

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 38

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JAMES W. THACKERAY
and GEORGE W. ORSULA

Appeal No. 1997-0106
Application 07/792,482

ON BRIEF

Before DOWNEY, HANLON, and PAK, Administrative Patent Judges.
HANLON, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 from the final rejection of claims 36-39, 44-47, 49-58, 60, 61, 63, 66-68 and 70, all the claims pending in the application. The claims on appeal are directed to a method for treating a substrate, such as a microelectronic wafer or a liquid crystal display substrate. Claim 36 is illustrative and reads as follows:

36. A method for treating a substrate comprising:

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(a) applying a layer of an antihalation composition on the substrate, the antihalation composition comprising an alkali soluble thermoplastic phenolic resin binder selected from the group consisting of novolak resins and polyvinyl phenols in an amount of from 50 to 90 weight percent of the composition on a dry solids basis and a thermal crosslinker compound in an amount sufficient to crosslink the composition;

(b) in the absence of a photoimaging step, at least partially thermally crosslinking the antihalation composition layer;

(c) applying a layer of a photoresist composition over the antihalation composition, the photoresist composition comprising an alkali soluble thermoplastic phenolic resin binder selected from the group consisting essentially of novolak resins and polyvinyl phenols in an amount sufficient to form a film and a radiation sensitive component in an amount sufficient to enable development of the photoresist following exposure to activating radiation;

(d) exposing the photoresist composition to patterned activation radiation;

(e) baking the exposed photoresist layer to cause a crosslinking reaction between the photoresist and antihalation layers;

(f) developing the baked, exposed photoresist layer; and

(g) in the absence of a photoimaging step, removing the bared antihalation layer, and

(h) altering the underlying substrate.

The following rejections are at issue in this appeal:¹

(1) Claims 36-39, 44-47, 49-58, 60, 61, 63, 66-68 and 70 are rejected under 35 U.S.C. § 112, first paragraph, based on written description.

¹ Additionally, the examiner rejected claim 36 under 35 U.S.C. § 112, second paragraph, for failing to provide antecedent basis for the "annihilation layer" of step (g) and claim 66 under 35 U.S.C. § 112, second paragraph, in view of several misspellings. However, these rejections have been withdrawn by the examiner. See Answer, p. 3.

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(2) Claims 36-39, 44-47, 49-58, 60, 61, 63, 66-68 and 70 are rejected under 35 U.S.C. § 112, first paragraph, based on enablement.

(3) Claims 36-39, 44-47, 49-58, 60, 61, 63, 66-68 and 70 are rejected under 35 U.S.C. § 112, second paragraph.

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

Claims 36-39, 44-47, 49-58, 60, 61, 63, 66-68 and 70 are rejected under 35 U.S.C. § 112, second paragraph, for failing to particularly point out and distinctly claim the subject matter which applicants regards as the invention. According to the examiner (Answer, p. 6):

Step (g) of claims 36, 56, and 66 recites "in the absence of a photoimaging step, removing the bared antihalation layer" however, Applicant previously recites photoimaging steps in the process, steps (d)-(f). It is not clear how step (g) can be performed in the absence of a photoimaging step when the process contains photoimaging steps recited prior to the removal of the bared photoimaging layer.

Appellants argue (Brief, p. 12):

From the claim format and the language used, it would be abundantly clear to one skilled in the art that the step of removing the antihalation layer in step (g) in the absence of a photoimaging step meant that the antihalation layer is not imaged in step (g) to assist in its removal.

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We agree. Furthermore, appellants' interpretation of the claim language at issue is consistent with the specification. See Specification, p. 23, lines 6-19.

The examiner further argues that "[i]t is not clear what is meant by 'altering the underlying substrate' in claims 36, 56, and 66." Answer, p. 7. However, the specification explains the phrase "altering the underlying substrate" as follows (see Brief, p. 13):

[Subsequent to the photolithographic process of the invention, the developed substrate may then be selectively processed on those substrate areas bared of photoresist, for example chemically etching or plating substrate areas bared of photoresist in accordance with procedures well known in the art. [Specification, p. 22, lines 26-31].

Reading the claim language at issue in light of the specification, one having ordinary skill in the art would have understood "altering the underlying substrate" to mean effecting a change to that portion of the substrate bared of photoresist. See In re Prater, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-51 (CCPA 1969) (claims cannot be read in a

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vacuum but instead must be read in the light of the specification).

For the reasons set forth above, the subject matter defined by the claims is particular and definite. Therefore, the rejection of claims 36-39, 44-47, 49-58, 60, 61, 63, 66-68 and 70 under 35 U.S.C. § 112, second paragraph, is reversed.

B. Rejection under 35 U.S.C. § 112, first paragraph

1. Enablement

According to the examiner, "the disclosure is enabling only for claims limited to the disclosed methods of altering the surface of the underlying substrate, such as etching." Answer, pp. 5-6. Presumably, the relevant claim language is the phrase "altering the underlying substrate" recited in subparagraph (h) of claims 36, 56 and 66.

Appellants argue that "[t]he art is fully aware of how a substrate is altered following photolithographic mask formation" (Brief, p. 11) and rely on several publications in

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support thereof. See Appendices B and C attached to the Brief.

The Court explains the burden in a rejection based on enablement in In re Wright, 999 F.2d 1557, 1561-62, 27 USPQ2d 1510, 1513 (Fed. Cir. 1993), as follows:

When rejecting a claim under the enablement requirement of section 112, the PTO bears an initial burden of setting forth a reasonable explanation as to why it believes that the scope of protection provided by that claim is not adequately enabled by the description of the invention provided in the specification of the application; this includes, of course, providing sufficient reasons for doubting any assertions in the specification as to the scope of enablement. If the PTO meets this burden, the burden then shifts to the applicant to provide suitable proofs indicating that the specification is indeed enabling.

The sole basis set forth by the examiner in support of the enablement rejection is that "[a]ltering a substrate can mean most anything, including weathering, which is not taught in Applicant's specification." Paper No. 25, p. 3; Answer, p. 6. While all possible methods of altering a substrate may not have been disclosed in appellants' specification, the examiner has failed to establish that undue experimentation would be required to make and use the full scope of the claimed invention. See Wright, 999 F.2d at 1561, 27 USPQ2d at 1513

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(to be enabling, a specification must teach those skilled in the art how to make and use the full scope of the claimed invention without "undue experimentation"). Therefore, the examiner's statement fails to rise to the level of a "reasonable explanation" as to why the claims are not adequately enabled by the description of the invention provided in the specification.

Based on the record before us, the examiner has failed to satisfy his initial burden. For this reason, the rejection of claims 36-39, 44-47, 49-58, 60, 61, 63, 66-68 and 70 under 35 U.S.C. § 112, first paragraph, based on enablement, is reversed.

2. Written description

Claims 36-39, 44-47, 49-58, 60, 61, 63, 66-68 and 70 are also rejected under 35 U.S.C. § 112, first paragraph, based on written description. According to the examiner, the specification, as originally filed, fails to provide descriptive support for the phrase "in the absence of a photoimaging step" recited in subparagraphs (b) and (g) of claims 36, 56 and 66. See Answer, pp. 4-5.

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Subparagraph (b) of claims 36, 56 and 66 reads as follows:

(b) in the absence of a photoimaging step, at least partially thermally crosslinking the antihalation composition layer[.]

Appellants argue that the phrase "in the absence of a photoimaging step" recited in subparagraph (b) establishes that the thermal cross-linking step in step (b) is not a curing step caused by exposure to imaging radiation. See Brief, p. 8. Appellants further argue that the specification describes the thermal cure embodiment of step (b) and in support thereof, rely on several portions of the specification, including the following (Brief, pp. 8-9):

On page 5, lines 26 to 31, it is stated that the antihalation composition in general comprises a resin binder and a compound capable of causing a thermally induced crosslinking reaction of the resin binder. . . . On page 7, line 30 to page 8, line 9, it is stated that the antihalation composition is one that cures or hardens on thermal treatment.

Similarly, subparagraph (g) of claims 36, 56 and 66 reads as follows:

(g) in the absence of a photoimaging step, removing the bared antihalation layer[.]

Appellants argue that the phrase "in the absence of a photoimaging step" recited in subparagraph (g) establishes

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that the step of removing the bared antihalation layer in step (g) is not a consequence of an imaging step. See Brief, p. 8. Appellants further argue that the specification describes this limitation and in support thereof, rely on page 23, lines 6 to 19 of the specification, wherein it states:

For example, an acid-hardening photoresist used in combination with a preferred antihalation composition of the invention comprising a phenol-based resin binder and an amine-based crosslinker as described above, is readily stripped with a single stripper solution after selective substrate treatment. For removing such coating layers, a preferred stripper solution contains about 90 weight percent dimethylsulfoxide and 10 weight percent para-toluenesulfonic acid. Preferably this composition is used at about 70 to 90°C.

We agree with appellants that the portions of the specification identified above reasonably establish written description for the claim language at issue. See In re Edwards, 568 F.2d 1349, 1351-52, 196 USPQ 465, 467 (CCPA 1978) ("To comply with the description requirement it is not necessary that the application describe the claimed invention in *ipsis verbis* . . .; all that is required is that it reasonably convey to persons skilled in the art that, as of the filing date thereof, the inventor had possession of the

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subject matter later claimed by him."). Therefore, the rejection of claims 36-39, 44-47, 49-58, 60, 61, 63, 66-68 and 70 under 35 U.S.C. § 112, first paragraph, based on written description is reversed.

REVERSED

MARY F. DOWNEY)	
Administrative Patent Judge)	
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)	APPEALS AND
ADRIENE LEPIANE HANLON)	
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