

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex parte DONALD FERRIER

Appeal No. 2006-2387
Application No. 10/304,514

ON BRIEF

Before ADAMS, GRIMES, and LINCK, Administrative Patent Judges.

GRIMES, Administrative Patent Judge.

DECISION ON APPEAL

This appeal involves claims to a composition and process for increasing adhesion of a polymer to a metal surface. The examiner has rejected the claims as obvious. We have jurisdiction under 35 U.S.C. § 134. We reverse.

Background

One method of forming a “multilayer printed circuit board is through additive or surface laminer [sic] circuitry techniques. These techniques begin with a non-conductive substrate, upon which the circuit elements are additively plated.” Specification, page 2. “It has long been known that the strength of the adhesive bond formed between the copper metal of the circuitry innerlayers and the . . . non-

conductive coatings[] in contact therewith leaves something to be desired, with the result that the cured multilayer composite . . . is susceptible to delamination in subsequent processing and/or use.” Id.

The specification discloses that “the addition of unsaturated alkyls with cyclic aromatic or non-aromatic substituents to adhesion promoting compositions used in bonding preparation gives improved cosmetic appearance and acceptable adhesion of polymeric materials on treated copper surfaces.” Page 15.

Discussion

1. Claim construction

Claims 1-36 are on appeal. Claim 9 is representative and reads as follows:

9. A composition useful in treating metal surfaces prior to bonding polymeric materials to the metal surfaces, said composition comprising:
 - a) hydrogen peroxide;
 - b) an inorganic acid;
 - c) a corrosion inhibitor;
 - d) an unsaturated alkyl substituted with aromatic or non-aromatic cyclic groups; and
 - e) optionally, but preferably, at least one material selected from the group consisting of:
 - (i) sources of halide ions;
 - (ii) organic nitro compounds;
 - (iii) sources of adhesion enhancing species, which species are selected from the group consisting of molybdates, tungstates, tantalates, niobates, vanadates, isopoly or heteropoly acids of molybdenum, tungsten, tantalum, niobium, vanadium, and combinations of any of the foregoing.

Thus, claim 9 is directed to a composition comprising hydrogen peroxide; an inorganic acid (e.g., sulfuric acid; specification, page 9, line 15); a corrosion inhibitor

(e.g., a benzotriazole; specification, page 9, line 23); and an unsaturated alkyl substituted with aromatic or non-aromatic cyclic groups (e.g., cinnamic acid; specification, page 11, line 17).

Claim 9 also recites several components that are “optionally, but preferably,” included in the claimed composition. Since they are optional, none of these components are required in the claimed composition.

2. Obviousness

The examiner rejected claims 1-26 under 35 U.S.C. § 103 as obvious in view of Ferrier¹ and Arimura.² The examiner relied on Ferrier for its disclosure of a composition comprising “an oxidizer preferably hydrogen peroxide . . . , an inorganic acid such as sulfuric acid . . . , [and] a corrosion inhibitor preferably benzotriazole.” Examiner’s Answer, page 3. The examiner acknowledged that “Ferrier does not explicitly teach the claimed unsaturated alkyl substituted with aromatic or non-aromatic cyclic groups.” Id.

For this limitation, the examiner relied on Arimura:

Arimura teaches a process for increasing the adhesion of a polymeric material to a metal surface (abstract) by applying a[n] adhesion promoting composition comprising organic acids such as cinnamic acid in order to provide pH adjustment and dissolution of copper produced by oxidation with cupric complex of an azole compound (col. 2 lines 52-64).

Id. The examiner concluded that it would have been obvious to “incorporate[] the cinnamic acid of Arimura into the adhesion promoting composition of Ferrier in order to better adjust the pH of the composition and better dissolve copper produced by oxidation with cupric complex of an azole compound as taught by Arimura.” Id., pages 3-4.

¹ Ferrier, U.S. Patent 6,146,701, issued Nov. 14, 2000

² Arimura et al., U.S. Patent 5,532,094, issued July 2, 1996

"The PTO has the burden under section 103 to establish a prima facie case of obviousness. It can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references." In re Fine, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988) (citations omitted).

"Under section 103, teachings of references can be combined only if there is some suggestion or incentive to do so." ACS Hosp. Systems, Inc. v. Montefiore Hosp., 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). "[T]he 'motivation-suggestion-teaching' test asks not merely what the references disclose, but whether a person of ordinary skill in the art, possessed with the understandings and knowledge reflected in the prior art, and motivated by the general problem facing the inventor, would have been led to make the combination recited in the claims." In re Kahn, 441 F. 3d 977, 988, 78 USPQ2d 1329, 1337 (Fed. Cir. 2006).

We agree with Appellant that the examiner has not made out a prima facie case of obviousness. In particular, the examiner has not adequately explained what would lead a skilled artisan to add an organic acid such as cinnamic acid to the composition disclosed by Ferrier. The examiner argues that a person of ordinary skill in the art would have added cinnamic acid to Ferrier's composition in order to adjust the pH and dissolve copper produced by oxidation. See the Examiner's Answer, pages 3-4.

Arimura indeed teaches that cinnamic acid is suitable for accomplishing these objectives. See col. 2, lines 52-55 and line 64. Arimura also teaches, however, that sulfuric acid accomplishes these goals as well. See col. 2, lines 52-55 ("The organic acids or inorganic acids are added . . . for adjusting pH and for dissolving copper

produced by oxidation.”) and col. 3, lines 2-3 (“Specific examples of the inorganic acid include . . . sulfuric acid.”).

As Appellant has pointed out, Ferrier’s composition comprises an acid, preferably a mineral acid such as sulfuric acid. See Ferrier, col. 5, lines 11-14. Since Ferrier’s composition already contains an acid that would accomplish the goals of adjusting pH and dissolving copper produced by oxidation, we do not agree with the examiner’s position that a person of ordinary skill in the art would have found it obvious to add cinnamic acid to the composition in order to do the same things.

At best, Arimura might have suggested substituting cinnamic acid for the sulfuric acid that is preferred in Ferrier’s composition. As Appellant points out, however, “even if the organic acid of Arimura et al. was substituted for the acid of Ferrier, the resulting composition would still not contain all of the elements of Applicant’s claimed invention,” Appeal Brief, page 8, because it would not contain an inorganic acid. Thus, even that modification of the prior art would not show that the present claims would have been prima facie obvious.

The examiner also rejected claims 27-36 under 35 U.S.C. § 103 as obvious in view of Ferrier, Arimura, and Fairweather.³ The rejection, however, relies on the same rationale as the rejection of claims 1-26. The examiner has pointed to nothing in Fairweather to make up for the deficiency discussed above. The rejection of claims 27-36 is reversed for the reasons discussed above.

³ Fairweather, U.S. Patent 6,036,758, issued March 14, 2000

Summary

The examiner has not adequately shown that those of ordinary skill in the art, without knowledge of the present disclosure, would have found it obvious to include cinnamic acid or another unsaturated alkyl substituted with aromatic or non-aromatic cyclic groups in the composition disclosed by Ferrier. We therefore reverse the rejections on appeal.

REVERSED

Donald E. Adams)
Administrative Patent Judge)
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) BOARD OF PATENT
Eric Grimes)
Administrative Patent Judge) APPEALS AND
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