

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(2) is not binding precedent of the Board.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. 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 MONTE A. DOUGLAS

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Appeal No. 1997-1140  
Application 08/175,865<sup>1</sup>

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ON BRIEF

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Before HANLON, WARREN, and LIEBERMAN, Administrative Patent Judges.

HANLON, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134

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<sup>1</sup>Application for patent filed December 30, 1993.  
According to applicant, the application is a continuation of  
Application 07/929,081, filed August 12, 1992, abandoned.

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from the final rejection of claims 23-26 and 28-34.<sup>2</sup> Claims 27 and 35-37 are also pending in the application and have been allowed by the examiner. See Paper No. 17.

Claims 23 and 30 are illustrative of the subject matter on appeal and have been reproduced below:<sup>3</sup>

23. A method of etching a  $\text{CaF}_2$  surface, comprising the steps of:

(a) contacting said surface with water; and

(b) irradiating said surface with visible and/or ultraviolet radiant energy at an intensity sufficient to produce directional etching of said surface.

30. A method of patterning a  $\text{CaF}_2$  film deposited on a substrate, said method comprising:

(a) constructing a mask of patterned photoresist overlying said film, thereby dividing said film into exposed areas and covered areas;

(b) contacting said exposed areas with water; and

(c) directionally etching said  $\text{CaF}_2$  film from said exposed areas using radiant energy at an intensity sufficient to produce directional etching of said film.

The rejections at issue in this appeal are based solely

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<sup>2</sup>The rejection of claim 31 under 35 U.S.C. § 103 was withdrawn by the examiner in the Answer. See Answer, p. 2.

<sup>3</sup>We note that an incorrect copy of claim 23 appears in the appendix to the brief. A corrected copy of claim 23 has been reproduced in this Decision on Appeal.

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on what the examiner has characterized as "[t]he admitted prior art at page 2, lines 7-9 and 14-15 of the instant specification." See Answer, p. 2. The claims on appeal stand rejected as follows:

(1) Claims 23-26, 28 and 29 are rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103 as obvious over the "admitted prior art;" and

(2) Claims 30 and 32-34 are rejected under 35 U.S.C. § 103 as unpatentable over the "admitted prior art."

#### Discussion

Claim 23 is directed to a method of etching a  $\text{CaF}_2$  surface comprising the steps of:

(1) contacting the surface with water; and

(2) irradiating the surface with visible and/or

ultraviolet radiant energy at an intensity sufficient to produce directional etching of the surface.

According to the examiner (Answer, p. 3):

Applicant admits on page 2 of the specification that it is known to etch calcium fluoride in water (lines 7-9), or water and nitric acid (lines 14-15). The instant claims do not preclude the addition of etchants such as nitric acid, and do not require any specific light source. Therefore, these claims are fully met by the prior art etching techniques which,

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presumably were not performed in total darkness.

Appellant argues (Brief, p.5):

Regarding the Examiner's contention that Appellant's claims do not require any specific light source, Appellant disagrees as claim 23 requires irradiating with "visible and/or ultraviolet energy sufficient to produce directional etching of said surface." . . . More importantly, page 2 of the specification contains no teaching or suggestion of lighting conditions and any corresponding effect on CaF<sub>2</sub> water etching . . . . Furthermore, neither of the wet etch examples on page 2 provides directional etching . . . .

The examiner fails to find appellant's arguments persuasive since, according to the examiner, the specification fails to define "directional." The examiner concludes that since all etching proceeds in at least one direction, it would be considered to be directional. See Answer, p.5. Contrary to the examiner's position, the Specification defines "directional" as follows (Specification, p. 9, lines 3-12):

It is important to note that the photo-stimulated etching of CaF<sub>2</sub> is a directional etch process. Because the reaction is catalyzed to a large extent by photo-exposure, areas not exposed to photo-stimulation, such as those areas under a photoresist mask, will not etch. This directionality of etch is a major improvement over conventional wet etches which undercut the mask, making sharply delineated or very small structures difficult, if not impossible, to define. Another benefit of the photo-stimulated etching is that in

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some cases the photoresist mask may be eliminated all together. In this case the photo-stimulation may be applied as a patterned exposure, etching the CaF<sub>2</sub> surface only where the photo-energy is directed and not etching the CaF<sub>2</sub> surface in the non-stimulated areas.

See In re Prater, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-51 (CCPA 1969) (during examination claims are to be given the broadest reasonable interpretation consistent with the specification).

The examiner further maintains that performing the etching process of the "admitted prior art" in the ambient light of the laboratory is sufficient to anticipate or render obvious the invention of claim 23. However, according to the method of claim 23, a CaF<sub>2</sub> surface, once contacted with water, is irradiated with visible and/or ultraviolet radiant energy at an intensity sufficient to produce directional etching of the surface. The examiner has failed to explain how ambient light in a laboratory would irradiate a CaF<sub>2</sub> surface during the etching process of the "admitted prior art" at an "intensity sufficient to produce directional etching of said surface."

Furthermore, the fact that the use of a mask is well

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known in the art fails to cure the deficiencies of the teachings in the "admitted prior art" with respect to the rejection of claims 30 and 32-34. Manifestly, the examiner has failed to establish how the teachings of the "admitted prior art" suggest "directionally etching" a CaF<sub>2</sub> film "using radiant energy at an intensity sufficient to produce directional etching of said film" as required by claim 30. See In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992) (the examiner bears the initial burden of presenting a prima facie case of unpatentability).

#### Conclusion

For the reasons set forth above, the rejection of claim 23 under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103 as obvious over the "admitted prior art" and the rejection of claim 30 under 35 U.S.C. § 103 as unpatentable over the "admitted prior art" are REVERSED. Accordingly, the rejection of claims 24-26, 28 and 29 under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103 as obvious over the "admitted prior art" and the rejection of claims 32-34 under 35 U.S.C. § 103 as unpatentable over the "admitted prior art"

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are REVERSED. See 37 CFR § 1.75(c) (1998) ("Claims in  
dependent form shall be

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construed to include all the limitations of the claim  
incorporated by reference into the dependent claim.").

REVERSED

ADRIENE LEPIANE HANLON	)	
Administrative Patent Judge	)	
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	)	BOARD OF PATENT
CHARLES F. WARREN	)	APPEALS AND
Administrative Patent Judge	)	INTERFERENCES
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PAUL LIEBERMAN	)	
Administrative Patent Judge	)	

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