significance or criticality with regards to this limitation in the specification as originally filed. Thus, this limitation appears to be an obvious matter of design choice.

Although a change in shape may constitute an obvious matter of design choice in certain circumstances, a variation in shape is not always a mere design choice. In this case, appellants have used a rectangular semiconductor waveguide with a square core dielectric waveguide for better contact between the two waveguides (see page 2 of the specification, wherein appellants refer to the circular shape of the waveguide as part of the problem being solved). Furthermore, optical waveguides are conventionally round, and it would have been counterintuitive to one of ordinary skill in the art to select anything other than a circular shape for the core of the waveguide in the absence of a specific teaching to do so. Since the examiner has provided no evidence to support his allegation that the shape of the dielectric waveguide is merely a design choice, and since the shape is recited in all of the claims, we find that

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the examiner has failed to establish a prima facie case of obviousness for all of claims 1, 3, and 11 through 23.

Appellants further argue (Brief, page 4) that "Nobuhara teaches removing the optical fiber cladding in the region of the coupling," whereas "Applicants teach and claim an invention using waveguides with the cladding intact." We agree that Nobuhara removes the cladding in the coupling area, but we see no such limitation in claim 1, the first independent claim. As to independent claims 14 and 19, each recites that the grating is between the cladding of the dielectric waveguide and either the cladding of the semiconductor waveguide or the core of the dielectric waveguide. Since Nobuhara teaches removing the cladding at the grating (as pointed out by appellants) and Laybourn shows the cladding around the dielectric waveguide up to, but not at, the grating, neither reference has the grating adjacent the cladding for the dielectric waveguide. Although the examiner is correct in stating (Answer, page 7, and Supplemental Answer, pages 3-4) that waveguides have cladding, the examiner has ignored the disclosures of the references relied upon.

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Furthermore, adding the cladding at the grating, as suggested by the examiner, would be contrary to the teachings of the references. Therefore, the examiner has again failed to provide a prima facie case of obviousness for claims 14 and 19 and the claims dependent therefrom, 15 through 18 and 20 through 23.

CONCLUSION

The decision of the examiner rejecting claims 1, 3, and 11 through 23 under 35 U.S.C. § 103 is reversed.

REVERSED

JERRY SMITH)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
LEE E. BARRETT)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
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ANITA PELLMAN GROSS)	
Administrative Patent Judge)	

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CARLTON H. HOEL
TEXAS INSTRUMENTS PATENT DEPT
P.O. BOX 655474., MS 219
DALLAS, TX 75265