

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 42

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte TED Y. TSAI

Appeal No. 1996-0647
Application No. 07/871,401¹

HEARD: September 16, 1999

Before PAK, WARREN, and WALTZ, Administrative Patent Judges.

WALTZ, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 1 through 8, which are the only claims in this application.

¹ Application for patent filed June 25, 1992. According to appellant, the application is a continuation of Application No. 07/567,409, filed August 14, 1990, now abandoned, which is a continuation-in-part of Application No. 07/348,606, filed May 5, 1989, now U.S. Patent No. 4,959,124 issued September 25, 1990.

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According to appellant, the invention is directed to both a method of bleaching kraft wood pulp and a kraft pulp product with good brightness, viscosity and reduced toxins which method comprises bleaching the pulp with chlorine dioxide or a mixture of chlorine dioxide and chlorine followed by ozonation using specified ratios of chlorine and ozone (Brief, page 3).² Claims 1, 7 and 8 are illustrative of the subject matter on appeal and are reproduced below:

1. A method for the treatment of kraft pulp in preparation for its use in papermaking comprising the steps of:

contacting said pulp while dispersed in an aqueous medium with an initial charge of a chlorine-based bleaching agent selected from the group consisting of chlorine dioxide, and mixtures of chlorine dioxide and chlorine, wherein the total chlorine dioxide present in said charge represents between about 100% and about 50% of the total charge, expressed as effective chlorine, the remainder of said charge being chlorine, said bleaching agent producing a substantial quantity of chlorine-containing moieties that are insoluble in an acid medium,

thereafter, and prior to any intervening treatment of said pulp other than a wash, contacting said pulp with ozone, said ozone being present in an amount which provides a ratio of "C" factor to % ozone, based on dry weight of pulp, from about 0.036 to about 0.7 for a period of time sufficient to cause said ozone to oxidize substantial quantities of said

²All citation from the "Brief" is from the amended Brief dated Feb. 18, 1997, Paper No. 38.

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"Technical News", Paper Technology, p. 36, January 1989
(hereafter "Technical News").

Claims 1-3 and 5-8 stand rejected under 35 U.S.C. § 103 as unpatentable over Granum in view of "Technical News" and Kringstadt (Answer, page 3).³ Claim 4 stands rejected under 35 U.S.C. § 103 as unpatentable over the references above further in view of Nonni (Answer, page 4). Claim 7 stands rejected under 35 U.S.C. § 103 as unpatentable over Granum (*Id.*). Claim 8 stands rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103 as unpatentable over Kringstad or "Technical News" (Answer, page 5).⁴ We *affirm* the examiner's rejection of claim 8 over

³The final rejection included rejections under 35 U.S.C. § 112, first paragraph, obviousness-type double patenting over claims 1-6 of U.S. Patent No. 4,959,124, and rejections including Berry et al., "Toward Preventing the Formation of Dioxins During Chemical Pulp Bleaching", Pulp and Paper Canada, pp. 48-58, August 1989. These rejections and the Berry et al. reference were withdrawn in view of appellant's responses dated Nov. 25, 1994 (Paper No. 24) and Dec. 21, 1994 (Paper Nos. 27 and 28), although only the response dated Dec. 21, 1994, was entered by the examiner (see the Advisory Actions dated Dec. 14, 1994, Paper No. 25, and Jan. 17, 1995, Paper No. 29). Accordingly, these rejections and the Berry et al. reference are not before us in this appeal.

⁴In the restatement of this rejection on page 5 of the Answer, the examiner applies the Berry et al. reference in the obviousness analysis (see the discussion of Berry et al.

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Kringstad or Technical News but reverse all other rejections for reasons which follow.

OPINION

A. *The Rejection of Claims 1-3 and 5-8*

The examiner applies Granum for its teaching of bleaching pulp in a D/C-ZEH bleach sequence (Page J26, column 2, bleach sequence 4) to produce a pulp with a total organic chloride content of less than 5 mg/100 g (Answer, page 3). The examiner further applies "Technical News" and Kringstad for the teaching to use low chlorine multiples⁵ in pulp bleaching to prevent dioxin formation ("Technical News"), or

above). This appears to be an inadvertent error by the examiner and appellant was aware of the references applied in the rejection of claim 8 (see the Brief, page 5). Accordingly, the examiner's analysis in the Answer is considered to include Kringstad for every occurrence of Berry et al.

⁵Although not necessary for our decision, we note that the examiner's statement regarding the claimed limitation of the ratio of "C" factor to ozone has assumed that the artisan would lower the amount of chlorine/chlorine dioxide used while keeping the amount of ozone constant. The secondary references to "Technical News" and Kringstad do teach lowering the amount of chlorine/chlorine dioxide used in order to reduce the formation of chlorinated organics but we find no teaching in the record as to the amount of ozone needed if the chlorine was reduced.

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specifically to prevent TCDF and TCDD formation
(Kringstad)(Answer, paragraph bridging pages 3-4).

Appellant argues that this rejection combines Granum,
which is directed to bleaching sulphite pulps, with references
to "Technical News" and Kringstad which are directed to
bleaching sulphate (kraft) pulps (Brief, page 6).

On the record before us, we agree with appellant that the
combination of a reference to bleaching of sulphite pulp with
references to sulphate pulp bleaching in the manner proposed
by the examiner is improper. As stated by our reviewing Court
in *In re Jones*, 958 F.2d 347, 351, 21 USPQ2d 1941, 1943-44
(Fed. Cir. 1992):

Before the PTO may combine the disclosures of two or
more prior art references in order to establish
prima facie obviousness, there must be some suggestion
for doing so, found either in the references
themselves or in the knowledge generally available
to one of ordinary skill in the art. [Citation
omitted].

The examiner admits that Granum does "discuss the
properties of sulphite pulps" but states that Granum, on the
last page of the article, discusses the differences in
mutagenicity when bleaching sulphite versus sulphate pulps.
The examiner submits that "[i]t appears the EXPERIMENTAL (page

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J 29, column 2) procedure of GRANUM ET AL was performed on both sulphite and kraft [sulphate] pulp." (Answer, page 8, see also page 6).

The examiner fails to show any evidence why it "appears" the EXPERIMENTAL procedure of Granum was performed on sulphate as well as sulphite pulps. The teachings of Granum are directed to sulphite pulp bleaching. The comparison of mutagenicity⁶ between sulphite and sulphate pulps in Granum is based on the chlorination effluent (page J 29, left column, see Figure 15). Even though Granum discloses the mutagenicity of sulphate pulp after oxygen and ozone delignification (*id.*), the examiner has not pointed to any disclosure or teaching in Granum which would have suggested that the specific bleaching sequences on page J 26 would have been applied to sulphate (kraft) pulps.

Appellant has submitted the Renard Declaration under 37 CFR § 1.132 executed on June 19, 1992, as evidence that, in the knowledge generally available to one of ordinary skill in

⁶Granum teaches that ether extractable chloroorganics are mainly responsible for the mutagenic activity in the chlorination effluent (page J 29, left column).

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the art, the teachings regarding sulphite pulps would not be applicable to sulphate pulps. The examiner acknowledges the Renard Declaration but only cites the above noted teachings of Granum to rebut this Declaration (Answer, page 8).

Granum also teaches that the best bleaching sequences differ even between different sulphite processes. The general process of Granum involved the calcium base acid sulphite process where the best bleaching sequence was D/C₁ZEH (page J 26, middle column). Granum teaches that the "results from bleaching of magnesium sulphite pulps are somewhat different" and the best bleaching sequence for this pulp was D/CEH (page J 28, left column).

Considering the totality of the record, we determine that the examiner has failed to show any suggestion for combining the references as proposed, either in the references themselves or in the knowledge generally available to the artisan. *Jones, supra*. Therefore no *prima facie* case of obviousness has been established and the rejection of claims 1-3 and 5-8 under § 103 is reversed.

B. The Rejection of Claim 4

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The examiner's rejection of claim 4 fails for reasons noted above. The addition of the Nonni reference to show the use of a peroxide-alkali extraction stage to improve pulp brightness does not remedy the deficiencies discussed above.

Accordingly, the rejection of claim 4 under 35 U.S.C. § 103 as unpatentable over Granum in view of "Technical News", Kringstad and Nonni is reversed.

C. The Rejection of Claim 7

The examiner states that Granum teaches a D/CZEHD bleaching sequence (page J 27, sequence 7) and the elimination of the H stage would have been obvious "if one were willing to use a less bright pulp." (Answer, page 5).⁷

However, on this record, the examiner has not shown what loss of function would have been expected if the H stage was

⁷The examiner has also considered claim 7 in the rejection of claims 1-3 and 5-8 discussed above in rejection "A" (Answer, page 3). The examiner states that "claim 7 is an open claim and does not exclude the 'H' stage of GRANUM ET AL." (*Id.*). In addition to the reasons given above for reversal of this rejection, we must also note that claim 7 recites the transitional term "consisting of" along with the language "no other stages either before, in-between or following the stages of this sequence". Therefore, we construe this claim as "closed" to the inclusion of any other stages than washing stages. See *Ex parte Davis*, 80 USPQ 448, 450 (Bd. App. 1948).

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omitted or eliminated. The examiner has only alleged that the brightness of the pulp would be affected (Answer, page 5). Furthermore, the examiner has not presented any reasoning or evidence as to why one of ordinary skill in this art would have been motivated to eliminate the H stage. It should be noted that 10 of the 11 bleaching sequences taught by Granum on page J 27 include the H stage.

For the foregoing reasons, we determine that the examiner has failed to establish a *prima facie* case of obviousness. Therefore the rejection of claim 7 under § 103 as unpatentable over Granum is reversed.

D. The Rejection of Claim 8

The cellulosic kraft pulp of claim 8 is set forth in product-by-process terminology, with the requirement that the pulp is "essentially free" of 2,3,7,8 tetrachlorodibenzodioxin or 2,3,7,8 tetrachlorodibenzofuran, has a total organic chloride content (TOCL) of less than about 200 ppm, based on pulp, and a total adsorbed organic halogen content (AOX) of less than about 2 kg/ton, based on pulp.

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With regard to product-by-process claims, it is the patentability of the *products* defined by these claims, and not the processes for making them, which must be gauged in light of the prior art. *In re Wertheim*, 541 F.2d 257, 271, 191 USPQ 90, 103 (CCPA 1976). When the prior art discloses a product which reasonably appears to be identical or only slightly different from the product claimed in a product-by-process claim, a rejection either under 35 U.S.C. § 102 based on "inherency" or a rejection under 35 U.S.C. § 103 on "prima facie obviousness" is proper. *In re Fitzgerald*, 619 F.2d 67, 70, 205 USPQ 594, 596 (CCPA 1980); *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). A lesser burden of proof is needed to establish a *prima facie* case of obviousness for product-by-process claims and, once established, the burden shifts to appellant to prove that the prior art products do not inherently or necessarily possess the characteristics of the claimed product. *In re Fessman*, 489 F.2d 742, 744, 180 USPQ 324, 326 (CCPA 1974).

"Technical News" discloses a bleached kraft pulp "without any dioxin being formed" (page 36, left column). As noted by

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the examiner (Answer, sentence bridging pages 3-4), "Technical News" teaches to use "low chlorine multiple" and oxygen bleaching to reduce the formation of dioxin (page 36, left column). Low TOCl and AOX contents would have necessarily followed from the teachings of "Technical News" (Answer, page 7).

Kringstad discloses that the partial replacement of chlorine with chlorine dioxide and/or applying low chlorine ratio bleaching in kraft pulps reduces the amount of chlorinated organic material (pages 63-64). Kringstad teaches that the amount of TOCl can be reduced to about 2 kg/ton of pulp by applying the technique of replacing chlorine with chlorine dioxide, use of low chlorine ratio bleaching, and fortified alkaline extraction (page 67). Kringstad further teaches that this process produces kraft pulps with low amounts of PCDDs and PCDFs (*Id.*).

For the foregoing reasons, we determine that the examiner has shown that the prior art "Technical News" and Kringstad disclose products which reasonably appear to be identical or only slightly different from the claimed product, regardless of the method of preparation. Therefore the examiner has

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established a *prima facie* case under §§ 102(b)/103 which appellant has not rebutted by any showing, on this record, that the products of the prior art differ substantially from the claimed product. Accordingly, the rejection of claim 8 under 35 U.S.C. §§ 102(b)/103 is affirmed.

E. Summary

The rejection of claims 1-3 and 5-8 under § 103 over Granum in view of "Technical News" and Kringstad is reversed. The rejection of claim 4 under § 103 over these same references further in view of Nonni is reversed. The rejection of claim 7 under § 103 over Granum is reversed. The rejection of claim 8 under §§ 102(b)/103 over "Technical News" or Kringstad is affirmed. Accordingly, the decision of the examiner is affirmed-in-part.

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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).

AFFIRMED-IN-PART

CHUNG K. PAK)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
CHARLES F. WARREN)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
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THOMAS A. WALTZ)	
Administrative Patent Judge)	

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APJ PAK

APJ WARREN

DECISION: AFFIRMED-IN-PART
Send Reference(s): Yes No
or Translation (s)
Panel Change: Yes No
Index Sheet-2901 Rejection(s): _____

Prepared: December 15, 2000

Draft Final

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PALM / ACTS 2 / BOOK
DISK (FOIA) / REPORT