

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.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. 21

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte KEIZI ISHIBASHI

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Appeal No. 1998-1669  
Application No. 08/508,563

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HEARD: January 16, 2001

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Before JOHN D. SMITH, KRATZ, and DELMENDO, Administrative Patent Judges.

DELMENDO, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 1 through 13, which are all of the claims pending in the subject application.

Claim 1 is illustrative of the claims on appeal and is reproduced below:

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1. In a method for fabricating a transparent conductive ITO film which has In and O as basic component elements and Sn added as a donor in an atmosphere comprising a mixture of rare gas and oxygen gas by a sputtering process using a mixture of oxides of In and Sn as a target, said method comprising:

a first step of sputtering a transparent conductive ITO film on a substrate in an atmosphere with a controlled partial pressure of oxygen, and

a second step of interrupting said first step and performing discharge in an atmosphere where a partial pressure of oxygen is  $1 \times 10^{-3}$  Torr or more, which is higher than the partial pressure of oxygen in said first step, to compensate for the oxygen deficiency in said target.

The subject matter on appeal relates to a method for fabricating a transparent conductive ITO film which has In and O as basic component elements and Sn as a donor. (Appeal brief, page 3.) The method comprises two steps. (Id.) Specifically, the first step involves sputtering a transparent conductive ITO film on a substrate in an atmosphere with a controlled partial pressure of oxygen. (Id.) The second step involves interrupting the first step and performing discharge in an atmosphere where the partial pressure of oxygen is  $1 \times 10^{-3}$  Torr or more, which is higher than the partial pressure of oxygen in the first step, to compensate for oxygen deficiency in the target. (Id.) According to the appellant, the present

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invention allegedly solves the problem of increasing resistivity in the direction of film thickness.

(Specification, pages 3-10.)

The examiner relies upon the following prior art references as evidence of unpatentability:

Mueller 1989	4,842,705	Jun. 27,
Nakamura 1990	4,936,964	Jun. 26,
Ohno et al. (Ohno) 1990	4,975,168	Dec. 04,
Tsuda (JP '746) <sup>1</sup> (published JP patent document)	7-51746 (2-47255)	Feb. 16, 1990

Claims 1 through 13 stand rejected under 35 U.S.C. § 103 as unpatentable over "either Mueller or Japanese patent 7-51746 in view of either Nakamura or Ohno et al." (Examiner's answer, pages 3 through 7.)

Upon review of the entire record, we determine that one skilled in the relevant art would not be able to ascertain the scope of appealed claim 1 because no reasonably definite meaning can be ascribed to certain language appearing in the

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<sup>1</sup> In our decision, we refer to the English language translation of JP '746 as submitted by the appellant on July 28, 1995. (Paper 3.)

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claim when it is read in light of the accompanying specification. Accordingly, we reverse the examiner's rejections of claims 1 through 13 under 35 U.S.C. § 103 as unpatentable over the applied prior art on procedural grounds<sup>2</sup> and, pursuant to our authority under 37 CFR § 1.196(b) (1997), enter a new ground of rejection under the second paragraph of 35 U.S.C. § 112. The reasons for our determination follow.

JP '746 teaches:

To solve the above-described problems, according to the method of manufacturing oxide thin films in accordance with the present invention, a period in which only an inert gas, such as an argon gas, is introduced, and a period in which only an oxygen gas is introduced are provided alternately and continuously, and an oxide thin film is manufactured in only the period in which only an inert gas, such as an argon gas, is introduced. [Pages 3-4.]

The examiner takes the position that JP '746 teaches sputtering an ITO film "in an atmosphere with a controlled partial pressure of oxygen" as recited in appealed claim 1. Specifically, the examiner points out that JP '746 teaches the introduction of argon and the introduction of oxygen alternately such that residual oxygen would be present during

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<sup>2</sup> We emphasize that this reversal is a technical reversal rather than one based on the merits.

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the step in which sputtering occurs (i.e., the step in which argon is introduced). (Examiner's answer, page 4.) Further, the examiner refers to the teaching in JP '746 that oxygen atoms are supplied from the oxide target during the sputtering step. (Id.; page 6 of JP '746.)

The appellant, on the other hand, argues that the sputtering step of JP '746 is not conducted "in an atmosphere with a controlled partial pressure of oxygen" as recited in appealed claim 1. (Reply brief, page 3.)

Additionally, we observe that Mueller describes a method for manufacturing transparent, conductive indium-tin oxide layers. (Column 1, lines 8-9.) As a preferred embodiment, Mueller teaches that the coating process is conducted at an oxygen partial pressure of about  $10^{-4}$  to  $10^{-2}$  mbar ( $7.5 \times 10^{-5}$  to  $7.5 \times 10^{-3}$  Torr)<sup>3</sup> until about one-third of the desired film thickness is achieved, the coating is continued at an oxygen partial pressure of less than  $10^{-5}$  mbar ( $7.5 \times 10^{-6}$  Torr) until another one-third of the desired film thickness is deposited, and then

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<sup>3</sup> According to the appellant, 1 mbar equals 0.75 Torr. (Appeal brief, p. 4.)

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the original oxygen partial pressure is restored. (Column 2, lines 13-23.) Mueller further teaches that a sputtering method may be used to make the ITO layers. (Column 3, lines 13-14; column 4, lines 1-2.)

The examiner states:

Appellant's first step and second step are therefore considered to be disclosed by the lowering of oxygen and the restoring of the oxygen of Mueller since "comprising" would open the claim to the inclusion of the other step such as the first high pressure of Mueller. [Examiner's answer, page 5.]

The appellant, however, argues that Mueller does not teach "interruption in the coating process." (Appeal brief, page 4.) Further, the appellant alleges that the present invention is distinguished from Mueller in that coating is not performed during the second step as recited in appealed claim 1. (Reply brief, page 5.)

In view of these opposing viewpoints, it is clear to us that the examiner's interpretation of appealed claim 1 is in direct conflict with the appellant's interpretation. It is our judgment that one skilled in the art would not be able to ascertain from the claim language and the specification as to which interpretation should control. In particular, we are

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uncertain as to what meaning should be ascribed to the recitations (i) "in an atmosphere with a controlled partial pressure of oxygen" and (ii) "interrupting said first step and performing discharge in an atmosphere where a partial pressure of oxygen is  $1 \times 10^{-3}$  Torr or more, which is higher than the partial pressure of oxygen in said first step, to compensate for the oxygen deficiency in said target."

Regarding recitation (i), we observe that the specification does not include a definition for the recitation "in an atmosphere with a controlled partial pressure of oxygen." (Emphasis added.) Indeed, we find that this recitation was inserted into appealed claim 1 by an amendment filed March 14, 1996 (Paper 6). Nowhere in the specification is there a description, much less a definition, of this recitation.<sup>4</sup> Also, as we have discussed above, the appellant argues that the sputtering step in JP '746 is not conducted "in an atmosphere with a controlled partial pressure of oxygen." Notwithstanding the appellant's proposed

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<sup>4</sup> On return of this application, the examiner should also consider the question of whether the specification, as originally filed, provides adequate written description for recitation (i) within the meaning of 35 U.S.C. § 112, ¶1.

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interpretation of appealed claim 1, it is not clear to us why an atmosphere in which only argon is introduced but oxygen is supplied from the target, as described in JP '746, cannot be considered as an "atmosphere with a controlled partial pressure of oxygen." Under these circumstances, it is our view that one skilled in the relevant art would not be able to ascertain the scope of recitation (i).

As to recitation (ii), we note that the specification also lacks definitions for the phrases "interrupting said first step" and "performing discharge." The examiner has interpreted the phrase "interrupting said first step" of the recited second step to encompass sputtering at an oxygen partial pressure which is different from the "controlled partial pressure of oxygen" of the recited first step. (Examiner's answer, page 5.) In addition, the examiner has interpreted "performing discharge" as continuing the sputtering process at a condition which is different from that of the first step. In this regard, we note that the term "discharge" is used in the specification and the prior art in the context of sputtering. (Specification, pages 1-2; Ohno,

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column 2, lines 48-49.) Again, notwithstanding the appellant's proposed interpretation, it is not clear as to why the examiner's interpretation would be inappropriate in this instance. We therefore determine that one skilled in the art would be unable to ascertain the scope of recitation (ii).

Although the examiner's interpretation is in direct conflict with the appellant's interpretation as stated in the briefs, it is not inconsistent with the appellant's specification. That is, the specification does not contain any description that would preclude the examiner's interpretation. By the same token, we think that the appellant's interpretation is also not inconsistent with the specification. Since appealed claim 1 can be reasonably interpreted in two conflicting ways, one skilled in the relevant art would be unable to determine the scope of appealed claim 1. To decide which interpretation is correct would require us to engage in unwarranted speculation as to the meanings of terms and assumptions as to the scope of the appealed claims.

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The predecessor of our reviewing court stated in In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970) as follows:

All words in a claim must be considered in judging the patentability of that claim against the prior art. If no reasonably definite meaning can be ascribed to certain terms in the claim, the subject matter does not become obvious -- the claim becomes indefinite.

Since interpreting appealed claim 1 would require us to engage in speculation as to the meaning of terms and assumptions as to the scope of the claim, we cannot properly determine whether the claimed invention encompassed by claims 1 through 13 on appeal is in fact unpatentable over the applied prior art. Accordingly, we are constrained to reverse the examiner's rejection of claims 1 through 13 under 35 U.S.C. § 103 as unpatentable over Mueller or JP '746 in view of Nakamura or Ohno. In re Steele, 305 F.2d 859, 862-63, 134 USPQ 292, 295 (CCPA 1962).

Pursuant to 37 CFR 1.196(b), we enter the following new grounds of rejection:

Claims 1 through 13 are rejected under the second paragraph of 35 U.S.C. § 112 for failing to particularly point

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out and distinctly claim the subject matter which the appellant regards as his invention.

The second paragraph of 35 U.S.C. § 112 (1999) states:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

The "distinctly claiming" requirement means that the claims must have a clear and definite meaning when construed in light of the complete patent specification. Standard Oil Co. v. American Cyanamid Co., 774 F.2d 448, 452, 227 USPQ 293, 296 (Fed. Cir. 1985). Thus, section 112 ensures definiteness of claim language. In re Zletz, 893 F.2d 893 F.2d 319, 322, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989).

In this regard, the purpose of a patent claim is to define the scope of protection<sup>5</sup> and hence what the claim precludes others from doing. Because a patent confers upon the patentee the right to exclude others from making, using and selling the claimed invention, the public must be apprised of what the patent covers, so that those who approach the area

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<sup>5</sup> In re Vamco Machine & Tool, Inc., 752 F.2d 1564, 224 USPQ 617 (Fed. Cir. 1985).

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circumscribed by the claims of a patent may readily and accurately determine the boundaries of protection in evaluating the possibility of infringement and dominance. In re Hammack, 427 F.2d 1378, 1382, 166 USPQ 204, 208 (CCPA 1970).

A claim complies with the second paragraph of section 112 if, when read in light of the specification, it reasonably apprises those skilled in the art of the scope of the invention. Hybritech Inc. v. Monoclonal Antibodies, Inc., 802 F.2d 1367, 1385, 231 USPQ 81, 94 (Fed. Cir. 1986).

Applying these principles to the present case, we are convinced that appealed claims fail to distinctly claim what the appellant regards as his invention for the reasons we have already discussed. It is our opinion that one skilled in the relevant art would not be able to determine the scope of appealed claim 1, because the meanings of recitations (i) and (ii) are unclear. Hence, one skilled in the relevant art would not be able to ascertain what appealed claim 1 covers. Here, the appellant has failed to meet the burden of precise claim drafting. In re Morris, 127 F.3d 1048, 1056, 44 USPQ2d

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1023, 1029 (Fed. Cir. 1997) ("It is the applicants' burden to precisely define the invention, not the PTO's.").

Since appealed claims 2 through 13, which all directly or indirectly depend from appealed claim 1, contain the same ambiguities, they are likewise indefinite under the second paragraph of 35 U.S.C. § 112.

In summary, we have reversed the grounds of rejection advanced on appeal by the examiner. However, pursuant to 37 CFR § 1.196(b), we have entered a new ground of rejection of claims 1 through 13 under the second paragraph of 35 U.S.C. § 112.

The decision of the examiner is reversed.

Time for taking action

This decision contains a new ground of rejection pursuant to 37 CFR § 1.196(b). 37 CFR § 1.196(b) provides that "[a] new ground of rejection shall not be considered final for the purposes of judicial review."

37 CFR § 1.196(b) also provides that the appellant, WITHIN TWO MONTHS FROM THE DATE OF THE DECISION, must exercise one of the following two options with respect to the new

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ground of rejection to avoid termination of proceedings (37  
CFR § 1.197(c)) as to the rejected claims:

(1) Submit an appropriate amendment of the claims so rejected or a showing of facts relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the application will be remanded to the examiner. . . .

(2) Request that the application be reheard under 37 CFR § 1.197(b) by the Board of Patent Appeals and Interferences upon the same record. . . .

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

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REVERSED  
37 CFR § 1.196(b)

JOHN D. SMITH	)	
Administrative Patent Judge	)	
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	)	
	)	BOARD OF PATENT
PETER F. KRATZ	)	APPEALS
Administrative Patent Judge	)	AND
	)	INTERFERENCES
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ROMULO H. DELMENDO	)	
Administrative Patent Judge	)	

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