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EXAMINER

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte LEI XIAO, STEVEN LESLIE SCORFIELD, and
JOHN CHAPPLES

Appeal 2018-004675
Application 14/447,922
Technology Center 1700

Before LINDA M. GAUDETTE, N. WHITNEY WILSON, and
LILAN REN, *Administrative Patent Judges*.

WILSON, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant¹ appeals under 35 U.S.C. § 134(a) from the Examiner's December 5, 2016, decision finally rejecting claims 1–15 and 21–25 (“Final Act.”). We have jurisdiction over the appeal under 35 U.S.C. § 6(b).

We reverse.

¹ Appellant is the Applicant Life Safety Distribution AG. The real party in interest is identified as Life Safety Distribution GmbH. (Appeal Br. 4).

CLAIMED SUBJECT MATTER

Appellant's disclosure is directed to a gas sensor having a filter which includes two or more chemicals that are incompatible or cross-reactive (Spec. ¶ 11). The two chemicals are physically separated by a gas permeable, inert barrier. The claimed invention is set forth in representative claim 1, which is reproduced below from the Claims Appendix of the Appeal Brief:

1. A gas sensor comprising:
 - a housing;
 - an opening in the housing;
 - a plurality of electrodes disposed within the housing;
 - a filter disposed within the housing between the opening and the plurality of electrodes, wherein the filter comprises two or more chemicals that are cross-reactive; and
 - a barrier disposed between at least two of the two or more chemicals within the filter, wherein the barrier is a gas permeable, inert barrier.

REJECTIONS

I. Claims 1–10 and 21–23 are rejected under 35 U.S.C. § 103(a) as unpatentable over Capetanopolous² in view of Azarian.³

II. Claims 11–15 and 24–25 are rejected under 35 U.S.C. § 103(a) as unpatentable over Capetanopolous in view of Azarian and further in view of Jolson.⁴

² Capetanopolous et al, US 5,560,810, issued October 1, 1996.

³ Azarian et al., US 6,238,467 B1, issued May 29, 2001.

⁴ Jolson et al., US 5,338,429, issued August 16, 1994.

DISCUSSION

The Examiner finds that Capetanopolous teaches each of the limitations of claim 1, except that it “does not explicitly disclose the filter comprises two or more chemicals that are cross-reactive; a barrier disposed between at least two of the two or more chemicals within the filter, wherein the barrier is a gas permeable, inert barrier” (Final Act. 3–4, citing Capetanopolous 1:29, 1:35–36, 2:66, 3:3, 3:11, FIG. 1). The Examiner further finds that Azarian discloses a filter comprising activated carbon and potassium permanganate, and further discloses a barrier between the chemicals within the filter, wherein the barrier is a gas permeable, inert barrier (Final Act. 4, citing Azarian 8:11–22, 8:34–9:16). The Examiner determines that it would have been obvious to form the filter in Capetanopolous so “that it includes the chemicals disclosed by Azarian, because . . . each adsorbent selectively removes different contaminants as they pass through the filter” (*id.*).

As a preliminary matter, we construe the claim terms “cross-reactive” and “inert barrier.” The Examiner construes these terms based on their broadest reasonable interpretation (Ans. 9). The Examiner determines that the term “cross-reactive” is broad enough into include any interaction between atoms or molecules of different chemicals, including van der Waals forces (*id.*). The Examiner also determines that the phrase “inert barrier” includes barriers which are unmoving, motionless, inanimate, still, stationary, or static (*id.*).

It is well established that during prosecution, “the PTO must give claims their *broadest reasonable construction consistent with the*

specification. . . . Therefore, we look to the specification to see if it provides a definition for claim terms, but otherwise apply a broad interpretation.” *In re ICON Health & Fitness, Inc.*, 496 F.3d 1374, 1379 (Fed. Cir. 2007) (emphasis added) (citation omitted). In this instance, we agree with Appellant that in view of the Specification, the term “cross-reactive” means chemicals which would chemically react with each other. This is supported by the Specification, which discusses that one of the objects of the claimed invention is to increase the lifespan of gas sensors which can be shortened by the chemical reaction of different components with each other (Spec. § 7). Similarly, the term “inert barrier” is properly construed in claim 1 to mean a barrier which physically separates the components of the sensor and is chemically inert (*see* Spec. ¶ 13 (“A number of materials could, in principle, be used as the inert barrier provided that they meet the criteria of *being chemically inert* and possess sufficient porosity so as not to significantly restrict gas flow through the filter compartment.” (emphasis added))).

Applying the broadest reasonable interpretations of “cross-reactive” and “inert barrier,” Appellant argues that the cited art does not teach or suggest an inert barrier disposed between two or more chemicals within the filter, as recited in claim 1 (Appeal Br. 15, 17). The Examiner finds that this feature is taught by Azarian based on the following argument:

Azarian. . . discloses “suitable filter materials for the present invention include such filter media as filter papers or filter membranes such as ePTFE, polypropylene, or polyethylene membranes, non-wovens or scrims (e.g., polyester or polyolefins), or cast polymeric membranes, or some combination of filter materials.” Additionally, with regard to the above disclosed filter membranes, Azarian discloses in

column 7 line 60 through column 8 line 6: “Further, the adsorbent may comprise one or more adsorbent materials, such as finely divided forms of activated carbon (powder, granules, beads, etc.), activated carbon fabric, paper, or fibers, or may be a filled matrix such as a scaffold of porous polymeric material compounded with adsorbents that fill the void spaces. Other possibilities include adsorbent impregnated non-wovens or beads on a scrim where the non-woven or scrim may be cellulose or polymeric and may include latex or other binders, porous castings or tablets of adsorbents and fillers that are polymeric or ceramic, as well as encapsulated adsorbents such as finely divided adsorbent in a pouch of porous membrane or other air-permeable material. The adsorbent may also be a mixture of different types of adsorbents.” This teaching of Azarian discloses encapsulated adsorbents in a pouch of porous membrane or other air-permeable material which meets the requirement for the claim limitation “gas permeable”, and the disclosure of Azarian specifying that the adsorbent may be a filled matrix such as a scaffold of porous polymeric material compounded with adsorbents that fill the void spaces meets the requirement for the claim limitation “inert barrier”.

Additionally, it is noted that Azarian discloses in column 7 lines 51-59 that “the adsorbent filter material, as explained in further detail below, may include a wide variety of materials. The general term “adsorbent”, as used herein is not meant to refer to any particular material or material for adsorption of any particular contaminants. The terms “adsorbent” and “adsorb” are not intended to be limiting with respect to the manner or mechanism of vapor entrapment. That is, the terms are intended to refer to any mechanism of entrapment whether it be adsorption, absorption, or some other mechanism.” Therefore, based on these cited disclosures of Azarian, Appellant’s argument that the prior art cited does not disclose “a barrier disposed between at least two of the two or more chemicals within the filter, wherein the barrier is a gas permeable, inert barrier” is not found persuasive by Examiner.

(Ans. 11–12).

Although we agree with the Examiner that Azarian does teach the presence of two cross-reactive chemicals, and also teaches the presence of gas permeable inert barriers, we agree with Appellant that the preponderance of the evidence of record does not support a finding that Azarian teaches or suggests that the inert barrier is disposed between the cross-reactive chemicals because, as argued by Appellant, Azarian does not teach each of its adsorbents (chemicals) is separated from another adsorbent by any barrier.

The Examiner has the initial burden of establishing a *prima facie* case of obviousness based on an inherent or explicit disclosure of the claimed subject matter under 35 U.S.C. § 103. *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992) (“[T]he examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a *prima facie* case of unpatentability.”). To establish a *prima facie* case of obviousness, the Examiner must show that each and every limitation of the claim is described or suggested by the prior art or would have been obvious based on the knowledge of those of ordinary skill in the art. *In re Fine*, 837 F.2d 1071, 1074 (Fed. Cir. 1988). In this instance, Appellant has persuasively shown error in the Examiner’s finding that Azarian discloses that the cross-reactive chemicals are separated by a gas permeable, inert barrier, as required by claim 1. Accordingly, we reverse the rejection of claim 1 over Capetanopolous in view of Azarian. Because claim 12 has a comparable limitation, we also reverse the rejection of claim 12, as well as the rejection of the remaining claims, each of which depends from either claim 1 or claim 12.

CONCLUSION

We REVERSE the rejection of claims 1–10 and 21–23 under 35 U.S.C. § 103(a) as unpatentable over Capetanopolous in view of Azarian.

We REVERSE the rejection of claims 11–15 and 24–25 under 35 U.S.C. § 103(a) as unpatentable over Capetanopolous in view of Azarian and further in view of Jolson.

REVERSED