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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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ARCH WOOD PROTECTION, INC., ARCH CHEMICALS, INC., and ARCH TREATMENT TECHNOLOGIES, INC.
Requester[1]

v.

OSMOSE, INC.
Patent Owner and Appellant

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Appeal 2012-010813
Reexamination Control 95/001,418
Patent 7,674,481 B2
Technology Center 3900

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Before LORA M. GREEN, RICHARD M. LEBOVITZ, and
RAE LYNN P. GUEST, *Administrative Patent Judges*.

GUEST, *Administrative Patent Judge*.

DECISION ON APPEAL

Patent Owner Osmose, Inc. ("Patent Owner") appeals under 35 U.S.C. §§ 134(b) and 315(a) the Examiner's decision to reject claims 1-29.[2] We have jurisdiction under 35 U.S.C. §§ 134(b) and 315(a).

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[1] Requester did not participate in this appeal. *See* Examiner's Answer (mailed March 1, 2012) (hereinafter "Ans.") at 2.

[2] *See* Patent Owner's Appeal Brief 1 (filed November 21, 2011) (hereinafter "PO App. Br."); Ans. 2.

We heard oral arguments from Patent Owner on December 3, 2012, a written transcript of which will be entered into the electronic record in due course.

We REVERSE.

## STATEMENT OF THE CASE

United States Patent 7,674,481 B2 (hereinafter the '"481 Patent"), which is the subject of the current *inter partes* reexamination, issued to Robert M. Leach, et al. on March 9, 2010.

The '481 Patent was involved in a litigation styled *Osmose Inc. v. Arch Chemicals, Inc., Arch Wood Protection, Inc., Arch Treatment Technologies, Inc., Cox Industries, Inc., Rocky Top Building Products, Inc. and Madison Wood Preservers, Inc.*, in the United States District Court for the Eastern District of Virginia Norfolk Division (C.A. No. 2:1O-cv-108)(JBF), which was dismissed with prejudice on March 17, 2011 (PO App. Br. 1).

As previously mentioned, Third-Party Requesters Arch Wood Protection, Inc., Arch Chemicals, Inc., and Arch Treatment Technologies, Inc.[3] (hereinafter collectively referred to as "Requester") did not file a Respondent Brief in this appeal.

The '481 Patent relates to a wood preservative composition comprising micronized particles (Col. 1, ll. 11-13). Claim 1, illustrative of the appealed subject matter, reads as follows (with indentations added for clarity):[4]

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[3] *See* Request for *Inter Partes* Reexamination (filed August 13, 2010) at 2; Ans. 2.
[4] The claims of the '481 Patent were not amended during reexamination.

> 1. A method for preserving a wood product comprising the step of contacting the wood product with a wood preservative composition comprising:
>
> (a) a dispersion in water of micronized particles of basic copper carbonate, copper carbonate or copper hydroxide between 0.001 and 25 microns and
>
> (b) one or more organic biocides selected from the group consisting of tebuconazole, alkyldimethylbenzylammonium chloride, dimethyldidecylammonium chloride, dimethyldidecylammonium carbonate, and dimethyldidecylammonium bicarbonate,
>
> wherein the micronized particles of the basic copper carbonate, copper carbonate or copper hydroxide are distributed within the wood product and render the wood product resistant to fungal decay.

(PO App. Br., Claims App'x.)

Patent Owner contests the Examiner's decision to reject the claims as follows:

I. Claims 1, 3-18, 20-23, and 25-29 are rejected under 35 U.S.C. § 103 as being unpatentable over Tadatoshi[5] in view of Heuer[6] (Ground 5, RAN 11-13; Ans. 5-8);

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[5] JP 2000-141316, published May 23, 2000, listing Tadatoshi Kurozumi as the sole inventor. There are two English language translations in the record. The first translation in the record is the PTO-ordered translation (PTO 09-7722) provided in September 2009 by Schreiber Translations, Inc. (hereinafter "PTO translation"). The second translation in the record is one provided by the Requester. Though the Request indicates that the translation is from TransPerfect Translations (Request 10, n. 3), the document itself describes no origin (hereinafter "Requester's translation").

[6] US 5,874,025, issued February 23, 1999, to Lutz Heuer, et al.

II. Claims 2, 19, 24 and 29 are rejected under 35 U.S.C. § 103 as being unpatentable over Tadatoshi in view of Heuer and further in view of Walker[7] (Ground 6, RAN 13-14; Ans. 8);

III. Claims 15-19, 22-24 and 28-29 are rejected under 35 U.S.C. § 103 as being unpatentable over Tadatoshi in view of Heuer and further in view of Ordas[8] (Ground 7, RAN 15; Ans. 9);

IV. Claims 1, 3-18, 20-23, and 25-29 are rejected under 35 U.S.C. § 103 as being unpatentable over Heuer in view of Ploss[9] (Ground 8, RAN 19-21; Ans. 9-11);

V. Claims 2, 19, 24 and 29 are rejected under 35 U.S.C. § 103 as being unpatentable over Heuer in view of Ploss and further in view of Walker (Ground 9, RAN 21-22; Ans. 11-12);

VI. Claims 1, 3-18, 20-23, and 25-29 are rejected under 35 U.S.C. § 103 as being unpatentable over Heuer in view of Ploss and further in view of Ordas (Ground 10, RAN 22-23; Ans. 12);

VII. Claims 1, 3-18, 20-23, and 25-29 are rejected under 35 U.S.C. § 103 as being unpatentable over Heuer in view of Spencer[10] (Ground 11, RAN 27-29; Ans. 12-14);

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[7] US 6,485,790 B2, issued November 26, 2002 to Leigh E. Walker et al.

[8] US 3,535,423, issued October 20, 1970 to Eugene P. Ordas.

[9] US 2003/0077219 A1, published April 24, 2003, in the name of Hartmut Ploss, et al.

[10] GB 1 491 330, published November 9, 1977, listing sole inventor Raymond Spencer.

VIII. Claims 2, 19, 24 and 29 are rejected under 35 U.S.C. § 103 as being unpatentable over Heuer in view of Spencer and further in view of Walker (Ground 12, RAN 29-30; Ans. 14-15);

IX. Claims 1, 3-18, 20-23, and 25-29 are rejected under 35 U.S.C. § 103 as being unpatentable over Heuer in view of Spencer and further in view of Ordas (Ground 13, RAN 30-31; Ans. 15-16);

X. Claims 1, 3-18, 20-23, and 25-29 are rejected under 35 U.S.C. § 103 as being unpatentable over Williams[11] in view of Ploss (Ground 14, RAN 33-35; Ans. 16-17);

XI. Claims 2, 19, 24 and 29 are rejected under 35 U.S.C. § 103 as being unpatentable over Williams in view of Ploss and further in view of Walker (Ground 15, RAN 35-36; Ans. 18); and

XII. Claims 1, 3-18, 20-23, and 25-29 are rejected under 35 U.S.C. § 103 as being unpatentable over Williams in view of Ploss and further in view of Ordas (Ground 16, RAN 37; Ans. 18-19).

The Patent Owner relies on the following additional evidence:

Declaration of John N.R. Ruddick executed May 26, 2011 (Ex. B.10, App. Br.) (hereinafter "Ruddick Decl.").

CLAIM INTERPRETATION

Each of independent claims 1, 8, 15, and 19-22 include a limitation that the recited micronized particles "are distributed within the wood product."

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[11] US 5,527,384, issued June 18, 1996, to Gareth Williams, et al.

The Examiner interprets the phrase "distributed within the wood product" to mean distributed "more than inside the wood just under the surface, but penetration into the interior of the wood" (RAN 6; Ans. 21). Patent Owner contends that the phrase "cannot refer to fixing of a metallic compound only to the surface of wood" (PO App. Br. 9). Patent Owner notes that the Examiner's interpretation uses the phrase "interior of the wood," which is the same word at issue in the translation of Tadatoshi (*id.*).

The Examiner's interpretation and the Patent Owner's interpretation do not appear to be in conflict to the extent that the micronized particles must penetrate further into the wood than would constitute just a surface treatment of the wood or just under the surface of the wood.

## TADATOSHI IN VIEW OF HEUER

### *The Rejection*

The Examiner found that Tadatoshi discloses a method of treating wood by coating or immersing wood in a composition including a copper hydroxide colloid formulation in water, in which the copper hydroxide has a particle size range encompassed by the claimed particle size range (Ans. 5-6). The Examiner found that Tadatoshi teaches that the composition may be applied in a first embodiment to only the surface of the wood including a "thin region inside the surface" (Ans. 6). The Examiner also found that paragraph [0023] of Tadatoshi teaches a second embodiment in which the air and water contained in the wood is replaced with the colloid metal compound by increasing the temperature of the wood "to facilitate the permeation of the colloidal metal compound into the interior of the wood" (Ans. 6). The Examiner finds this a teaching that the micronized copper hydroxide

particles are "distributed within the wood product" as recited in claim 1 (Ans. 21-23).

The Examiner relies on Heuer, a method of applying a copper metal based solution to wood, to further teach the use of organic biocides as recited in claim 1 as a preservative against wood-destroying fungi and insects (Ans. 6).

The Examiner concludes that one of ordinary skill in the art at the time of the invention would include the organic biocides taught by Heuer in the copper hydroxide containing wood treatment composition of Tadatoshi to obtain a more effective wood treating composition against microbes (*id.*).

*Issues*

The dispositive issue for this rejection is:

Does Tadatoshi disclose a wood preservative composition of micronized copper hydroxide particles in water that is capable of distributing the copper hydroxide micronized particles "within the wood product" as recited in claim 1?

*Findings of Fact*

FF1. Paragraph 10 of the PTO's translation of Tadatoshi reads as follows:

> When such a colloid solution is used, although it was thought that the colloidal metallic compound would be able to soak into the wood, surprisingly, the colloidal metallic compound only fixes to the surface of the wood (herein, 'surface' includes the thin inner surface) with virtually no penetration into the inner wood. Despite this, functions such as enhanced flame retardance, insect proofing, rot proofing, and dimensional stability were conferred to the wood. As a result at this discovery, this invention was completed.

The same paragraph of the Requester's translation does not appear to conflict as it states:

> It could be thought that colloidal metal compounds might permeate into wood if this type of colloidal solution were used. However, it was

> unexpectedly discovered that the colloidal metal compounds are affixed to only the surface of the wood (referring, in the present invention, to include a thin region inside the surface), with almost no permeation into the wood interior. However, the present invention was perfected upon discovering that, in spite of this, functionality in regard to improved flame retardance, insect resistance, decay resistance, and dimensional stability can still be provided.

FF2. Paragraph 22 of Tadatoshi is substantially similar in the two translations. Paragraph 22 describes that fixing the colloidal metal oxide to the surface of the wood occurs quickly, by contacting the solution to the wood surface by coating, or preferably immersion, and describes that adding energy during immersion provides uniform fixing of the colloidal metal compound to the wood.

FF3. The interpretation of paragraph 23 of Tadatoshi is at issue in this case (PO App. Br. 10).

FF4. Paragraph 23 of the PTO's translation of Tadatoshi reads as follows (underlining added for emphasis):

> To increase the amount of metallic compound fixed to the wood, it is necessary to efficiently replace the wood's air bubbles, moisture, and so forth with the colloidal metallic compound. To achieve this, it is desirable to impart energy during fixation. Suitable means for imparting energy include heating to supply physical energy . . . . It is also favorable to raise the temperature of the wood in advance to that of the colloid solution, to coat or immerse the wood in advance with a surfactant or the like <u>in order to facilitate penetration of the colloidal metallic compound into the wood</u>, or to add the surfactant to the colloid solution in advance. These methods are effective in cases where it is necessary to increase the thickness of metallic compound fixed to the surface.

Paragraph 23 of Requester's translation of Tadatoshi reads as follows (underlining added for emphasis):

> In order to increase the fixing amount of metal compound to the wood, it is necessary to efficiently replace the air and water contained in the wood with colloidal metal compound. To this end, it is desirable to add energy during fixing. Means for adding energy include a thermal irradiation system . . . . In addition, the temperature of the wood may be increased in advance to approximately the temperature of the colloid solution, or a surfactant or the like may be applied, permeated into the wood, or added to the colloid solution in advance <u>in order to facilitate permeation of the colloidal metal compound</u> <u>into the interior of the wood</u>. This is advantageous when it is necessary to increase the thickness over which the material is affixed to the surface region.

*Analysis*

Patent Owner contends that paragraph 23 of Tadatoshi was misinterpreted as teaching a penetration of the metallic compound further into the wood than would constitute just a surface treatment of the wood or just under the surface of the wood (App. Br. 15). Patent Owner argues that such an interpretation fails to consider the reference as a whole, namely the express teaching in paragraph 10 of no penetration into the wood (*id.* 17).

In light of the teachings of the remaining portions of both versions of the Tadatoshi reference, we find that the reference in paragraph 23 to "permeation of the metal compound in to the wood" (or even "into the interior of the wood") cannot be interpreted as permeation to an extent more than what would still be considered a surface treatment and a treatment which would not permeate more than just under the surface of the wood. In particular, we find the discussion in paragraph 10 to indicate that the invention as a whole is limited to the surface treatment of the wood. Paragraph 10 is entitled "Embodiments of the Invention." Thus, the statements in paragraph 23 referring permeation into the wood's interior would be understood by the skilled artisan to be restricted to the thin region inside

the surface as described in paragraph 10, and not into the interior of the wood beyond the thin surface region. Accordingly, we cannot agree with the Examiner that paragraph 23 constitutes a separate embodiment that was not contemplated in the "Embodiments of the Invention." Moreover, the preceding paragraph 22 teaches using additional energy for more uniform fixing of the compound "to the wood." We find no reason that the sources of additional energy described in the next paragraph do not refer to the same use of additional energy described in paragraph 22, which says nothing about the additional energy providing a deeper penetration than the surface penetration discussed, for example, in paragraph 10. Thus, we agree with the Patent Owner that Tadatoshi does not teach or suggest the micronized particles "distributed within the wood product" as that term would be reasonably construed.

The Examiner's rejection does not rely on the teachings of Heuer as overcoming this deficiency.

Accordingly, the Examiner has not established that independent claims 1, 8, 15, and 19-22 are obvious over Tadatoshi in view of Heuer. The Examiner's rejections of the dependent claims rely on Tadatoshi and Heuer in the same manner and thus fail for the same reason.

HEUER IN VIEW OF PLOSS

*The Rejection*

The Examiner found that Heuer teaches using an aqueous solution of copper hydroxide or copper carbonate for the treatment of wood, in which the copper ions penetrate well into wood and wood-based materials (Ans. 9). The Examiner found that Heuer does not teach micronized particles in a dispersion of water (*id.* at 10).

The Examiner found that Ploss teaches a wood treatment comprising copper hydroxide with the claimed particles size that "can penetrate more easily and more deeply into the wood layers under treatment due to their quasi atomic size" (*id.* at 10). The Examiner found that Ploss teaches a micro-emulsion that is a starting product that can be dried under vacuum condition and reconstituted in water (id. 27-28).

The Examiner concludes that one of ordinary skill in the art at the time of the invention would have modified the wood preservative of Heuer by dispersing the particular copper hydroxide particles of Ploss in water (*id.*).

*Issues*

The dispositive issue for this rejection is:

Would a method in which micronized particles are distributed within the wood product by contacting the wood product with a dispersion of such particles in water have been obvious to one of ordinary skill in the art having the teachings of Heuer and Ploss?

*Findings of Fact*

FF5. Heuer teaches a method for treating wood including a copper hydroxide or copper carbonate dissolved as a clear solution (Heuer, col. 2, ll. 9-10 and 37-42).

FF6. Ploss teaches combining a first $CuCl_2$ and block polymer emulsion in one of four organic solvents and a second emulsion of NaOH in water and a block polymer in the organic solvent of the first emulsion under ultrasound or high-pressure homogenization (Ploss, ¶ [0031]-[0035], ¶ [0017]).

FF7. This process produces a monodisperse, stable, liquid product comprising particles sizes of less than 50 nm (Ploss, ¶¶ [0036]-[0037], [0017]).

FF7. Ploss teaches an improvement in wood permeation, to a depth of more than 10 mm, when immersed in the "micro-emulsion prepared pursuant to the invention" over "a conventional copper hydroxide suspension" that was fixated to the wood only superficially (Ploss, ¶ [0040]).

FF8. Ploss teaches a formulation using the copper compounds "in the familiar fashion based on the application purpose" (Ploss, ¶ [0029]).

FF9. Ploss teaches using the micro-emulsion as a liquid end product or preparing a dry formulation under vacuum conditions (Ploss, ¶ [0036]).

*Analysis*

Patent Owner contends that neither Heuer nor Ploss discloses a dispersion of micronized particles in water (PO App. Br. 20-25). We agree with the Patent Owner that the Examiner has not demonstrated that either Heuer or Ploss would have suggested that the skilled artisan form a dispersion of micronized particles in water.

Heuer suggests a copper solution, not a suspension, in water. Ploss on the other hand discloses only a dry product or an organic solvent-based emulsion. The Examiner has not explained a reason why the skilled artisan would have even attempted to prepare a suspension of the small-sized particles of Ploss in water. The Examiner has not explained why replacing Heuer's solubilized copper compound with Ploss' particular micronized copper compound would necessarily form a suspension in water, particularly considering that Ploss's dried compound further includes block polymers (Ans. 29; *see* Ruddick Dec. ¶ 34 (stating that it is speculation to predict how the micro-emulsion of Ploss would behave in the aqueous system of Heuer)). Even though Ploss describes a benefit to permeation with a smaller particle size over conventional copper hydroxide suspensions, we

agree with Patent Owner that Ploss's teaching of an organic-solvent based suspension does not correlate to the teachings of Heuer where the copper is solubilized and not permeated into the wood as micronized particles, without the benefit of hindsight. In other words, we are not persuaded that, without hindsight, the skilled artisan would have considered using micronized particles suspended in water, rather than the organic solvents described by Ploss, since there is no evidence to suggest that a suspension in water is either equivalent or an improvement to Heuer's solution.

Accordingly, the Examiner has not established that independent claims 1, 8, 15, and 19-22 are obvious over Heuer in view of Ploss. The Examiner's rejections of the dependent claims rely on Heuer in view of Ploss in the same manner and thus fail for the same reason.

WILLIAMS IN VIEW OF PLOSS

*The Rejection*

Both the Examiner and Patent Owner indicate that the reasons for combining Williams and Ploss are the same as the reasons for combining Heuer and Ploss, in that "the teachings of Williams and Heuer are similar" (Ans. 37; RAN 34; PO App. Br. 29-30).

Considering that Williams teaches copper metal ions in an aqueous solution (Williams, col. 2, ll. 32-39), we determine that the Examiner has not demonstrated that either Williams or Ploss would have suggested that the skilled artisan form a dispersion of micronized particles in water for the same reasons discussed above with respect to Heuer and Ploss.

Accordingly, the Examiner has not established that independent claims 1, 8, 15, and 19-22 are obvious over Williams in view of Ploss. The Examiner's

rejections of the dependent claims rely on Williams in view of Ploss in the same manner and thus fail for the same reason.

HEUER IN VIEW OF SPENCER

*The Rejection*

The Examiner found that Heuer teaches using an aqueous solution of copper hydroxide or copper carbonate for the treatment of wood in which the copper ions penetrate wood and wood-based materials well (Ans. 13). The Examiner found that Heuer does not teach micronized particles in a dispersion of water (*id.*).

The Examiner found that Spencer teaches a composition comprising water and copper-8-hydroxyquinolate (an unclaimed copper compound) having the claimed particle size (*id.*).

The Examiner concludes that one of ordinary skill in the art would modify the wood preservative of Heuer by dispersing in water particulate copper hydroxide or basic copper carbonate with a size less than 1 micron as taught by Spencer to obtain a more effective wood treating composition (*id.*).

The Examiner explains that because Spencer describes that the low particle size facilitates penetration into the wood, the skilled artisan would desire this feature for the copper compounds of Heuer as an alternative to using solubilizing agents (*id.* at 33).

*Findings of Fact*

FF9. Heuer teaches a method for treating wood including a copper hydroxide or copper carbonate dissolved as a clear solution (Heuer, col. 2, ll. 9-10 and 37-42).

FF10. Spencer teaches a preparation of copper-8-hydroxyquinolate mixed with water whose copper constituent is in particulate form having a particulate size less than one micron (Spencer 1:36-40).

FF11. Spencer teaches that the resulting fungicide "adhered tenaciously to the wood" when immersed or "may be sprayed on to the whole surface of the elm wood" (Spencer 2:29-33).

FF12. Spencer teaches that "The low particle size of the copper constituent in the active agent facilitates penetration of the wood which is particularly important for hardwoods such as elm. As a result adhesion of the fungicide to the wood is improved" (Spencer 3:42-56).

FF13. Spencer teaches that the fungicide prevents or retards mould (mold) growth in wood (Spencer 1:25-28).

*Analysis*

Patent Owner contends that neither Heuer nor Spencer teach a dispersion in water of micronized particles of basic copper carbonate, copper carbonate or copper hydroxide as recited in the claims (PO App. Br. 27). Patent Owner further argues that Spencer is equivalent to Tadatoshi in that it is directed only to a surface treatment of micronized particles, such that the copper particles are not distributed within the wood product (PO App. Br. 27; PO Reb. Br. 11).

The Examiner has not demonstrated that either Heuer or Spencer would have suggested that the skilled artisan form a dispersion of the claimed micronized particles in water. The evidence does not suggest using micronized particles of the claimed compounds at all. Although Spencer teaches that copper-8-hydroxyquinolate was commercially available in a micronized size and dispersible in water, it is silent as to the applicability of its teachings to other copper compounds, such as those taught by Heuer. The Examiner has presented no evidence that micronized copper hydroxide or copper carbonate was likewise commercially available or in a form that provided for aqueous suspension by

mixing with water, as taught by Spencer. Likewise, Heuer does not suggest micronizing and/or suspending copper hydroxide or copper carbonate since it relies on solubilization of these copper compounds.

Moreover, we agree with Patent Owner that Spencer does not describe micronized particles in a water suspension "dispersed within the wood product." Patent Owner has provided persuasive evidence that Spencer's disclosure of "penetration of the wood" is for the purpose of improved adhesion to the surface of the wood and does not describe permeation deeper into the wood than just under the surface (*see* Spencer 3:24-46; Reddick Decl. ¶ 41). Thus, even if the skilled artisan would use the compounds of Heuer as a suspension in water, the Examiner's reasoning that such a suspension would cause the micronized particles to be distributed within the wood product as claimed is based on teaching of Spencer of only surface penetration of micronized particles into a wood product, which is insufficient to meet the requirements of the claim. The Examiner has provided no further reasoning as to why the micronized particles would penetrate deeper than taught by Spencer.

Accordingly, the Examiner has not established that independent claims 1, 8, 15, and 19-22 are obvious over Heuer in view of Spencer. The Examiner's rejections of the dependent claims rely on Heuer in view of Spencer in the same manner and thus fail for the same reason.

DECISION

In sum, we reverse each of the Examiner's rejection on appeal.

<u>REVERSED</u>

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