UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JON B. JANSMA

Appeal 2008-3939
Application 10/867,084
Technology Center 1700

Decided: September 25, 2008

Before BRADLEY R. GARRIS, MICHAEL P. COLAIANNI, and JEFFREY B. ROBERTSON, *Administrative Patent Judges*.

ROBERTSON, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellant appeals under 35 U.S.C. § 134(a) (2002) from the Examiner's rejection of claims 14, 15, 20, 21, and 23-25.[1] (Examiner's Answer entered November 14, 2007, hereinafter "Ans."). We have jurisdiction pursuant to 35 U.S.C. § 6(b) (2002).

We AFFIRM.

THE INVENTION

Appellant's claimed invention is directed to a method for providing a coating layer on a glass envelope of a fluorescent lamp. The method comprises providing a suspension of 1-10 wt. % of coating layer substrate particles in deionized water, dissolving yttrium salt in the suspension, and acidifying the suspension to a pH of 3-6. (Spec. 3, ll. 15-18, 9, ll. 4 and 14-17). The resulting suspension is applied to the inner surface of a glass envelope, and then dried, causing the yttrium salt to recrystallize. (Spec. 3, ll. 19-25, 10, l. 21- 11, l. 2). The deposited layer is then baked to further dry the coating layer as well as to oxidize the recrystallized yttrium salt to form yttria. (Spec. 3, ll. 25-28, 11, ll. 6-8). Appellant also claims that a film of crystallized yttrium salt is coated over the surfaces of the coating layer substrate particles and the inner surface of said glass envelope. (Spec. 7, ll. 14-18). Appellant further claims that the substrate particles are phosphor particles. (Spec. 7, ll. 1-18).

Claims 14, 15, and 20, reproduced below, are representative of the subject matter on appeal.

> 14. A method of providing a coating layer on a glass envelope of a fluorescent lamp comprising the steps of:

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[1] Claims 16-19 and 22 have been withdrawn from consideration and claims 1-13 have been canceled. (Appeal Brief filed August 31, 2007, hereinafter "Br.," 3).

(a) providing a suspension of 1-10 wt.% coating layer substrate particles in a suspension medium of deionized water;
(b) dissolving a yttrium salt in said suspension;
(c) acidifying said suspension to bring the suspension to a pH of 3-6;
(d) applying said suspension to the inner surface of the glass envelope of said fluorescent lamp;
(e) drying said suspension on said inner surface of said glass envelope to provide an at least partially dried coating layer, said dissolved yttrium salt being at least partially recrystallized thereby; and
(f) baking said coating layer to dry said coating layer, and to oxidize said recrystallized yttrium salt to yttria, said yttria being dispersed throughout said coating layer.

15. A method according to claim 14, step (e) further comprising providing a film of crystallized yttrium salt coated over the surfaces of said coating layer substrate particles and said inner surface of said glass envelope.

20. A method according to claim 14, wherein said coating layer is a phosphor layer, said coating layer substrate particles being phosphor particles.

THE REJECTION

The prior art relied upon by the Examiner in rejecting the claims on appeal is:

Bruno	5,382,452	Jan. 17, 1995
Tateiwa	5,417,886	May 23, 1995

The Examiner rejected claims 14, 15, 20, 21, and 23-25 under 35 U.S.C. § 103(a) as being unpatentable over Bruno in view of Tateiwa. The

Examiner found that Bruno did not teach applying a suspension to the inner surface of a glass envelope where drying and baking of the resulting coating layer occurs on the glass envelope. (Ans. 3). The Examiner found that Tateiwa teaches that coating particles and decomposable compounds may be co-deposited directly onto the surface of fluorescent lamps prior to calcining and decomposition. (Ans. 4). The Examiner determined that it would have been obvious to deposit the slurry of Bruno prior to drying and calcining in view of Tateiwa in order to reduce the number of steps. (Ans. 4).

Appellant contends that Tateiwa does not teach that coating particles and decomposable compounds may be co-deposited onto the surface of fluorescent lamps. (Br. 12). Appellant argues that the phosphor particles and the rare earth compounds in Tateiwa are solids, and that Tateiwa teaches not to dissolve the rare earth compounds. (Br. 13 and 14). Appellant also argues that Bruno is directed to making luminescent particles while Tateiwa starts with luminescent particles, such that one of ordinary skill in the art would not have combined these references without guidance from present claim 14. (Reply Brief filed Jan. 1, 2008, hereinafter "Rep.," 2). Appellant argues that the same results are not necessarily achieved by applying the composition of Bruno in the process of Tateiwa. (Rep. 2). Appellant further contends that the calcining step disclosed in Bruno is performed at temperatures that would damage the glass envelope if carried out after coating the envelope. (Rep. 3).

ISSUE

Has Appellant shown that the Examiner erred in determining that the appealed claims would have been obvious to one of ordinary skill in the art over the cited prior art of record?

FINDINGS OF FACT

The record supports the following findings of fact (FF) by a preponderance of the evidence.

1. Bruno states:

> It will be appreciated, however, that this optimal loading [of the luminescent coating] will vary with 1) the size of the core particles, 2) the relative densities of the core and luminescent coating, 3) factors relating to the end use application, among other factors.

(Col. 5, ll. 19-23).

2. Bruno states:

> While particular emphasis in the above description has been placed on coating a single luminescent material about a core particle, it is to be understood that the invention covers a plurality of luminescent coatings, e.g., the luminescent material may comprise a plurality of, for example, successive coatings that absorb and/or emit the same and/or different colors. Further, the invention may be employed to provide a mixed composition luminescent coating, e.g., a coating comprising at least one layer which includes a plurality of luminescent materials . . . In some cases, it can be desirable to employ a mechanical mixture of luminescent coated particles which have distinct sizes, compositions, among other characteristics.

(Col. 11, ll. 38-59).

3. Bruno states:

> Accordingly, by appropriately selecting a core material(s), luminescent coating(s), coating process, mixtures of coated materials, and optional post-treatments, the luminescent composition of the invention can be tailored to satisfy a virtually unlimited array of end product applications.

(Col. 11, ll. 59-65).

4. Bruno discloses that calcining takes place temperatures of about 800ºC to 1300ºC. (Col. 10, ll. 62-64)

5. Tateiwa discloses either that a coated phosphor particle may be prepared and then formed into a phosphor-coating liquid, or that a phosphor-coating liquid may be directly prepared and applied to the inner wall of a fluorescent bulb. (Col. 3, ll. 12-16, col. 4, ll. 33-62).

6. Tateiwa states:

> The subsequent steps for the manufacture of a lamp may be carried out in a conventional manner. Thus, after the phosphor layer is formed on the bulb inner wall as described above, the bulb is formed into a circular shape (forming temperature: around 800ºC.), if desired.

(Col. 4, l. 65 – col. 5, l. 2).

7. Tateiwa states:

> The rare earth compounds used in the present invention may be used in the form of an oxide, or may be a precursor of the oxide, which can ultimately be converted into the corresponding oxidic compounds, including oxides, in a baking step, which will be explained later, or in the forming step, including forming the bulb into a circular shape.

(Col. 2, ll. 60-66).

PRINCIPLES OF LAW

"Section 103 forbids issuance of a patent when 'the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.'" *KSR Int'l. Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1734 (2007).

In order to establish a *prima facie* case of obviousness, prior art is evaluated based on what it, as a whole, conveys to one of ordinary skill in the art, rather than the specific teaching of each reference. *In re McLaughlin*, 443 F.2d 1392 (CCPA 1971); *In re Simon*, 461 F.2d 1387 (CCPA 1972). In responding to a *prima facie* case of obviousness, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. *See In re Keller*, 642 F.2d 413 (CCPA 1981); *In re Merck & Co., Inc*., 800 F.2d 1091 (Fed. Cir. 1986).

ANALYSIS

We confine our discussion to appealed claims 14, 15, and 20, which contain the claim limitations representative of the arguments made by Appellant pursuant to 37 C.F.R. § 41.37(c)(1)(vii) (2006).

We are not persuaded by Appellant's argument that Tateiwa fails to teach that the coating particles and decomposable compounds are co-deposited on glass envelope surfaces of fluorescent lamps. Tateiwa clearly discloses either that a coated phosphor particle may be prepared and then formed into a phosphor-coating liquid, or that a phosphor-coating liquid may be directly prepared and applied to the inner wall of a fluorescent bulb. (FF 5; Ans. 5). Thus, we are in complete agreement with the Examiner's conclusion that in view of Tateiwa, it would have been obvious to apply the slurry of Bruno to the inner surface of a fluorescent bulb prior to the drying and calcining steps in order to reduce the number of steps in preparing the coated glass envelope. (Ans. 4).

Appellant further argues that the references cannot be combined because Tateiwa requires solid particles of rare earth compound as opposed to dissolved rare earth compounds as disclosed in Bruno. However, Appellant's argument unduly focuses on the individual teachings of the reference rather than what the prior art conveys as a whole. *See Keller*, 642 F.2d at 425-26; *Merck & Co., Inc*., 800 F.2d at 1097-98. Tateiwa is relied on for teaching the equivalence of processes of applying phosphor coatings to fluorescent bulb surfaces, not for the particular coating composition applied. (Ans. 6).

Appellant's contention that the process disclosed in Tateiwa would not necessarily function with any coating compositions is also not persuasive. Although Tateiwa discloses use of a medium that does not dissolve the rare earth compound, there is no teaching in Tateiwa that expressly discredits, criticizes or otherwise discourages the use of a medium that dissolves the rare earth compound. Thus, Tateiwa does not teach away from rare earth compounds in solution. *See In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004). Appellant has provided no additional evidence that the solubility of the rare earth compound would affect the coating performance to rebut the Examiner's finding that one of ordinary skill in the art would have had a reasonable expectation of success in applying the method of Tateiwa to the compositions of Bruno. *In re Schulze*, 346 F.2d 600, 602 (CCPA 1965).

Appellant also argues that Bruno requires calcining at temperatures above 1000ºC. (Rep. 3). Appellant's argument unduly limits Bruno's disclosure to the examples. *See In re Heck*, 699 F.2d 1331, 1332-33 (Fed. Cir. 1983)(quoting *In re Lemelson*, 397 F.2d 1006, 1009 (CCPA 1968)).

Bruno discloses that calcining takes place at temperatures of about 800ºC to 1300ºC. (FF 4). Thus, Bruno does not require calcining at temperatures above 1000ºC. Moreover, Appellant has presented no evidence to support the contention that the calcining temperature disclosed in Bruno would have damaged or destroyed the glass envelope. Indeed, the references themselves directly contradict Appellant's argument. Tateiwa discloses that the phosphor coating may be applied prior to formation of the bulb, and that the rare earth compounds may be converted to oxides in the bulb-forming step. (FF 6 and 7). Tateiwa also discloses that the bulb is formed successfully at around 800ºC, which overlaps Bruno's calcining temperatures of about 800ºC to 1300ºC. (FF 4 and 6). Therefore rather than damaging or destroying the bulb, Bruno and Tateiwa provide a reasonable expectation of success in applying the composition of Bruno to a bulb surface prior to drying and calcining.

Regarding claim 15, the Examiner contends that excess yttrium salt not coated on a substrate particle would necessarily be coated onto the glass envelope. (Ans. 7). Appellant argues that there would be no excess yttrium salt available to deposit a film on the inner surface of the surface of the glass envelope, because the point of Bruno is to avoid wasting luminescent material. (Rep. 6). However, Appellant's argument fails to consider the coating process which results from the combination of Bruno and Tateiwa as a whole. Specifically, Bruno teaches that the loading of the luminescent material in the coating may vary with factors relating to end use application or other factors. (FF 1). Bruno also teaches that the coating process may be selected to tailor the coating to a desired end product application. (FF 3). Thus, Bruno does not contradict the Examiner's finding that the combination

of Bruno and Tateiwa would suggest forming a layer comprised of yttrium salt on a substrate particle and a glass envelope. (Ans. 7).

Regarding claim 20, Appellant's argument that Bruno teaches away from using phosphor particles as the inert core particles is not persuasive. Appellant contends that substituting phosphor particles for the inert core particles would negate the cost-savings rationale disclosed in Bruno and render the coated structure in Bruno useless. (Br. 17 and 18). Appellant additionally argues that Bruno's concern with the expense of phosphor particles criticizes, discredits and discourages the use of bulk phosphor particles. *See In re Fulton*, 391 F.3d at 1201. We are not persuaded. The additional expense incurred by substituting a phosphor particle as the inert core particle would not discourage one of ordinary skill in the art from making the substitution proposed by the Examiner. "That a given combination would not be made by businessmen for economic reasons does not mean that persons skilled in the art would not make the combination because of some technological incompatibility." *In re Farenkopf*, 713 F.2d 714, 718 (Fed. Cir. 1983)(reference does not teach away from addition of inhibitor to an Angiotensin I standard solution or composition, where reference indicated that adding inhibitor "can be costly"). Additionally, Bruno states that "by appropriately selecting a core material(s), luminescent coating(s), coating process, mixtures of coated materials, and optional post-treatments, the luminescent composition of the invention can be tailored to satisfy a virtually unlimited array of end product applications." (FF 3). Thus, although Bruno is concerned with cost-efficiency, Bruno also teaches that the core particles may be varied and multiple luminescent materials may be employed. (FF 2 and 3). Therefore, we are not persuaded that Bruno

teaches away from employing phosphor particles disclosed in Tateiwa as the inert core particles as determined by the Examiner. (Ans. 7-9).

CONCLUSION

In light of the above discussion, Appellant failed to demonstrate that the Examiner erred in rejecting claims 14, 15, 20, 21, and 23-25 under 35 U.S.C. § 103(a) as being unpatentable over Bruno in view of Tateiwa.

ORDER

The Examiner's decision rejecting claims 14, 15, 20, 21, and 23-25 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

tf/ls

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