

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. 18

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MARY A. ALVIN

Appeal No. 1999-0551
Application No. 08/636,431

ON BRIEF

Before TIMM, DELMENDO, and JEFFREY T. SMITH, *Administrative Patent Judges*.
JEFFREY T. SMITH, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the Examiner's final rejection of claims 1-9, as amended by the after final amendment filed, according to the certificate of mailing, November 14, 1997.¹ Claims 1-9 are the only claims pending in this application.

¹This amendment was entered as per the Advisory Action mailed November 28, 1997.

BACKGROUND

Appellant's invention relates to a filter element. Claims 1 and 5, the only independent claims, and 6 are illustrative:

1. A filter element comprising:

a filter member, said filter member having an open end, a closed end, and a porous sidewall, said side wall defining a bore which extends from a location beginning at said open end and terminates at the closed end allowing a gas to flow, said sidewall having an outer surface and an inner surface which allow a gas to flow through;

a first membrane in communication with said outer surface for preventing particulate matter from penetrating into said sidewall from the outer surface;

a second membrane in communication with said inner surface for preventing particulate matter from penetrating into said side wall from the inner surface; and

wherein said first and second membranes have a finer porous structure than the sidewall.

5. A filter element comprising:

a filter member, said filter member having a porous sidewall, said sidewall having an outer surface and an inner surface which allow a gas to flow through;

a first membrane in communication with said outer surface for preventing particulate matter from penetrating into said sidewall from the outer surface;

a second membrane in communication with said inner surface for preventing particulate matter from penetrating into said sidewall from the inner surface; and

wherein said first and second membranes have a finer porous structure than the sidewall.

6. The filter element of claim 5 wherein said first and second membranes are made of any one of the group consisting of a finer porous ceramic grained material similar to the underlying support matrix, sintered metal, a finer fibrous chopped matrix layer, a finer fibrous continuous matrix layer, a

wrapped ceramic yarn comprising particulates, CVI, and Sol-gel, and a coated wrapped ceramic yarn comprising particulates, CVI, and Sol-gel.

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

Bogart et al. (Bogart)	4,923,487	May 8, 1990
Butkus	4,946,487	Aug. 7, 1990
Yamamoto et al. (Yamamoto)	5,409,515	Apr. 25, 1995
Connolly et al. (Connolly)	5,460,637	Oct. 24, 1995
Zievers et al. (Zievers)	5,500,029	Mar. 19, 1996

Claims 1, 4, and 5 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Yamamoto. Claims 1-7 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Connolly in view of Zievers. Claim 8 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Connolly in view of Zievers and, in addition, Bogart. Claim 9 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Connolly in view of Zievers and, in addition, Butkus. We reverse all of the above rejections. Our reasons follow.

OPINION

Anticipation by Yamamoto

For the reasons well articulated in the paragraph bridging pages 1 and 2 of the Reply Brief, we find that the Examiner has failed to establish a *prima facie* case of anticipation over Yamamoto. In order for a reference to anticipate, “[t]here must be no difference between the claimed invention and the

reference disclosure, as viewed by a person of ordinary skill in the field of the invention.” *Scrrips Clinic & Research Found. v. Genentech Inc.*, 927 F.2d 1565, 1576, 18 USPQ2d 1001, 1010 (Fed. Cir. 1991). In the present case, as pointed out by Appellant, the claims require that the membranes have a finer porous structure than the sidewall and Yamamoto does not describe such a structure (Reply Brief, pages 1-2). In fact, Yamamoto describes the exact opposite structure, i.e., the inner and outer sheets are to have larger pores than the membrane sandwiched therebetween (col. 12, lines 29-31). As there is a difference between the claimed invention and the reference disclosure, there is no anticipation.

Obviousness over Connolly and Zievers

Appellant’s claims 1 and 5 require a filter member to have a porous sidewall wherein the sidewall has an outer surface and an inner surface which allow a gas to flow through. In communication with the outer surface is a first membrane which prevents particulate matter from penetrating into the sidewall from the outer surface. In communication with the inner surface is a second membrane which prevents particulate matter from penetrating into the sidewall from the inner surface. Both the first and second membranes have a finer porous structure than the sidewall.

Zievers² describes a candle filter that employs a wrapping of continuous filamentary ceramic material (14) over a porous ceramic support structure (12). A membrane (16) is applied to the outer surfaces of the ceramic support and the filamentary ceramic material. (Col. 3, ll. 27 to 28.) The outer

² The number designations refer to the drawing of Figure 2.

membrane provides the filter media which captures particulates entrained in the gas. (Col. 4, ll. 7 to 8.) Zievers discloses the ends of the ceramic wrapping (14) are folded back a short distance over the ends of the tube (i.e., support structure). (Col. 3, ll. 19 to 21.) The wrapped end of the support structure is inserted into the annular grove (22) in the cap (18). (Col. 3, ll. 46 to 49.) The membrane, on the interior surface of the support structure, does not appear to extend above the cap so as to prevent particulate matter from penetrating into the support structure from the interior surface. Zievers does not disclose or describe a membrane, having a finer porous structure than the support structure, which prevents particulate matter from penetrating into the support structure from the inner surface.

Connolly describes a ceramic candle filter for removing particles from a gas stream. The filter comprises a porous elongated filter support and a porous membrane layer on the outer surface of the support. (Col. 2, ll. 32 to 34.) Connolly discloses the membrane layer has a porosity that is less than that of the support. (Col. 2, ll. 56 to 57.) Connolly does not disclose or describe a membrane, having a finer porous structure than the support structure, which prevents particulate matter from penetrating into filter support structure from the inner surface.

The Examiner asserts that Zievers shows the placement of a membrane layer on the inner and outer surfaces of the filter. The Examiner concludes that it would have been obvious to modify the filter of Connolly in light of the showing of Zievers. (Answer, p. 3.) We do not agree. The phrase “in communication with the inner surface is a second membrane which prevents particulate matter from penetrating into the sidewall from the inner surface” when read in light of the specification must be

construed to be that the second membrane prevents particulate matter from penetrating the entire inner surface. To construe otherwise would defeat the purpose of the invention as described in the specification. (See pages 1 to 3 and Figures 3 and 4.) Neither Zievers nor Connolly discloses a membrane that protects the entire inner surface of the filter (porous sidewall) from penetration by particulate matter. Even if one of ordinary skill in the art were to modify the filter of Connolly as suggested by the Examiner, the filter achieved would not meet the limitations of claims 1 and 5 because the inner surface of the porous sidewall would not be protected from penetration from particulate matter.

In the absence of sufficient factual evidence or scientific rationale on the part of the Examiner to establish why and how a skilled artisan would have arrived at Appellant's filter element the applied references' teachings as discussed above, we find that the Examiner has failed to meet the initial burden of establishing the *prima facie* obviousness of the claimed subject matter. See *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992); *In re Piasecki*, 745 F.2d 1468, 1471-1472, 223 USPQ 785, 787-788 (Fed. Cir. 1984). Accordingly, we reverse the Examiner's rejection of claims 1 to 9 under 35 U.S.C. §103(a).

CONCLUSION

The rejection of claims 1, 4, and 5 under 35 U.S.C. § 102(e) as being anticipated by Yamamoto is reversed. The rejection of claims 1-7 under 35 U.S.C. § 103(a) as being unpatentable over Connolly in view of Zievers is reversed, as well as the rejections of claims 8 and 9 under 35 U.S.C. § 103(a) as being unpatentable over Connolly in view of Zievers and, in addition, Bogart are reversed.

REVERSED

ROMULO H. DELMENDO
Administrative Patent Judge

JEFFREY T. SMITH
Administrative Patent Judge

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CATHERINE TIMM, *Administrative Patent Judge*, dissenting.

While I concur with my colleagues with regard to the reversal of the decision of the Examiner to reject claims 1, 4, and 5 under 35 U.S.C. § 102(e) as being anticipated by Yamamoto, I do not agree with their reversal of the Examiner's obviousness rejections. I believe that the majority has too narrowly interpreted the phrase "a second membrane in communication with said outer surface for preventing particulate matter from penetrating into said sidewall from the inner surface" (3rd clause of claims 1 and 5).

My colleagues state the following in their opinion:

The phrase "in communication with the inner surface is a second membrane which prevents particulate matter from penetrating into the sidewall from the inner surface" when read in light of the specification must be construed to be that the second membrane prevents particulate matter from penetrating the entire inner surface. To construe otherwise would defeat the purpose of the invention as described in the specification. (See pages 1 to 3 and Figures 3 and 4.)

"During patent examination, the pending claims must be interpreted as broadly as their terms reasonably allow." *In re Zletz*, 893 F.2d 319, 321-22, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989). It is improper to read limitations from the specification into the claims. *Id.* See also *In re Hyatt*, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1668 (Fed. Cir. 2000). "Generally, particular limitations or embodiments appearing in the specification will not be read into the claims." *Enercon GmbH v. ITC*, 151 F.3d 1376, 1384, 47 USPQ2d 1725, 1731 (Fed. Cir. 1998)(quoting *Loctite Corp. v. Ultraseal*

Ltd., 781 F.2d 861, 867, 228 USPQ 90, 93 (Fed. Cir. 1985)). An interpretation which is broad but not unreasonable is proper. *See In re Hyatt*, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1668 (Fed. Cir. 2000)(“The specification, although lengthy, contains no definition of ‘shared’ or ‘sharing’ that would require the Board to construe those limitations in the narrower manner asserted by Mr. Hyatt. The Board's interpretation of those terms, although broad, is not unreasonable.”).

In the present case, the Examiner’s interpretation is broad, but not unreasonable. The Examiner interprets the claims as encompassing filter elements in which a second membrane is in communication with some part, but not the entire, inner surface. I agree that the claims do not require that the membrane extend along the entire length of the inner sidewall. Claims 1 and 5 call for the sidewall to have an inner surface which allows a gas to flow through (first clause) and a second membrane *in communication with* the inner surface for preventing particulate matter from penetrating into the sidewall from the inner surface (third clause). The second membrane need only be “in communication” with the inner surface at some point. Nothing in claim 5 rises to a requirement that the inner membrane extend the entire length of the inner surface of the sidewall.

My colleagues state that to construe the claims as encompassing structures in which the inner membrane does not cover the entire inner surface “would defeat the purpose of the invention as described in the specification.” I cannot agree that the purpose described in the specification is a necessary element of the claimed invention. The claim is drawn to an apparatus. “Claims drawn to an apparatus must distinguish from the prior art in terms of structure rather than function.” *In re Danly*,

263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). “[A]pparatus claims cover what a device *is*, not what a device *does*.” *Hewlett-Packard Co. v. Bausch & Lomb, Inc.*, 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990). The functional recitation of “for preventing particulate matter from penetrating into said sidewall from the inner surface” merely requires that the inner membrane be of a structure capable of preventing particulate matter penetration. *See In re Yanush*, 477 F.2d 958, 959, 177 USPQ 705, 706 (CCPA 1973)(Appellant’s use limitation does not impart a structural feature different from those of the prior art where the prior art structure inherently possesses the capability of performing the claimed function). An inner membrane such as that of Zievers has the inherent capability of preventing particulate matter penetration at the location it is applied even if that capability is not used. The claim does not recite that particulate matter be prevented from penetrating *the entire* sidewall. Moreover, the claims could be easily amended to make the extent of coverage clear.

Obviousness over Connolly and Zievers

Both Connolly and Zievers describe a filter element for separating particulates from gas. As required by claim 5, the filter element of each of the references has a filter member with a porous sidewall and a membrane of finer porosity on the outer surface (Connolly, col. 2, lines 32 -34, lines 56-57; Zievers, col. 1, lines 62-67, col. 2, lines 60-62). In the filter element of Zievers, thin skin or membrane 16 (col. 3, lines 26-27) is both present on the outer surface and also is “received in an annular groove **22** in the cap **18**” (col. 3, lines 45-46). Figure 2 shows twine-like wrapping 14, which has the membrane 16 applied to it, extending around the ends of tube 12 onto the inner surface.

Zievers thus describes a membrane “in communication with said inner surface” as required by claim 5.³

I, therefore, conclude that the Examiner has established a *prima facie* case of unpatentability over Connolly and Zievers.

In addition to the argument that the claims require the entire inner surface to be covered by the second membrane, Appellant also argues that the references do not solve the problem solved by the present invention and that there is no motivation for one of ordinary skill in the art to combine their teachings to attempt to solve the problem solved by the present invention (Brief, page 9). These arguments are not persuasive. A *prima facie* case of obviousness does not require that the applied prior art recognize and address the specific problem upon which the inventor was working. See *In re Dillon*, 919 F.2d 688, 693, 16 USPQ2d 1897, 1901-1902 (Fed. Cir. 1990)(*en banc*), *cert denied*, 500 U.S. 904 (1991). Moreover, the motivation in the prior art to combine the teachings of the references need not be the same as that of the applicant to establish obviousness. *In re Kemps*, 97 F.3d 1427, 1430, 40 USPQ2d 1309, 1311 (Fed. Cir. 1996).

Appellant also argues that “[t]here is no teaching in Zievers et al. that would indicate to one skilled in the art that it would be desirable to use a membrane such as that shown in Connolly et al. on both the inner and outer surface of the sidewall.” (Reply Brief, page 2). The Examiner stated that it would have been obvious to make the combination “in order to protect such filter member” (Answer,

³Zievers describes each and every element of claim 5 and thus anticipates this claim. I note that lack of novelty is the ultimate or epitome of obviousness. *In re Fracalossi*, 681 F.2d 792, 794, 215 USPQ 569, 571 (CCPA 1982).

page 3) and that reason comes from looking at the disclosures of both Connolly and Zievers as a whole (Answer, page 6). I agree. Furthermore, Zievers alone teaches each limitation of claim 5 and, therefore, a reason to combine the teachings of Zievers with those of Connolly is not required to establish a *prima facie* case of unpatentability.

With respect to claim 6, Appellant argues that the references do not disclose or suggest the use of the materials recited in the claim on both the inner and outer surfaces of the filter member sidewall, with each membrane having a finer porous structure than the filter member (Brief, page 9). This argument is not persuasive because both Connolly and Zievers describe making the membrane from a continuous wrapped ceramic yarn coated with a particulate⁴ (Connolly, col. 2, lines 45-54; Zievers col. 3, lines 7-9 and lines 27-32), one of the materials recited in claim 6. As discussed above, both references also describe that the membranes have a finer porous structure than the sidewall.

I note that the Brief and Reply Brief contain no arguments with respect to the separate patentability of claims 8 and 9 (Brief, pages 9-10, Reply Brief in its entirety) and, therefore, these claims stand or fall with claims 1 and 5. I would affirm the Examiner's decision to reject claims 1-9 as obvious.

⁴A colloidal slurry as described by Zievers is a mixture of particulates in liquid.

CATHERINE TIMM
Administrative Patent Judge

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APPEAL NO. 1999-0551 - JUDGE TIMM
APPLICATION NO. 08/636,431

APJ JEFFREY SMITH

APJ DELMENDO

APJ TIMM

DECISION: **REVERSED**
DISSENT-IN-PART (TIMM)

Prepared By:

DRAFT TYPED: 15 Nov 02

FINAL TYPED: