

UNITED STATES PATENT AND TRADEMARK OFFICE

**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Ex parte
DENNIS FARWELL and KEITH BAUMANN

Appeal 2008-1672
Application 10/431,047
Technology Center 1600

Decided: September 30, 2008

Before TONI R. SCHEINER, DEMETRA J. MILLS, and RICHARD M. LEBOVITZ, *Administrative Patent Judges*.

SCHEINER, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 involving claims to a one-piece, biological-weapon-sensing, fibrous product. The Examiner has rejected the claims as obvious over the prior art. We have jurisdiction under 35 U.S.C. § 6(b).

STATEMENT OF THE CASE

Claims 69-73, 75-87, and 89-103¹ stand rejected under 35 U.S.C. § 103(a) as unpatentable over Chee² in view of Knezevic³ and Charych.⁴

Claims 69 and 70 are representative of the subject matter on appeal:

69. A one-piece, biological-weapon-sensing, fibrous product, comprising:

a network of fibers, the network of fibers having a thickness dimension, a width dimension, and a length dimension;

a plurality of transparent sol-gel particles, said transparent sol-gel particles having pores therein;

units of biopolymeric material entrapped in said transparent sol-gel particles; and

said biopolymeric material entrapped in said transparent sol-gel particles being incorporated into said network of fibers so as to be distributed throughout the thickness dimension of the network of fibers, wherein the units of biopolymeric material include ligands that are sensitive to contact with one or more specific biological weapons such that after contact between said ligands and said biological weapon said units of biopolymeric material exhibit a detectable color change.

70. The product of claim 69, wherein said transparent sol-gel particles are distributed substantially uniformly throughout the thickness dimension, the length dimension, and the width dimension, of the network of fibers.

¹ Claim 104 is also pending, but has been withdrawn from consideration by the Examiner on the basis of election by original presentation (Office Action of June 21, 2006, pages 2-3). Appellants request “a reversal of the Examiner’s decision to withdraw claim 104” (App. Br. 6). However, withdrawal of a claim by the Examiner is a petitionable matter, rather than an appealable matter, and not decided by the Board. *See* 37 C.F.R. §§ 1.144, 1.181.

² U.S. Patent 6,544,732 B1 to Chee et al., issued April 8, 2003.

³ U.S. Patent 6,770,485 B2 to Knezevic et al., issued August 3, 2004.

⁴ U.S. Patent 6,306,598 B1 to Charych et al., issued October 23, 2001.

Thus, in its broadest aspect, the claimed invention is directed to a three-dimensional fibrous product with transparent sol-gel particles distributed throughout the thickness of the product, rather than being concentrated on the surface. Biopolymers carrying biological weapon-sensitive ligands are entrapped in the sol-gel particles, and the biopolymers exhibit a detectable color change upon contact between the ligand and the biological weapon.

According to the Specification, because

[T]he bioweapon-sensing fibrous-network products . . . contain units of a bioweapon-sensing agent dispersed throughout . . . the thickness dimension of the product . . . much of the bioweapon-sensing agent [is] shielded by fibers of the product from the direct physical insults inherent in, for example, mail sorting and delivery processes, . . . also the agent can detect exposure to a bioweapon (or portion thereof) on both the inside and outside surfaces of the fibrous-network product.

(Spec. 3: 7-13.)

ISSUE ON APPEAL

The Examiner contends that it would have been obvious for one skilled in the art to include biological-weapons sensitive ligands (as taught by Knezevic) entrapped in sol-gel particles (as taught by Charych) in Chee's fibrous product. (Ans. 4-5.)

Appellants contend that the references "do not disclose or suggest each limitation of the . . . claims," alone or in combination. (App. Br. 6).

Thus, the issue raised by this appeal is whether the Examiner has established that the art relied on teaches or suggests all of the limitations of the claimed invention.

DISCUSSION

The Examiner rejected claims 69-73, 75-87, and 89-103 under 35 U.S.C. § 103(a) as unpatentable over Chee, Knezevic and Charych.

According to the Examiner, Chee describes

[A] fibrous product comprising: a network of fibers, the network of fibers having a thickness, width and length dimension (col. 5, lines 54-67, substrate is flat and planar with three dimensions, which indicates thickness, width and length dimensions, col. 6, lines 6-14); a plurality of sol-gel particles, the sol-gel particles having pores therein . . . ; units of biopolymeric material entrapped in the sol-gel particles (bioactive agents attached to nanocrystals are biopolymeric material, nanocrystals are attached to bioactive ligand, and nanocrystals are embedded in porous silica microspheres, therefore bioactive ligands are also embedded in the microspheres . . . ; the transparent sol-gel particles being incorporated into the network of fibers so as to be distributed throughout the thickness, length and width dimensions of the network of fibers, wherein the units are distributed substantially uniformly throughout the thickness dimension of the substrate (microspheres can be embedded in a substrate that is a porous block[,] microspheres are therefore distributed throughout the thickness of the substrate, col. 6, lines 3-14; substrate can be fibrous, col. 5, lines 54-67); wherein the units of biopolymeric material include ligands that are sensitive to contact with one or more biological agents . . . such that after contact between the ligands and the biological agent the units of biopolymeric material exhibit a detectable color change . . . Chee et al. fail to teach the ligand being sensitive to contact with a biological weapon and . . . the sol-gel particle being transparent.

(Ans. 4.)

Thus, the Examiner relies on Chee to meet all of the limitations of the claimed invention, except for specifying ligands sensitive to biological

weapons, and transparent sol-gel particles. The Examiner relies on Knezevic's disclosure of a ligand specific to anthrax, and Charych's disclosure of transparent tetramethylorthosilicate sol-gel particles to make up Chee's deficiencies. (Ans. 4.)

“In proceedings before the Patent and Trademark Office, the Examiner bears the burden of establishing a *prima facie* case of obviousness based upon the prior art.” *In re Fritch*, 972 F.2d 1260, 1265 (Fed. Cir. 1992).

A rejection based on section 103 clearly must rest on a factual basis . . . In making this evaluation, all facts must be considered. The Patent Office has the initial duty of supplying the factual basis for its rejection. . . . To the extent the Patent Office rulings *are* so supported, there is no basis for resolving doubts against their correctness. Likewise, we may not resolve doubts in favor of the Patent Office determination when there are deficiencies in the record as to the necessary factual bases supporting its legal conclusion of obviousness.

In re Warner, 379 F.2d 1011, 1017 (CCPA 1967, emphasis added).

As an initial matter, Appellants contend that “[n]one of the cited references, alone or in combination, discloses or suggests the recited distribution of biopolymeric material” (App. Br. 8) “**throughout** the thickness dimension of the network of fibers” (*id.*).

We agree with Appellants. Chee describes “compositions and methods for encoding, decoding and using microsphere array sensors utilizing nanocrystals” (Chee, col. 1, ll. 6-8). Chee’s compositions comprise

[A] substrate with a *surface* comprising discrete sites, and a population of microspheres distributed on the sites. At least one of the microspheres comprises a nanocrystal. The nanocrystal can be embedded in the microsphere, for example

using the sol-gel polymerization process, or it can be attached to the microsphere. The microspheres optionally comprise bioactive agents and/or identifier binding ligands.

(Chee, col. 2, l. 67 to col. 3, l. 7 (emphasis added)).

Similarly, Chee's method entails

[M]aking a composition comprising forming a *surface* comprising individual sites on a substrate and distributing microspheres on the *surface* such that the individual sites contain microspheres. The microspheres comprise an optical signature, and at least one optical signature comprises at least one nanocrystal.

. . . The microspheres are *distributed on the surface* such that the discrete sites contain microspheres and . . . at least one of the optical signatures comprises at least one nanocrystal. The presence or absence of the target analyte is then determined.

(Chee, col. 3, ll. 15-20 (emphasis added)).

Chee teaches that “[g]enerally the substrate is flat (planar)” (Chee, col. 6, l. 3), and comprised of a “material that can be modified to contain discrete individual sites appropriate for the attachment or association of beads” (Chee, col. 5, ll. 54-57), including some that are conceivably fibrous, for example, nylon, nitrocellulose, and optical fiber bundles (Chee, col. 5, ll. 64-67). In addition, Chee teaches that “three dimensional configurations can be used, for example by embedding the beads in a porous block of plastic that allows sample access to the beads” (Chee, col. 6, ll. 5-8).

Nevertheless, apart from the fact that the Examiner has not established that the beads embedded in Chee's three-dimensional plastic block are distributed throughout the thickness of the block, rather than being

embedded on the surface, there is nothing to indicate that the plastic block itself is fibrous.

As discussed above, as an initial matter, all of the claims on appeal require a three-dimensional fibrous product with transparent sol-gel particles distributed throughout the thickness of the product, rather than being concentrated on the surface. Chee does not disclose or suggest this aspect of the claimed invention, nor is it taught or suggested by Knezevic or Charych. Thus, we agree with Appellants that “[n]one of the cited references, alone or in combination, discloses or suggests the recited distribution of biopolymeric material” (App. Br. 8) in a fibrous network.

The Examiner’s conclusion that the claimed invention would have been obvious over the combined disclosures of Chee, Knezevic, and Charych is not supported by an adequate factual basis. Accordingly, the rejection of claims 69-73, 75-87, and 89-103 under 35 U.S.C. § 103(a) as unpatentable over Chee, Knezevic and Charych is reversed.

REVERSED

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