

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.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. 32

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* JAMES M. CLEEVES

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Appeal No. 2003-1081  
Application 08/581,347

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ON BRIEF

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Before OWENS, TIMM and MOORE, *Administrative Patent Judges*.

OWENS, *Administrative Patent Judge*.

*DECISION ON APPEAL*

This appeal is from the final rejection of claims 21-40, which are all of the claims remaining in the application.

*THE INVENTION*

The appellant claims a method for making a semiconductor structure, and claims methods for making a semiconductor device and an electronic device comprising the semiconductor structure.

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Claims 21 and 38 are illustrative:

21. A method of making a semiconductor structure, comprising:

plasma etching a surface of a substrate; and

transferring heat from said substrate to (i) a seal on a support surface, and (ii) a gas in a space defined by said substrate, said seal and said support surface, substantially uniformly across said substrate, said seal being in contact with an opposing surface of said substrate.

38. A method of making a semiconductor device, comprising:

making a semiconductor structure by the method of Claim 21; and

making a semiconductor device comprising the semiconductor structure.

#### *THE REFERENCES*

Horiuchi et al. (Horiuchi)	4,931,135	Jun. 5, 1990
Meyer et al. (Meyer)	5,089,880	Feb. 18, 1992
Cathey, Jr.	5,096,536	Mar. 17, 1992

#### *THE REJECTIONS*

The claims stand rejected as follows: claims 21-27, 29, 31-37, 40 and 41-43 under 35 U.S.C. § 102(b) as anticipated by Cathey, Jr.; claim 28 under 35 U.S.C. § 103 as obvious over Cathey, Jr. in view of Meyer; claims 21 and 30 under 35 U.S.C. § 103 as obvious over Cathey, Jr. in view of Horiuchi; and claims 38 and 39 under 35 U.S.C. § 112, second paragraph, as being incomplete for omitting essential steps.

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OPINION

We reverse the rejection under 35 U.S.C. § 112, second paragraph, and procedurally reverse the rejections under 35 U.S.C. §§ 102(b) and 103. Under 37 CFR § 1.196(b), we enter a new ground of rejection of claims 21-40.

*Rejection under 35 U.S.C. § 112, second paragraph*

The relevant inquiry under 35 U.S.C. § 112, second paragraph, is whether the claim language, as it would have been interpreted by one of ordinary skill in the art in light of the appellant's specification and the prior art, sets out and circumscribes a particular area with a reasonable degree of precision and particularity. See *In re Moore*, 439 F.2d 1232, 1235, 169 USPQ 236, 238 (CCPA 1971).

The examiner argues, in reliance upon *Manual of Patent Examining Procedure* (MPEP) § 2172.01, that the inventions claimed in claims 38 and 39 are not distinctly claimed because claims 38 and 39 omit the materials and steps for making, respectively, a semiconductor device and an electronic device (answer, page 7).

The portion of the MPEP relied upon by the examiner directed toward omitted essential subject matter pertains to nonenablement rejections under 35 U.S.C. § 112, first paragraph, not claim clarity rejections under 35 U.S.C. § 112, second paragraph. The

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portion of the relied-upon MPEP section directed toward claim clarity pertains to claims in which essential elements are recited but not interrelated, which is not the situation in the present case.

The examiner argues that because the components of the semiconductor device in claim 38 and the electronic device in claim 39 are omitted, it is unclear what the semiconductor device and electronic device are (answer, page 12). The claims broadly encompass any semiconductor device and electronic device, and the claims are not indefinite merely because they are broad. See *In re Gardner*, 427 F.2d 786, 788, 166 USPQ 138, 140 (CCPA 1970) ("Breadth is not indefiniteness.")

Thus, the examiner has not carried the burden of establishing that the claim language, as it would have been interpreted by one of ordinary skill in the art in light of the appellant's specification and the prior art, fails to set out and circumscribe a particular area with a reasonable degree of precision and particularity. Accordingly, we reverse the rejection under 35 U.S.C. § 112, second paragraph.

*Procedural reversal and new ground of rejection*

Claims 21-40 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point

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

The appellant's claims all require "substantially" uniform heat transfer across the substrate.

When a word of degree such as "substantially" is used in a claim, the specification must provide some standard for measuring that degree such that one of ordinary skill in the art would understand what is claimed when the claim is read in light of the specification. See *Seattle Box Co. v. Industrial Crating & Packing, Inc.*, 731 F.2d 818, 826, 221 USPQ 568, 573-74 (Fed. Cir. 1984).

The appellant's specification indicates that the heat transfer across the substrate is substantially uniform when the appellant's heat transferring seal (220) is used and the thermal conductivity of this seal "closely" matches that of the heat transfer gas in the region enclosed by the seal (page 9, lines 1-8).

The specification, however, does not provide a standard for measuring the degree encompassed by "closely". The only seal material and heat transfer gas disclosed in the specification are, respectively, Kapton® and helium (page 7, lines 23-26; page 10, lines 1-10). The DuPont website indicates that the

thermal conductivities of the various types of Kapton<sup>®</sup> range from 0.12 to 0.45 W/m.K, which is a factor of almost four.<sup>1</sup> Moreover, in the appellant's specification, Kapton<sup>®</sup> (page 10, lines 3-4) and helium (page 7, line 25) are merely nonlimiting examples. Thus, the specification indicates that the thermal conductivities of the seal material and the heat transfer gas do not need to be as close as those of Kapton<sup>®</sup> and helium to be closely matched.

In response to a rejection by a previous examiner on the ground that "substantially uniform heat transfer" is indefinite,<sup>2</sup> the appellant argued that in the appellant's specification, "substantially" and "uniform" have their customary meanings which, the appellant argues, are, respectively, "in the nature of" and "not varying or changing" (amendment filed December 28, 1999, paper no. 14, page 2). Even if "substantially" means "in the nature of", the appellant has not established that the specification provides a standard for measuring the degree encompassed by that term. The appellant also argued, *see id.*, that the specification (page 9, lines 17-27) explains how

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<sup>1</sup> Copies of the relevant pages from the DuPont website are provided to the appellant with this decision.

<sup>2</sup> This ground of rejection was not maintained by the present examiner.

appropriate combinations of seal materials and heat transfer gases can be chosen to provide substantially uniform heat transfer. This portion of the specification discloses that heat transfer functions for the seal and the heat transferring gas can be defined and equated to "determine the ratio or the relation between the thermal conductivity of the gas and the thermal conductivity of the seal such that the heat transfer between the lower electrode and the substrate is substantially uniform across the substrate" (page 9, lines 24-27), but does not provide a standard for determining the scope of "substantially".

The discussion in the appellant's specification regarding the prior art and the appellant's figure 4b further indicates that the scope of "substantially uniform" is unclear with respect to the heat transfer across the substrate. The discussion of the prior art indicates that the periphery of the substrate, which touches the cooled lower electrode as shown in the appellant's figure 1, is cooler than the central portion of the substrate which, due to bowing of the substrate by the heat transferring gas, is farther away than the periphery of the substrate from the lower electrode (page 1, lines 19-21; page 3, lines 1-8). The appellant's figure 4b and the discussion thereof (page 11, lines 21-24) indicate that the periphery of the appellant's

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substrate can be outside the seal and can touch the lower electrode. Thus, the specification indicates that the temperature at the periphery of the appellant's substrate can differ from the temperature of the central portion of the substrate. The specification calls the temperature across such a substrate "substantially uniform", but does not provide a standard for measuring the degree encompassed by "substantially".

In some instances, it is possible to make a reasonable, conditional interpretation of claims adequate for the purpose of resolving patentability issues to avoid piecemeal appellate review. In the interest of administrative and judicial economy, this course is appropriate wherever reasonably possible. See *Ex parte Saceman*, 27 USPQ2d 1472, 1474 (Bd. Pat. App. & Int. 1993); *Ex parte Ionescu*, 222 USPQ 537, 540 (Bd. App. 1984). In other instances, however, it may be impossible to determine whether or not claimed subject matter is anticipated by or would have been obvious over references because the claims are so indefinite that considerable speculation and assumptions would be required regarding the meaning of terms employed in the claims with respect to the scope of the claims. See *In re Steele*, 305 F.2d 859, 862, 134 USPQ 292, 295 (CCPA 1962).

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For the reasons discussed above, the appellant's claims are sufficiently indefinite that application of the prior art to the claims is not possible. On this basis, we do not sustain the rejections under 35 U.S.C. §§ 102(b) or 103. It should be understood that this reversal is not a reversal on the merits of the rejections but, rather, is a procedural reversal predicated upon the indefiniteness of the claims.

*DECISION*

The rejection of claims 38 and 39 under 35 U.S.C. § 112, second paragraph, is reversed. The rejections of claims 21-27, 29, 31-37, 40 and 41-43 under 35 U.S.C. § 102(b) over Cathey, Jr., claim 28 under 35 U.S.C. § 103 over Cathey, Jr. in view of Meyer, and claims 21 and 30 under 35 U.S.C. § 103 over Cathey, Jr. in view of Horiuchi, are procedurally reversed. Under 37 CFR § 1.196(b), a new ground of rejection of claims 21-40 has been entered.

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 purposes of judicial review."

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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 ground of rejection to avoid termination of proceedings (§ 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 § 1.197(b) by the Board of Patent Appeals and Interferences upon the same record. . . .

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

*REVERSED, 37 CFR § 1.196(b)*

	)	
TERRY J. OWENS	)	
Administrative Patent Judge	)	
	)	
	)	
	)	BOARD OF PATENT
CATHERINE TIMM	)	
Administrative Patent Judge	)	APPEALS AND
	)	
	)	INTERFERENCES
	)	
JAMES T. MOORE	)	
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