

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

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte INA PAHL,
HANS-WEDDO SCHMIDT AND
ULRICH GRUMMERT

Appeal No. 2006-1391
Application No. 10/168,806

ON BRIEF

Before PAK, WALTZ, and JEFFREY T. SMITH, *Administrative Patent Judges*.

WALTZ, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on an appeal from the primary examiner's refusal to allow claims 1 through 6, the only claims pending in this application, as amended subsequent to the final rejection (see the amendment dated Nov. 14, 2005, entered as per the Advisory Action dated Nov. 29, 2005). We have jurisdiction pursuant to 35 U.S.C. § 134.

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According to appellants, the invention is directed to a cross-flow filtration cassette having at least one two-ply microporous separation membrane wherein the plies of the two-ply membrane physically lie on top of one another, are joined at their peripheries by spacers but not bonded together, and the pores of the separation membrane are sized such that the average pore size of the front side ply is 1.3 to 5 times the average pore size of the back side ply (Brief, pages 2-3). Independent claim 1 is illustrative of the invention and is reproduced below:

1. A cross-flow filtration cassette having a feed inlet and feed flow channel; a permeate flow channel and a permeate outlet; a retentate outlet; and at least one two-ply microporous separation membrane having a front side ply facing said feed channel and a back side ply facing said permeate channel wherein said plies physically lie on top of one another and are joined at their peripheries by spacers but are not bonded together in the area between said spacers, wherein the flow of liquid feed through said separation membrane is tangential over the surface of said separation membrane and the flow of permeate through said separation membrane is from the front side ply to the back side ply, and wherein the pores of said separation membrane are sized such that the average pore size of said front side ply is 1.3 to 5 times the average pore size of said back ply.

The examiner has relied upon the following references as evidence of obviousness:

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van Reis 5,256,294 Oct. 26, 1993

Millipore, Catalog on Pellicon® Tangential Flow Filtration Cassettes, March 1999.

Claims 1-6 stand rejected under 35 U.S.C. § 103(a) as unpatentable over van Reis (Answer, page 3). Based on the totality of the record, we *affirm* the rejection on appeal. However, since we advance a rationale significantly different from the examiner in the Answer, we denominate this “affirmance” as a *new ground of rejection* pursuant to the provisions of 37 CFR § 41.50(b)(2004) to allow appellants the option of reopened prosecution or rehearing. Our reasons follow.

OPINION

The examiner finds that van Reis discloses a cross-flow filter device having membranes with feed inlets, permeate outlets, and concentrate outlets, where the membranes have multiple plies or a plurality of two-ply membranes, with pore sizes decreasing from the feed side ply to the permeate side ply (Answer, page 3). With regard to the cassette form of structure, the examiner finds that van Reis teaches use of Millipore Pellicon ultrafiltration systems, and cites the Millipore catalog as evidence of this structure (*id.*; see also pages 7-8).

The examiner finds that the claims differ from the teachings of van Reis in that the reference does not teach the ratio of pore size of the front side ply to the backside ply as 1.3 to 5 (*id.*). However, the examiner concludes that it would have been obvious to one of ordinary skill in the art at the time of appellants’ invention “that such a ratio can be established between the layers (or plies) of membranes ... depending on the particle

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size or molecular weights of the particles to be separated" (*id.*). The examiner cites case law for the holding that discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art (Answer, page 4).

In the "Response to Argument" section of the Answer (pages 4-10), the examiner attempts to interpret claim 1 on appeal as "reading on" Figure 4A of van Reis (e.g., Answer, page 8, first full paragraph; see the Reply Brief, pages 4-5). However, as correctly argued by appellants (Brief, pages 5-6), van Reis teaches that layered parallel membranes have the same pore size, i.e., a 1:1 pore size ratio (see van Reis, col. 10, II. 53-60). The membranes of the cascade systems of van Reis do have decreasing pore sizes (col. 6, II. 48-55 and 62-64; col. 11, II. 50-51) but the examiner has failed to establish that the disclosure of these cascade systems of van Reis meet the limitations of claim 1 on appeal, namely that the plies "physically lie on top of one another and are joined at their peripheries by spacers" and also have the flow channels specified in the claim. Furthermore, contrary to the examiner's rationale that it would have been "obvious to optimize" the result effective pore size variable (Answer, pages 3-4), we determine that the examiner has failed to establish that the pore size of adjacent membranes is a result effective variable. See *In re Antonie*, 559 F.2d 618, 620, 195 USPQ 6, 8-9 (CCPA 1977). We determine that van Reis teaches that the "size of the species of interest to be separated will determine the pore size of the membrane to be utilized" (col. 8, II. 32-34), but this teaching is in reference to the cascade system of membranes. Where van Reis has disclosed membranes adjacent or physically on top

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of one another, the reference teaches that these membranes should be the “same pore size” (col. 10, ll. 53-60). Thus, for these membranes, the examiner has not established that it would have been “obvious to optimize” (see also the Brief, pages 8-10).

Contrary to appellants’ argument that van Reis does not disclose two-ply membranes lying on top of each other, yet separated by spacers (Brief, page 6), we determine that van Reis teaches “adjacent” membranes where this term means that the filtration membranes “may be physically layered on top of one another or with a slight space between” (col. 9, ll. 31-35). Of course, if the membranes have a “slight space” between, they must be kept apart by some structure which may be denominated as a “spacer.” Appellants have pointed to the teaching of van Reis that these “adjacent” membranes are preferably of the same pore size (Brief, page 5, citing col. 10, ll. 53-60). However, van Reis defines the expression “same pore size” as including membranes where the actual pore size may “vary somewhat” (col. 9, ll. 26-30). Therefore, as noted above, we determine that the pore size ratio taught by van Reis is 1:1 or values slightly above or below this ratio. Since these values specifically taught by the reference are very close to the lower range limit (1.3) as claimed in claim 1 on appeal, we conclude that these claimed values would have been *prima facie* obvious to one of ordinary skill in this art with the expectation of similar properties. See *In re Peterson*, 315 F.3d 1325, 1330, 65 USPQ2d 1379, 1382 (Fed. Cir. 2003); *In re Geisler*, 116 F.3d 1465, 1470, 43 USPQ2d 1362, 1365 (Fed. Cir. 1997), and *Titanium Metals Corp. Of America v. Banner*, 778 F.2d 775, 783, 227 USPQ 773, 779 (Fed. Cir. 1985)(A *prima facie* case of

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obviousness exists when the claimed range and the prior art range do not overlap but are close enough such that one skilled in the art would have expected them to have the same properties).

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For the foregoing reasons, we determine that the claimed subject matter is prima facie obvious in view of the reference evidence. Appellants have argued that they have shown “unexpected advantages” for the claimed pore size ratios (Brief, pages 9-10). Therefore, we begin anew and consider all evidence for and against obviousness. See *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992).

Appellants argue that their Example and Comparative Examples 1-3 found on pages 5-7 of the specification establish “unexpected advantages” (Brief, page 9). We are not persuaded since the comparative showing is not commensurate in scope with the subject matter sought to be patented. See *In re Boesch*, 617 F.2d 272, 276, 205 USPQ 215, 219 (CCPA 1980). Appellants’ Example 1, allegedly representative of the claimed subject matter, is limited to a pore size ratio of 2.25 (specification, page 6, l. 19) while claim 1 on appeal has a lower limit of a 1.3 pore size ratio. Although Comparative Example 1 has a pore size ratio of 1.0, similar to the teaching of van Reis, we find no comparative showing of this example with an example directed to the lower end of appellants’ claimed range.

Accordingly, based on the totality of the record, including due consideration of appellants’ arguments and evidence, we determine that the preponderance of evidence weighs most heavily in favor of obviousness within the meaning of section 103(a). Therefore we affirm the rejection of claims 1-6 under section 103(a) over van Reis. Since our rationale differs significantly from that advanced by the examiner, we denominate this “affirmance” as a *new ground of rejection* where appellants may avail

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themselves of the provisions of 37 CFR § 41.50(b)(2004).

This decision contains a new ground of rejection pursuant to 37 CFR § 41.50(b) (effective September 13, 2004, 69 Fed. Reg. 49960 (August 12, 2004), 1286 Off. Gaz. Pat. Office 21 (September 7, 2004)). 37 CFR § 41.50(b) provides "[a] new ground of rejection pursuant to this paragraph shall not be considered final for judicial review."

37 CFR § 41.50(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 the appeal as to the rejected claims:

(1) *Reopen prosecution.* Submit an appropriate amendment of the claims so rejected or new evidence relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the proceeding will be remanded to the examiner. . . .

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(2) *Request rehearing.* Request that the proceeding be reheard under § 41.52 by the Board 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)(1)(iv)(2004).

AFFIRMED-37 CFR § 41.50(B)

CHUNG K. PAK Judge))	Administrative Patent
)	
THOMAS A. WALTZ Administrative Patent Judge))	BOARD OF PATENT
)	APPEALS AND
)	INTERFERENCES
JEFFREY T. SMITH Administrative Patent Judge)))

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