

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. 23

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte STEPHEN E. PETTY

Appeal No. 2002-0467
Application No. 08/824,153

HEARD: Feb. 5, 2003

Before WALTZ, DELMENDO, and POTEATE, 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 31 through 60 as amended subsequent to the final rejection (see the amendment dated July 28, 1999, Paper No. 7, entered as per the Advisory Action dated Aug. 5, 1999, Paper No. 8). Claims 31-60 are the only claims remaining in this application. We have jurisdiction pursuant to 35 U.S.C. § 134.

According to appellant, the invention is directed to an improved process of using supercritical fluids to effect separation of components in a mixture by contact with a non-porous membrane

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(Brief, page 2). A copy of illustrative independent claim 31 is attached as an Appendix to this decision.

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

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| Chen et al. (Chen) | 5,107,059 | Apr. 21, 1992 ¹ |
| Schucker | 5,430,224 | Jul. 4, 1995 |

The claims on appeal stand rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as unpatentable over Schucker (Answer, renumbered page 4). We reverse the rejections on appeal essentially for the reasons stated in the Brief, Reply Brief, Reply to Examiner's Communication, and for the reasons set forth below.

¹We note that Chen has been listed as prior art of record "relied upon in the rejection of the claims under appeal" (Answer, ¶(9) on incorrectly numbered page 2, now renumbered as page 3). However, the examiner has not included Chen in the statement of the rejection (Answer, ¶(10), renumbered page 4) although discussing Chen on renumbered page 8 of the Answer (originally page 6). See *In re Hoch*, 428 F.2d 1341, 1342 n.3, 166 USPQ 406, 407 n.3 (CCPA 1970) (whether a reference is used in a major or minor role, there is no excuse for not positively including a prior art reference in the statement of the rejection). Furthermore, as correctly argued by appellant, Hotler, British Patent 2190398 A, has been inexplicably listed as "Prior Art of Record" (Answer, ¶(9)) but never discussed by the examiner in the Answer (see the Reply Brief, page 1; the examiner's Letter dated June 22, 2000, Paper No. 15; and the Reply to Examiner Communication dated Aug. 25, 2000, Paper No. 16, page 1). Accordingly, we do not consider either Chen or Hotler as part of the examiner's evidence in support of the rejection.

OPINION

The examiner finds that Schucker discloses separating components of a mixture by perstration involving a nonporous membrane, using supercritical fluid in both the feed inlet and the sweep stream, recovering the supercritical fluid from the permeate and concentrate, adjusting temperature and pressure of the recovered fluid to supercritical conditions, and recycling the fluid back to the process (Answer, renumbered page 4).

To support a rejection based on section 102(b), the examiner must show that a prior art reference describes, either explicitly or inherently, every limitation of the claims. See *In re King*, 801 F.2d 1324, 1326, 231 USPQ 136, 138 (Fed. Cir. 1986). All of the claims on appeal specifically exclude the recycle of at least one fluid to the same side of the process (e.g., see claim 31, "wherein at least one of said first fluid and said second fluid is fresh to and cannot be recycled to the same side of said process").² The examiner reasons that the Schucker process initially provides fresh fluid to both sides of the membrane from sources 2 and SCS (see

²As correctly argued by appellant (Brief, page 10), a fluid that is "fresh" to the process is a fluid that has not been in contact with the same side of the nonporous membrane previously (i.e., a "virgin" solvent, see the specification, page 5, ll. 25-28; a fluid solvent that is "never returned to the side of first use," see page 12, ll. 20-22).

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Fig. 1), and teaches use of fresh fluid from these sources as make up fluid in the recycling process, and therefore the examiner concludes that "the use of fresh fluid or fluid that has not been in contact with the same side of the membrane is disclosed as alternative [sic] in '224, (Fig. 1)." Answer, renumbered page 5. We do not agree.

The initial conditions of the Schucker process do not anticipate the claimed process since these initial conditions do not show all of the limitations present in the claims on appeal, nor do these initial conditions suggest that initial conditions be preserved throughout the process. Contrary to the examiner's reasoning, Schucker does not disclose, teach or suggest that the fresh fluids initially used are "alternatives" to the recycled fluids taught as necessary to the process. Similarly, the recycle of used fluid in combination with fresh make up fluid does not anticipate the claimed limitation that at least one fluid cannot be recycled to the same side of the process, nor can any teaching be found that the fresh make up fluid is an "alternative" to the recycled fluid. See Schucker, Figures 1 and 2, and col. 3, ll. 11-12; ll. 27-28; col. 7, ll. 7-10; ll. 19-21; ll. 39-43; and ll. 53-57. Accordingly, we determine that the examiner has failed to

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present sufficient factual support for the rejection under section 102(b). Therefore, we cannot sustain this rejection.

With regard to the examiner's rejection under section 103(a), the examiner states that

Separating first and second fluids from the retentate and permeate respectively, obtaining a fluid "free of retentate" and recycling the fluid back to the feed side of the membrane is disclosed, therefore, the use of a fluid free of contaminants is suggested for the feed side of the membrane. The separated supercritical fluid, e.g. CO₂ [sic], subjected to feed conditions and free of retentate can be considered equivalent to fresh fluid for the intended purpose, since it does not contain contaminants. [Answer, renumbered page 5].

As correctly argued by appellant (Reply Brief, pages 3-5), the examiner has admitted that Schucker "fails to exclude the reuse or recycling of fluids" (Answer, renumbered page 6, l. 10). As discussed above, a limitation explicitly recited in the claims on appeal prohibits recycle to the same side of the process for at least one solvent fluid. The examiner has failed to present any convincing evidence or reasoning to support the position quoted above that the separated supercritical fluids of Schucker, disclosed as free of retentate or permeate, are "free of contaminants" and therefore can be considered "equivalent" to fresh fluids as defined and claimed by appellant. In appropriate circumstances, a single prior art reference can render a claim

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obvious. However, the examiner must still show a motivation or suggestion to modify the disclosure of this single reference. See *B.F. Goodrich Co. v. Aircraft Braking Sys. Corp.*, 72 F.3d 1577, 1582, 37 USPQ2d 1314, 1318 (Fed. Cir. 1996). On this record, the examiner has failed to provide any convincing motivation, suggestion or teaching to show why one of ordinary skill in this art would not recycle the separated fluids as taught by Schucker, whether these fluids were impure or "free of contaminants."

For the foregoing reasons and those stated in the Brief, Reply Brief, and Reply to Examiner's Communication, we determine that the examiner has failed to establish a *prima facie* case of obviousness in view of the reference evidence. Accordingly, we reverse the examiner's rejection of the claims on appeal under 35 U.S.C. § 103(a) over Schucker.

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The decision of the examiner is reversed.

REVERSED

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| THOMAS A. WALTZ |) | |
| Administrative Patent Judge |) | |
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| |) | BOARD OF PATENT |
| ROMULO H. DELMENDO |) | APPEALS |
| Administrative Patent Judge |) | AND |
| |) | INTERFERENCES |
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| LINDA R. POTEATE |) | |
| Administrative Patent Judge |) | |

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APPENDIX

31. A fluid-membrane separation process comprising
 - a. providing a nonporous membrane with a first side and a second side;
 - b. providing a mixture having at least a first component and a second component;
 - c. providing a first fluid and a second fluid to said process wherein at least one of said first fluid and said second fluid is fresh to and cannot be recycled to the same side of said process and at least one of said first fluid and said second fluid is in a supercritical state;
 - d. mixing said mixture having said first component and said second component with said first fluid to form a fluid mixture of said first fluid and said mixture;
 - e. passing said fluid mixture of said first fluid and said mixture of said first component and said second component over said first side of said membrane to obtain a mixture of a retentate of said second component and said first fluid; and
 - f. removing said first component of said mixture from said second side of said membrane by passing said second fluid over said second side of said nonporous membrane to obtain a mixture of a permeate of said first component and said second fluid.