

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 20

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

MAILED

Ex parte PREM NATH  
and CRAIG N. VOGELI

SEP 25 1996

Appeal No. 94-2303  
Application 07/881,345<sup>1</sup>

PAT. & T.M. OFFICE  
BOARD OF PATENT APPEALS  
AND INTERFERENCES

HEARD: September 11, 1996

Before COHEN, MEROS and JERRY SMITH, Administrative Patent Judges.

MEROS, Administrative Patent Judge.

DECISION ON APPEAL

This appeal is from the examiner's rejection of claims 6-9, all of the claims pending in the application.

The rejected claims are directed to a method of severing a semiconductor device comprising a thin film semiconductor body sandwiched between a base electrode on a substrate and a transparent, electrically conductive top electrode into at least

<sup>1</sup> Application for patent filed May 11, 1992. According to appellants, the application is a Division of Application 07/724,543, filed June 27, 1991 (ABN).

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two smaller devices. The claimed method comprises the steps of depositing a polymeric containment layer on the top electrode of at least one region through which the device is to be severed to prevent formation of shards in the top electrode when the device is severed and severing the device from the top electrode side.

Claim 6 is illustrative of the claimed subject matter and reads as follows:

6. A method of severing a semiconductor device into at least two smaller devices, said semiconductor device including a thin film semiconductor body sandwiched between a base electrode formed on a substrate and a transparent, electrically conductive top electrode formed of an at least partially light transmissive conductive material, said method including the steps of:

depositing a containment layer formed of polymeric material atop said top electrode on at least one region through which said device is to be severed to prevent formation of shards in the top electrode when the device is severed;

severing the device from the top electrode side thereof by first severing through the containment layer such that the containment layer cushions and contains the top electrode, thereby preventing the formation of top electrode shards and subsequent short circuiting of the device.

The examiner relies on the following sole reference:

Nath et al. (Nath)                      4,704,369                      Nov. 3, 1987

Claims 6-9 stand rejected under 35 USC § 103 as being unpatentable over Nath.

We will not sustain the rejection.

Nath discloses a method of severing a large area semiconductor device comprising photovoltaic cells which comprise a substrate, a semiconductor body disposed on the substrate, and a transparent, electrically conductive top electrode disposed on the semiconductor body into smaller area semiconductor devices. The method of severing the large area semiconductor device disclosed by Nath comprises providing means for supporting the top electrode side of the semiconductor device and applying a shearing force to the substrate side of the device. In this manner the device is severed without establishing short circuit contact between the substrate electrode and the top electrode. Optionally, a protective member, such as a sheet of cardboard, paper, or synthetic polymer, may be disposed between the top electrode side of the semiconductor device and the support means so as to prevent damage to the top electrode during cutting (col. 5, line 66 to col. 6, line 10). Such an embodiment is described in col. 9, line 51 to col. 11, line 9 and illustrated in figures 3A and 3B. As illustrated in said figures, a cutting die severs the semiconductor device from the rear (substrate) surface.

In the sentence bridging columns 10 and 11, Nath specifically teaches that the semiconductor device should not be cut from its top electrode surface because shards of TCO material would penetrate the semiconductor body and establish a short

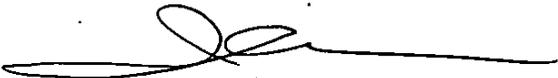
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circuit current path to the substrate electrode. We therefore agree with appellants that Nath teaches away from severing a semiconductor device from its top electrode surface as here claimed. As pointed out by the court in Air Products and Chemical, Inc. v. Chas. S. Tanner Co., 219 USPQ 223, 231 (D.S.C. 1983), where the prior art teaches away from the claimed invention, that is highly probative evidence that the invention is nonobvious. See also Bausch & Lomb, Inc. v. Barnes-Hind/Hydrocurve, Inc., 796 F.2d 443, 449, 230 USPQ 416, 420 (Fed. Cir. 1986), *cert. denied*, 484 U.S. 823 (1987) wherein the court pointed out that teachings in a reference which lead away from the claimed invention is evidence of nonobviousness. Moreover, we agree with appellants that Nath uses a "protective layer" between the top electrode side of the semiconductor device and the support means as the semiconductor is severed from its substrate (back) side, not a containment layer which prevents formation of shards in the top electrode as the device is severed from the top electrode side in the here claimed process.

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Accordingly, the examiner's § 103 rejection of claims 6-9 is reversed.

REVERSED

	)	
IRWIN CHARLES COHEN	)	
Administrative Patent Judge	)	
	)	
EDWARD J. MEROS	)	BOARD OF PATENT
Administrative Patent Judge	)	APPEALS AND
	)	INTERFERENCES
JERRY SMITH	)	
Administrative Patent Judge	)	

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