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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 24

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte E.H. KELLE ZEIHER, BRIAN F. POST
WILLIAM F. McCOY and TIMOTHY L. CHAFFIN

Appeal No. 96-3854
Application No. 08/027,872[1]

ON BRIEF

Before and COHEN, STAAB and GONZALES, Administrative Patent Judges

GONZALES, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1 through 3, 5 through 7, 9 through 11, 13 through 16 and 18 through 21, which are all of the claims

[1] Application for patent filed March 8, 1993.

pending in this application.

We REVERSE.

BACKGROUND

The claims on appeal are directed to an apparatus (claims 1-3 and 5) and a method (claims 6, 7, 9 and 10) for monitoring the deposition on a membrane in a reverse osmosis system, to a reverse osmosis system including means for monitoring reverse osmosis membrane deposition (claims 11 and 13-15) and to a method for reverse osmosis of a fluid stream including the step of passing the fluid stream through an apparatus for monitoring membrane deposition (claims 16 and 18-21). Claims 1, 6, 11 and 16 are representative of the claimed subject matter. Claims 6, 11 and 16 are correctly reproduced in the appendix attached to appellants' corrected brief filed on September 5, 1995 (Paper No. 16)[2]. The copy of claim 1 in the

[2] We note that strict antecedent basis is lacking for the recitation of "the filtration system" in paragraph (c) of claim 11. Correction of this informality is in order upon return of the application to the jurisdiction of the examiner.

appendix is incorrect[3]. Claim 1 correctly reads as follows:[4]

> 1. An apparatus for monitoring membrane deposition in a reverse osmosis system comprising:
>
> an exterior body defining an interior compartment receiving a fluid stream; and
>
> a support membrane positioned in the interior compartment removably supporting a reverse osmosis membrane coupon parallel to the direction of fluid flow of the fluid stream through the interior compartment allowing the collection of deposition present within the fluid stream on the reverse osmosis membrane coupon.

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Madden	3,400,575	Sep. 10, 1968
Bach et al. (Bach)	4,389,879	Jun. 28, 1983

The following rejections are before us for review:

Claims 1 through 3, 5 through 7, 9 through 11, 13 through

[3] The word "for" in line 4 of claim 1, as it appears in the appendix, was canceled by Paper No. 7.

[4] As a result of a typographical error in Paper No. 5, the original recitation in claim 1 of a "support member" was changed to read "support membrane." The error was carried over to Paper No. 7. Correction of claim 1 in Paper No. 7 is in order upon return of this application to the jurisdiction of the examiner.

16 and 18 through 21 stand rejected under 35 U.S.C. § 103 as being unpatentable over Bach in view of Madden; and

Claims 1 and 5 stand rejected under 35 U.S.C. § 103 as being unpatentable over Madden.[5]

Rather than reiterate the conflicting viewpoints advanced by the examiner and the appellants regarding the above-noted rejections, we make reference to the examiner's answer (Paper No.
17) for the complete reasoning in support of the rejections, and

to the corrected brief filed September 5, 1995 (Paper No. 16) and the reply brief (Paper No. 18), for the appellants' arguments thereagainst.

OPINION

In reaching our decision in this appeal, we have given careful consideration to the appellants' specification and claims, to the applied prior art references, and to the

[5] Rejections of claims 1, 5 and 6 under 35 U.S.C. § 102 and of claim 6 under 35 U.S.C. § 103 based on Madden have been withdrawn (answer, page 4).

respective positions articulated by the appellants and the examiner. As a consequence of our review, we have made the determinations which follow.

Turning first to the examiner's rejection of claims 1 through 3, 5 through 7, 9 through 11, 13 through 16 and 18 through 21 under 35 U.S.C. § 103 as being unpatentable over Bach in view of Madden, we note that each of claims 1, 6, 11 and 16, the only independent claims before us, calls for either a reverse osmosis membrane or a reverse osmosis membrane coupon held by a support parallel to the direction of fluid flow through the interior compartment of the monitoring apparatus.

According to the examiner, Bach shows the claimed invention, except that Bach's measuring filter 11 is not supported parallel

to the direction of fluid flow and is not disclosed as a "reverse osmosis membrane" or a "reverse osmosis membrane coupon". The examiner cites Madden to show a fluid sampling

device having a filter medium 26 mounted parallel to the flow path when valves 18 and 22 are opened. It is the examiner's position that

> [i]t would have been obvious to one of ordinary skill in the art at the time the invention was made, to provide Bach with the flow path of Madden because this would involve a mere minor change in flow path, and both references are clearly from the sampling art. . . .the filter band or strip of Bach (col. 2, next to the last paragraph) which passes through the chamber clearly suggests the coupon form. One would be motivated to provide the band or strip with tear or score lines to easily remove the used part of the filter for detailed analysis or for storage. (answer, pages 3 and 4)

In addition, on page 5 of the answer, the examiner asserts that one of ordinary skill in the art would have been motivated to make the Bach flow parallel in order to return the fluid sample to the main flow.

Appellants argue that the combination of Bach and Madden would not lead one of ordinary skill in the art to appellants' invention (corrected brief, page 5). We agree.

The Bach patent discloses a method and apparatus for determining the colloid index of a liquid, such as water being treated in a reverse osmosis "desalification" [sic] system (col. 1, lines 39-41; and col. 5, lines 16-19). The disclosed

apparatus includes a collecting and measuring container 4 having an inlet conduit 15, a supporting screen member 13 on which a measuring filter 11 is mounted, an opening 14 below the screen, a filling pipe 10 which in turn extends lengthwise of the measuring container 4 into the vicinity of the outlet end 9 and an outlet valve 5. The apparatus further comprises an inlet valve 1 which controls the intake of measuring liquid into a pressure chamber 3 through inlet conduit 15, and a pressure control means 2 for controlling the pressure of liquid supplied to the chamber 3. The inlet valve 1 and the outlet valve 5 are controlled by a time control circuit 6 which is responsive to a vertically adjustable level detector or switching means 8. The switch 8 is arranged to respond when it detects a given level and thus a given volume of liquid in the container 4. The apparatus further comprises a time measuring circuit 7 connected to the level switch 8 and operable to measure the period of time which is required for the container 4 to be filled with a given volume of liquid preset by the positioning of the switch 8. The measuring filter 11 may be in the form of a membrane filter strip or band which is passed from a supply or storage reel 18

to a take-up reel 17. See Figures 1 and 2 and col. 4, lines 1-60. In order to determine

the colloid index, Bach measures the time it takes for a predetermined volume of sampling fluid to pass through the membrane filter strip before and after sampling fluid has been passed through the membrane filter strip for a test period T (col. 4, line 63 through col. 5, line 34).

The Madden patent discloses an apparatus and method for sampling the particulate contamination of a fluid flowing in a conduit 10. The apparatus includes a sample-inflow port 12, an upstream valve 18, a chamber 24 disposed above a filter medium 26, a downstream valve 22 and a sample-outflow port 16. The upper surface of the filter medium is disclosed as being coplanar with the bottom of the chamber 24 (col. 2, lines 29-31). When it is desired to sample the fluid, valve 18 is opened and valve 22 is closed forcing the fluid through the filter medium 26 and into a container 30 (col. 2, line 45-48). Fluid flow through the filter medium during the sampling period results in the deposition of particulate contaminants

upon the surface of the filter medium. The extent of particulate deposition may be observed on the surface of the filter medium through a viewing port 32. See col. 2, lines 61-71. Madden further discloses that

after the sample has been observed, valves 22 and 18 are re-opened to establish fluid flow through the chamber 24 over the surface of filter medium 26 for the purpose of cleaning the surface of filter medium 26 between sampling periods (col. 2, lines 29-38 and col. 3, line 73 through col. 4, line 3).

It is well-established that before a conclusion of obviousness may be based on a combination of references, the examiner must show that some objective teaching or suggestion in the applied prior art, or knowledge generally available in the art, would have led those of ordinary skill to combine the teachings of the references to arrive at the claimed invention. Pro-Mold and Tool Co. v. Great Lakes Plastics Inc., 75 F.3d 1568, 1573, 37 USPQ2d 1626, 1629 (Fed. Cir. 1996); In re Fritch, 972 F.2d 1260, 1266, 23 USPQ2d 1780, 1784

(Fed. Cir. 1992); Ashland Oil, Inc. v. Delta Resins & Refractories Inc., 776 F.2d 281, 297 n. 24, 227 USPQ 657, 667 n. 24 (Fed. Cir. 1985). Here, apart from reference to appellants' disclosure of the present invention, we find no such reason, suggestion, or motivation which would have lead one of ordinary skill in the art to combine the disclosures of Bach and Madden in the manner proposed by the examiner. The examiner's assertion that it would have been

obvious to a person of ordinary skill in the art to provide Bach with the parallel flow path of Madden because the modification would have involved a minor change and both references are from the same sampling art seems to us to be an assertion that the invention as a whole would have been obvious because the individual parts of the invention were know in the art. This is clearly an inappropriate rationale for a conclusion of obviousness.

The examiner's other assertion that one of ordinary skill in the art would have been motivated to make the Bach flow parallel in order to return the sample to the main flow is not

persuasive. Bach teaches that the container 4 is emptied after the first step of the disclosed method and that in the second step measuring liquid is passed through the filter 11 and out chamber 4 through open outlet valve 5 (col 4, line 63 through col. 5, line 12). Bach also discloses that this second test period may be five to fifteen minutes long (col. 5, lines 20 and 21). Bach does not disclose what happens to the sampling liquid after it passes through outlet valve 5. Thus, whether or not the sampling liquid is returned to the main flow does not appear to be a matter of concern to Bach. In any event, if it were deemed desirable to

return sampling liquid to the main flow in Bach, this could be accomplished without making the liquid flow parallel to the filter strip. On the other hand, Madden provides parallel flow for a reason, namely, to clean the surface of the filter medium, that would appear to be of little or no concern to Bach, since Bach provides an arrangement for periodically replacing the filter medium in the form of supply reel 18 and take-up reel 17. In our view, it is only through the use of

impermissible hindsight that one would provide for parallel flow in Bach based on Madden's teachings.

For the foregoing reasons, we conclude that the examiner has failed to establish a prima facie case of obviousness for the claimed subject matter in view of the applied prior art references. Accordingly, the rejection of independent claims 1, 6, 11 and 16, and claims 2, 3, 5, 7, 9, 10, 13 through 15 and 18 through 21 dependent thereon, under 35 U.S.C. § 103 as being unpatentable over Bach in view of Madden will not be sustained.

Turning now to the rejection of claims 1 and 5 under 35 U.S.C. § 103 as being unpatentable over Madden alone, it is the examiner's position that the only patentable feature set forth in claim 1 which is not found in Madden is the reverse osmosis membrane coupon. However, the examiner finds it obvious that "the membrane of Madden could originate from a membrane

sheet of plural coupons separable by tear lines or score lines" (answer, page 4).

First, contrary to what is implied by the examiner, we do not believe appellants' use of the word "coupon" in the phrase "reverse osmosis membrane coupon" appearing in the claims requires a membrane sheet of plural "coupons" separable by tear lines or score lines. Webster's dictionary[6] defines "coupon" as --3: a test sample, and this is the use of the word intended here, in our view. Accordingly, and in contrast to what the examiner believes, we believe it is of no moment that Madden's filter membrane sheet lacks tear lines or score lines. Second, since appellants' specification teaches that the membrane which is supported parallel to the direction of fluid flow through the interior compartment is made of the same material as the membrane used in the reverse osmosis system (page 10), and since appellants' specification also teaches that reverse osmosis is

[6] Webster's Third New International Dictionary of the English Language, Unabridged, G. & C. Merriam Co., Springfield, MA, 1971.

used for separations involving material less than .001 micron in size (page 2), we regard the claim language "reverse osmosis membrane" as requiring the membrane in question to have the ability to separate out materials less than .001 microns in size. Accordingly, although Madden discloses (col. 3, lines 33-38) that the filter membrane thereof may be made of one of the same materials appellants use in making the claimed reverse osmosis membrane, i.e., cellulose acetate, we do not consider Madden's filter membrane to be a "reverse osmosis membrane," as called for in the claims, because Madden's filter membrane is only designed "to filter out particulate contaminants of a size equal to or greater than ½ micron" (col. 3, lines 33-38). Third, there is simply no teaching in Madden that the filter membrane should be constructed so as to be capable of functioning as a "reverse osmosis membrane." For these reasons, we do not agree with the examiner's assertion that Madden would have been suggestive of the invention defined by appellants' claim 1.

Accordingly, the rejection of independent claims 1, and claim 5 dependent thereon, under 35 U.S.C. § 103 as being unpatentable over Madden will not be sustained.

CONCLUSION

To summarize, the decision of the examiner to reject claims 1 through 3, 5 through 7, 9 through 11, 13 through 16 and 18 through 21 under 35 U.S.C. § 103 is reversed.

REVERSED

IRWIN CHARLES COHEN Administrative Patent Judge	)	
LAWRENCE J. STAAB Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
JOHN F. GONZALES Administrative Patent Judge	)	

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