The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

Paper No. 23

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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Ex parte GERHARD STEININGER, RAINER LUDWIG and GERD HOFFMANN

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Appeal No. 1998-0758
Application 08/434,073

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HEARD: February 22, 2001

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Before OWENS, KRATZ, and JEFFREY T. SMITH, *Administrative Patent Judges*.

OWENS, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal from the examiner's final rejection of claims 9-15 and refusal to allow claim 16 as amended after final rejection. These are all of the claims remaining in the application.

THE INVENTION

The appellants claim an evaporation process for applying a transparent metal oxide layer onto a film. Claim 9 is illustrative:

> 9. Process for applying a transparent metal oxide on a film, comprising
>
> passing a film through a receiver,
>
> vaporizing metal in said receiver to produce vapor phase metal,
>
> introducing oxygen into said receiver in order to produce a metal oxide layer on said film, said oxygen being introduced in an amount which is not sufficient to produce a stoichiometric metal oxide layer on said film, whereby said layer is not completely transparent, said layer having an absorption coefficient,
>
> measuring the absorption coefficient of said layer using optical sensors, said absorption coefficient providing a means for determining thickness of the layer,
>
> controlling the rate of vaporizing metal based on the absorption coefficient, and
>
> subjecting the layer to further oxidation in order to produce a stoichiometric oxide which is fully transparent.

*THE REFERENCE*S

Preston	2,769,778	Nov. 6, 1956
Nath	4,514,437	Apr. 30, 1985
Feuerstein et al. (Feuerstein)	4,627,989	Dec. 9,

1986

THE REJECTION

Claims 9-16 stand rejected under 35 U.S.C. § 103 as being unpatentable over Preston in view of Nath and Feuerstein.

OPINION

We reverse the aforementioned rejection. We need to address only claim 9, which is the sole independent claim.

Preston discloses a process for providing the surface of an electrical nonconductor with a thin, transparent electrically conductive film (col. 1, lines 16-18). The film is formed by cathode sputtering a metal such as indium or tin in the presence of oxygen insufficient in concentration to oxidize the metal completely, and then applying heat under oxidizing conditions to substantially complete oxidation of the metal, such that the film is transparent and electrically conductive (col. 1, lines 62-70). "The value of the electrical conductivity attained is dependent on the species and thickness of the deposited coating, the colour attained in

the initial deposition, and the rate and intensity of heating" (col. 2, lines 53-56). The color of the coating after the sputtering step is observed through a window or the like, and indicates the conductivity of the film after the subsequent heating step (col. 2, lines 18-22; col. 3, lines 8-11). If the color is not correct, the level of oxygen in the sputtering apparatus is adjusted accordingly (col. 2, lines 27-28).

Nath discloses an evaporation process for forming a thin film of a metal oxide such as indium tin oxide wherein metal vapor reacts with oxygen in a plasma region (col. 12, lines 40-47). The film thickness is monitored by a device such as an optical or piezoelectric monitor (col. 11, line 64 - col. 12, line 2).

Feuerstein discloses an evaporation process for forming a film wherein local evaporation power and film thickness values are displayed as spatially-coordinated bars of charts on a

display screen, at least the film thickness bar chart is calibrated, and the local evaporation power is adjusted to correct any deviation shown by the film thickness bar chart (col. 2, lines 46-58). The film thickness can be measured optically (col. 3, lines 8-12).

The examiner argues that it would have been obvious to one of ordinary skill in the art to substitute Nath's evaporation process for Preston's sputtering process because both processes are for depositing thin transparent metal oxide coatings, including indium and/or tin oxide, both plasma chemical vapor deposition and sputtering were well known techniques for depositing layers onto substrates, and the processes would have been expected to produce similar results (answer, pages 5 and 8-9).

Preston, however, points out that both sputtering and evaporation were known in the art for forming thin, transparent electrically conductive films (col. 1, lines 26-30), but discloses only sputtering for his particular process wherein the color of the film is monitored and the oxygen content in the sputtering chamber is adjusted accordingly.

The examiner has not provided evidence that one of ordinary skill in the art would have considered evaporation to always be suitable as a substitute for sputtering for forming oxide films of indium, tin or their combination, or would have had a reason for substituting evaporation for the particular process used by Preston.

The examiner's argument that both processes would have been expected to produce similar results has no support in the applied prior art with respect to sputtering and evaporation generally, let alone with respect to Preston's process wherein the film color is observed and used for adjusting the oxygen level in the sputtering chamber. The examiner's argument is based upon mere speculation, and such speculation is not sufficient for establishing a *prima facie* case of obviousness. *See In re Warner*, 379 F.2d 1011, 1017, 154 USPQ 173, 178 (CCPA 1967), *cert. denied*, 389 U.S. 1057 (1968); *In re Sporck*, 301 F.2d 686, 690, 133 USPQ 360, 364 (CCPA 1962).

For the above reasons, we conclude that the examiner has not carried the burden of establishing a *prima facie* case of obviousness of the appellants' claimed invention.

Consequently, we reverse the examiner's rejection.

DECISION

The rejection of claims 9-16 under 35 U.S.C. § 103 over Preston in view of Nath and Feuerstein is reversed.

REVERSED

TERRY J. OWENS Administrative Patent Judge	)
PETER F. KRATZ Administrative Patent Judge	) BOARD OF PATENT) APPEALS AND) INTERFERENCES
JEFFREY T. SMITH Administrative Patent Judge	)

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