UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JEFFRY L. JACOBS, MARK T. ANDERSON, JAMES G. CARLSON, CAROL-LYNN SPAWN and RACHAEL A.T. GOULD

Appeal 2008-1695
Application 11/240,316
Technology Center 1700

Decided: April 7, 2008

Before CHUNG K. PAK, ROMULO H. DELMENDO, and LINDA M. GAUDETTE, *Administrative Patent Judges*.

GAUDETTE, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1, 2, 15, and 16. Claims 3-14 and 17-37 are also pending but have been withdrawn from consideration. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

Claim 1 is illustrative of the invention and is reproduced below:

1. A structure comprising
a structural layer having an external surface; and
a coating on the external surface of the structural layer, the coating comprising
a polyurethane binder; and
photocatalytic particles within the polyurethane binder.

The Examiner relies on the following prior art references to show unpatentability:

Feng 2005/0075469 A1 Apr. 7, 2005

Appellants' Admitted Prior Art ("APA"), Spec., p. 1, ll. 10-20 (Ans. 3)

Appellants appeal from the Examiner's rejection of claims 1, 2, 15, and 16 under 35 U.S.C. § 103 as unpatentable over Appellants' admitted prior art ("APA") in view of Feng. Appellants do not present arguments which are reasonably specific to any one of claims 1, 2, 15, and 16. Therefore, we decide the appeal of this rejection on the basis of independent claim 1. 37 C.F.R. § 41.37(c)(1)(vii).

The Examiner finds that one of ordinary skill in the art at the time of the invention was familiar with the use of photocatalytic coatings for construction materials, such as roofing substrates. (Ans. 3) (citing APA). The Examiner further finds that Feng discloses polyurethane ("PU") coatings for various construction applications, including roofing systems. (Ans. 3). The Examiner contends that "since the admitted prior art puts photocatalyst into binder for use on roofs and Feng teaches PU as a binder

for use on roofs, Feng suggests the use of PU as the binder of the admitted prior art." (Ans. 4).

Appellants argue that one of ordinary skill in the art would not have been motivated to combine a photocatalyst with Feng's polyurethane binder. (App. Br. 4). According to Appellants, one of ordinary skill in the art at the time of the invention would have expected a polyurethane binder to degrade as a result of photocatalytic activity. (App. Br. 4). Therefore, one of ordinary skill in the art would have expected a photocatalyst to degrade Feng's material, thereby destroying the material for its intended purpose, i.e., as a sealant. (Reply Br. 2). Appellants thus contend that the Examiner's rejection is based on improper hindsight reasoning.

Based on the contentions of the Examiner and the Appellants, the issue presented in this Appeal is: Have Appellants identified reversible error in the Examiner's determination that one of ordinary skill in the art at the time of the invention would have been motivated to include the photocatalytic particles of the APA in Feng's polyurethane coating composition? We answer this question in the negative.

The following findings of fact are of particular relevance to our consideration of the issue presented in this Appeal:

1) The use of photocatalytic coatings in roofing substrates, such as tiles and shingles, was known in the art at the time of Appellants' invention. APA (Spec. 1, ll. 11-12.) More specifically, the ordinary artisan was familiar with the use of photocatalytic materials to combat discoloration in roofing substrates caused by organic materials, such as blue-green algae. APA (Spec. 1, ll. 14-19.)

2) Feng discloses "a prepolymer composition for preparing a one-part, moisture-curable sealant, adhesive or coating, and a method of making such prepolymer composition." Feng [0007]. The claimed prepolymer composition comprises "a) prepolymers comprising terminal NCO groups that are end-capped with silane groups or with silane groups and alcohol groups, and b) an excess of unreacted aromatic alcohol." Feng claim 1.

3) Feng discloses that coating compositions made with the inventive prepolymer composition may include other components such as an adhesion promoter, a UV stabilizer, and reinforcing filler. Feng [0011].

4) According to Feng, "[s]ealants are used to provide liquid and gaseous barriers in various applications. Such applications include bonding of dissimilar materials, . . . weatherproofing, [and] constructing roofing systems." Feng [0001]. Feng notes that a "sealant or coating in the cured state should have sufficient elasticity and flexibility to withstand expansions and contractions of panels, etc. with which it is associated during temperature variations that result from climatic changes." Feng [0003].

5) Feng discloses that "[p]olyurethane sealant and coating compositions typically are based on isocyanate-terminated prepolymers." Feng [0004]. In order to improve flexibility, these prepolymers are end capped with a combination of silane groups and other groups, e.g., aliphatic alcohol groups. Feng [0004]. Feng states that a drawback of these known sealants is that they "are more likely to chalk, crack and yellow when exposed to extreme weathering conditions of high heat, high moisture, and prolonged exposure to UV radiation. Such sealants can also lose strength when exposed to these weathering conditions." Feng [0004].

6) In Example 4, Feng discloses preparation of sealant compositions using the inventive prepolymers. The sealants were said to give "excellent color stability after UV light exposure." Feng [0048]. According to Feng, sealant or coating compositions prepared using the inventive prepolymer compositions "have excellent shelf-life, have excellent flowability for easy gunning, have good flexibility to withstand joint movement, do not shrink and gas upon curing, have excellent weathering stability upon exposure to UV light, and give fast skin time after exposed to the atmosphere moisture." Feng [0050].

Both the APA and Feng disclose materials for improving weatherability (including reducing discoloration) of roofing materials. (FF 1 & FF 6.) Therefore, the Examiner reasonably concluded that one of ordinary skill in the art at the time of the invention would have been motivated to combine the APA and Feng materials with the expectation of obtaining a coating composition with similar properties. *See KSR Int'l Co. v. Teleflex Inc*., 127 S. Ct. 1727, 1739 (2007) ("The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results."); *see also, In re Kerkhoven*, 626 F.2d 846, 850 (CCPA 1980) ("It is prima facie obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition which is to be used for the very same purpose.").

Appellants argue that the Examiner's obviousness determination is flawed because the Examiner failed to consider the APA in its entirety. More specifically, Appellants argue that the Examiner reversibly erred in

failing to accord evidentiary weight to page 2, lines 7-10[1] of the Specification. Appellants rely on this portion of the Specification to establish that one of ordinary skill in the art would have expected a prior art polyurethane binder to degrade as a result of photocatalytic activity and, therefore, would not have combined Feng's polyurethane composition with a photocatalyst. (App. Br. 3-4 and Reply Br. 2). We have considered Appellants' arguments, but are not persuaded of reversible error on the part of the Examiner.

"A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant." *In re Gurley* 27 F.3d 551, 553 (Fed. Cir. 1994). The question of whether a reference teaches away must be considered in the context of the claimed invention. *Cf. Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1567-68 (Fed. Cir. 1987) (In making a patentability determination, analysis must begin with the question, "what is the invention claimed?" since "[c]laim interpretation, . . . will normally control the remainder of the decisional process."). In the present case, the claimed invention includes a coating composition comprising a polyurethane binder and photocatalytic particles within the binder.

[1] The referenced portion of the Specification reads as follows: "While prior art has taught binders highly or totally resistant to photodegradation, the current invention utilizes binders that undergo slow but significant photodegradation catalyzed by the photocatalytic particles. It has been found that this provides effective algicidal properties while maintaining acceptable outdoor exposure lifetimes." (Spec. 2).

Contrary to Appellants' contention, we find that the Examiner's obviousness determination is properly based on what the collective teachings of the prior art would have suggested to one of ordinary skill in the art. The Examiner provided a detailed discussion of, and, therefore, clearly weighed that portion of the Specification relied by Appellants as a teaching away, against the evidence of obviousness (Ans. 4-5). Like the Examiner, and for the reasons well-stated in the Answer, we do not agree that the language relied upon by Appellants supports a finding that one of ordinary skill in the art at the time of the invention would have been dissuaded from adding photocatalyst particles to Feng's polyurethane-based composition. More specifically, we do not read this language as teaching that a *polyurethane-based* binder is insufficient for forming a photocatalytic coating for use over a desired lifetime of a roofing product. (Ans. 4-5).

In sum, we are in agreement with the Examiner's conclusion that a preponderance of the evidence weighs in favor of obviousness of the claimed invention.

ORDER

The decision of the Examiner rejecting claims 1, 2, 15, and 16 under 35 U.S.C. § 103 as unpatentable over AAPA in view of Feng 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

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