The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.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 TORU NAKAMURA, TOSHIMI NISHIOKA, TAKUYA HOGA, NOBUYUKI KUROKAWA, JUNICHI FUKUZAWA, HORST-TORE LAND and FREDY HELMER-METZMANN

Appeal No. 2006-2693
Application No. 09/000,330

ON BRIEF

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

GRIMES, Administrative Patent Judge.

DECISION ON APPEAL

This appeal involves claims to toner. The examiner has rejected the claims as obvious and inadequately described. We have jurisdiction under 35 U.S.C. § 134. We affirm the obviousness rejection and reverse the written description rejection.

Background

The specification describes "toner for developing an electrostatically charged image of a heat roller type copier or printer." Page 7. The toner contains binder resin, colorant and charge control agent. The colorant may be carbon black, diazo yellow, phthalocyanine blue, quinacridone, carmine 6B, monoazo red, or perylene. Id.

The binder resin includes a polyolefin resin having a cyclic structure, for example, "a copolymer of an alpha olefin, such as ethylene, propylene or butylene, with an alicyclic compound having a double bond, such as cyclohexene or norbornene." Page 4. A diene may be copolymerized with the polyolefin resin. Page 7.

Discussion

1. Claim construction

Claims 16, 21, 24-30, and 35 are pending and on appeal. With regard to the obviousness rejection, the claims have been argued in four groups. See the Appeal Brief, pages 8-16. We will focus on one claim from each group -- claims 16, 28, 29, and 30, each of which is representative of its group. Claims 21, 24, and 35 stand or fall with claim 16. Claims 26 and 27 stand or fall with claim 29. Claims 16, 28, 29, and 30 read as follows:

16. A toner for developing an electrostatically charged copier or printer image, the toner consisting essentially of:

a) a binder resin;

b) a colorant which is carbon black, diazo yellow, phthalocyanine blue, quinacridone, carmine 6B, monoazo red or perylene; and

c) a charge control agent,

wherein the binder resin includes a polyolefin resin having a cyclic structure, wherein the polyolefin resin is a copolymer derived from an alpha-olefin, an alicyclic compound having one double bond and, optionally, a diene monomer, and wherein the electrostatically charged copier or printer image is fixed by the action of a heated roller.

28. A toner for developing an electrostatically charged copier or printer image, the toner consisting essentially of:

a) a binder resin;

b) a colorant which is carbon black, diazo yellow, phthalocyanine blue, quinacridone, carmine 6B, monoazo red or perylene; and

c) a charge control agent,

wherein the binder resin includes a polyolefin resin having a cyclic structure, wherein the polyolefin resin is a copolymer derived from

(1) an alpha-olefin selected from the group consisting of ethylene, propylene and butylene

an alicyclic compound having one double bond and, optionally, a diene monomer, and

wherein the electrostatically charged copier or printer image is fixed by the action of a heated roller.

29. The toner as claimed in claim 28, wherein said alicyclic compound is cyclohexene or norbornene.

30. The toner as claimed in claim 28, wherein said alicyclic compound is norbornene and the alpha-olefin is ethylene.

Thus, claim 16 is directed to toner consisting essentially of a binder resin, a specified colorant, and a charge control agent. The binder resin includes a polyolefin resin having a cyclic structure that is derived from an alpha-olefin, an alicyclic compound having one double bond, and, optionally, a diene monomer.

Claim 28 substantially corresponds to claim 16 except that it recites that the alpha-olefin is ethylene, propylene, or butylene.

Claim 29 depends from claim 28 and recites that the alicyclic compound is cyclohexene or norbornene.

Claim 30 depends from claim 28 and recites that the alicyclic compound is norbornene and the alpha-olefin is ethylene.

2. New Matter

The examiner has rejected claims 16, 21, 24, 25, 28, and 35 under 35 U.S.C. § 112, first paragraph, for failing to comply with the written description requirement. The examiner notes that "[t]he originally filed specification at page 4, lines 32-34, discloses a copolymer of an alpha olefin with 'an alicyclic compound having a double bond, such as cyclohexene or norbornene.'" Examiner's Answer, page 5. However, the examiner argues that "[t]here is no disclosure of the broadly recited subgeneric species 'alicyclic compound having one double bond' as recited in the instant claims. Nor is there any appreciation in the originally filed specification for the broadly recited 'alicyclic compound having one double bond.'" Id. The examiner states that "the disclosure of a 'compound having a double bond,' when given its broadest and reasonable interpretation, is not limited to compounds having one double bond, but includes compounds having . . . more double bonds than one double bond. . . . The originally filed specification does not expressly define the term 'a double bond' as referring to only one double bond." Id., at pages 10-11.

Appellants argue that the teaching in the specification at page 4, lines 32-34, provides adequate support for the recitation of "one double bond." In particular, Appellants argue that "[t]he term 'a' indicates only one, therefore the phrase compound having a double bond means that there is only one double bond. The phrase 'such as cyclohexene and norbornene' evidences that only one double bond is preferred

because both cyclohexene and norbornene have only one double bond." Appeal Brief, page 7.

We conclude that the specification provides adequate written description for an alicyclic compound having one double bond. As noted above, the specification describes "an alicyclic compound having a double bond, such as cyclohexene or norbornene." Page 4, lines 32-34. As alluded to by the examiner, unless a more limited construction is indicated, the article "a" is construed in a claim to mean "one or more." KCJ Corp. v. Kinetic Concepts, Inc., 223 F.3d 1351, 1356, 55 USPQ2d 1835, 1839 (Fed. Cir. 2000). However, the fact that the recitation of "a double bond" is generally construed in a claim to mean "one or more double bonds" does not mean that the specification does not describe a compound having only one double bond.

In the present case, we agree with Appellants that the specification demonstrates that Appellants were in possession of the concept of alicyclic compounds having only one double bond, particularly in view of the fact that the two examples of alicyclic compounds following the recitation of "a double bond" have only one double bond. Thus, we conclude that the specification provides adequate written description for an alicyclic compound having one double bond. We therefore reverse the rejection of claims 16, 21, 24, 25, 28, and 35 under 35 U.S.C. § 112, first paragraph.

3. Obviousness

The examiner has rejected claims 16, 21, 24, 26-30, and 35 under 35 U.S.C. § 103 as obvious over Yoshikawa[1] in view of Minami,[2] as evidenced by two other

[1] Yoshikawa et al., U.S. Patent No. 5,292,609, issued March 8, 1994.
[2] Minami et al., U.S. Patent No. 5,179,171, issued January 12, 1993.

references. The examiner states that "Yoshikawa discloses a toner that comprises a colorant, such as carbon black, a vinyl-based binder resin, a wax comprising two particular polyolefin waxes, and a charge control agent. Col. 2, lines 1-7, and examples 1-3 at cols. 7-8. . . . Yoshikawa does not disclose that the vinyl-based binder resin is a polyolefin resin having a cyclic structure as recited in the instant claims. However, Yoshikawa discloses that the vinyl-based binder resin can be ethylene-based copolymers or alicyclic hydrocarbon resins. Col. 4, lines 24 and 30." Examiner's Answer, page 7.

The examiner notes that "Minami discloses a random copolymer resin having a cyclic structure that is within the compositional limitations recited in the instant claims." Id., at page 8. In particular, Minami discloses a random copolymer "obtained from ethylene and at least one cycloolefin, such as bicyclo[2,2,1]hept-2-ene, which is incorporated in the polymer chain without ring opening. Col. 4, lines 30, to col. 8, line 5, and especially col. 6, line 50." Examiner's Answer, page 8. "[B]icyclo[2,2,1]hept-2-ene . . . is another name for norbornene." Id. In addition, "Minami discloses that the low molecular weight random copolymers can be used as electrophotographic toners. Col. 15, lines 58-59, and col. 16, line 2." Examiner's Answer, page 8. Furthermore, "Minami teaches that its random copolymers have excellent transparency, thermal resistance, dielectric properties, and mechanical properties. Col. 4, lines 16-21." Examiner's Answer, page 9.

The examiner argues that "[i]t would have been obvious for a person having ordinary skill in the art, in view of the teachings of Minami, to use the random copolymer obtained from ethylene and a cycloolefin, such as norbornene, . . . taught by Minami, as

the vinyl-based binder resin in the toner disclosed by Yoshikawa. That person would have had a reasonable expectation of successfully obtaining an electrophotographic color toner having the properties disclosed by Yoshikawa, as well as excellent transparency." Id., at pages 9-10.

In particular, the examiner argues that "the particular class of 'vinyl-based polymer synthetic resin' . . . required by Yoshikawa for its invention is not critical. . . . The point of Yoshikawa is that any vinyl-based polymer having appropriate properties would have been recognized by a person having ordinary skill in the art as being suitable for use as a toner binder resin in Yoshikawa's invention." Id., at pages 12-13. In addition, the examiner notes that "Yoshikawa provides examples of useful vinyl-based polymers, e.g., ethylene-based copolymers and alicyclic hydrocarbon resins, both of which encompass the Minami low molecular weight ethylene-cycloolefin copolymers. Similarly, the fact that Minami discloses that the low molecular weight ethylene-cycloolefin copolymers of its invention have a multitude of uses does not detract from Minami's teachings that its low molecular weight ethylene-cycloolefin copolymers are useful as toners." Id., at pages 13-14. The examiner also argues that "[e]ven without that express teaching, a person having ordinary skill in the art would have recognized from the properties disclosed by Minami for its low molecular weight ethylene-cycloolefin copolymers that they would have been useful as toner binder resins." Id., at page 14.

We agree with the examiner that the applied references support a prima facie case of obviousness. As noted by the examiner, Yoshikawa discloses a developing agent (i.e., toner) comprising a colorant, a vinyl-based binder resin, two polyolefin

waxes, and a charge control agent. Col. 2, lines 41-45; col. 4, lines 36-49. Minami describes a copolymer comprising polymerized units from ethylene and polymerized units from a cycloolefin having one double bond, such as norbornene. Col. 4, lines 26-65; col. 6, lines 47-50. We conclude that one of ordinary skill in the art would have been motivated to use the copolymer of Minami in the developing agent of Yoshikawa.

Yoshikawa describes a broad range of vinyl-based binder resins. In addition, the categories of binder resins that are listed as examples include "ethylene-based copolymers such as polyethylene, ethylene-vinyl acetate copolymer, [and] ethylene-vinyl alcohol copolymer, . . . alicyclic hydrocarbon, . . . and mixtures thereof" (col. 4, lines 21-32) and therefore encompass the copolymers described in Minami. In addition, Minami specifically states that its polymers can be used as electrophotographic toners. Col. 16, line 2. Minami also discloses that its copolymers have excellent transparency, thermal resistance, dielectric properties, and mechanical properties. Col. 4, lines 16-21. Based on these teachings, we agree with the examiner that one of ordinary skill in the art would have been motivated to include the copolymers described in Minami in the developing agents described in Yoshikawa.

Appellants note that Yoshikawa provides a list of eighteen examples of vinyl-based polymers that can be used as a binder for the developing agent, but that "[n]one of the examples use a copolymer having an alpha-olefin and an alicyclic compound having one double bond as is required by the applicant's claimed invention." Appeal Brief, pages 8-9. Appellants argue that "[t]here would [have] be[en] no reason to selectively pick the alicyclic compound having one double bond or alpha-olefin based

copolymers in this group of 18 examples of binders to arrive at the applicant's claimed invention. While there are alpha-olefin based copolymers (ethylene-based copolymers) within this list[,] there is absolutely no indication to use a copolymer as defined in the instant claims. The examples of ethylene-based copolymers given in Yoshikawa are totally different (col. 4, lines 25-26) from the binder used in the instant claims. Again, reference to 'alicyclic compound having one double bond' on col. 4, line 30 cannot overcome this deficiency." Appeal Brief, page 9.

Although Yoshikawa does not disclose a copolymer of an alpha-olefin with an alicyclic compound having one double bond, the examiner is not relying on Yoshikawa for this feature. Instead, the examiner states that "Minami discloses a random copolymer resin having a cyclic structure that is within the compositional limitations recited in the instant claims." Examiner's Answer, page 8. In addition, for the reasons discussed above, we conclude that one of ordinary skill in the art would have been motivated to include the copolymer of Minami in the developing agent of Yoshikawa.

In addition, Appellants argue that "[o]ut of the forty different fields [of use] disclosed [in Minami,] only one field is drawn to electrophotographic toners. . . . There is no disclosure in Minami on how to make electrophotographic toners. There is no motivation to combine Minami with Yoshikawa." Appeal Brief, page 12. Instead, Appellants argue that "[t]he Examiner's argument is clearly based on hindsight reconstruction." Id., at page 13.

As pointed out by Appellants, the mere fact that the prior art may be modified does not make the modification and therefore the claimed invention obvious. "Rather, to establish obviousness based on a combination of the elements disclosed in the prior

art, there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by the applicant." In re Kotzab, 217 F.3d 1365, 1369-70, 55 USPQ2d 1313, 1316 (Fed. Cir. 2000). However, given that Yoshikawa broadly encompasses the copolymers of Minami and Minami specifically describes using its copolymers in toner, we conclude that one of ordinary skill in the art would have been motivated to include the copolymer of Minami in the developing agent of Yoshikawa. We agree with the examiner that "the fact that Minami discloses that the low molecular weight ethylene-cycloolefin copolymers of its invention have a multitude of uses does not detract from Minami's teachings that its low molecular weight ethylene-cycloolefin copolymers are useful as toners." Examiner's Answer, page 13-14. A person desiring to make toner would have been motivated by this teaching to use the copolymer of Minami in toner.

For at least these reasons, we conclude that the examiner has set forth a prima facie case that claim 16 would have been obvious over Yoshikawa in view of Minami, which Appellants have not rebutted. We therefore affirm the rejection of claim 16 under 35 U.S.C. § 103. Claims 21, 24, and 35 fall with claim 16.

Claim 28 substantially corresponds to claim 16 except that it recites that the alpha-olefin is ethylene, propylene, or butylene. Claim 29 depends from claim 28 and recites that the alicyclic compound is cyclohexene or norbornene. Claim 30 also depends from claim 28 and recites that the alicyclic compound is norbornene and the alpha-olefin is ethylene.

Appellants argue that "none of the examples of Yoshikawa use a copolymer having an alicyclic compound having one double bond and alpha-olefin, specifically,

ethylene, propylene or butylene as is required by [claim 28]. There would [have] be[en] no reason to selectively pick the alicyclic compound having one double bond or the specific alpha-olefin (ethylene, propylene or butylene) based copolymers in this group of 18 examples of binders to arrive at [claim 28]." Appeal Brief, page 14. Appellants' arguments with respect to claims 29 and 30 are similar. See Id., at pages 15 and 16.

However, as discussed above, the examiner is not relying on Yoshikawa for the copolymer. Minami describes a copolymer derived from ethylene and an alicyclic compound having one double bond, such as norbornene. Col. 4, lines 26-65; col. 6, lines 47-50. In addition, for the reasons discussed above, we conclude that one of ordinary skill in the art would have been motivated to include the copolymer of Minami in the developing agent of Yoshikawa. For at least these reasons, we conclude that the examiner has set forth a prima facie case that claims 28-30 would have been obvious over Yoshikawa in view of Minami, which Appellants have not rebutted. We therefore affirm the rejection of claims 28-30 under 35 U.S.C. § 103. Claims 26 and 27 fall with claim 29.

Summary

The examiner's obviousness position is supported by the preponderance of the evidence of record. We therefore affirm the rejection of claims 16, 21, 24, 26-30, and 35 under 35 U.S.C. § 103. However, we reverse the rejection of claims 16, 21, 24, 25, 28, and 35 under 35 U.S.C § 112, first paragraph. As a result, claim 25 is not subject to any outstanding rejection.

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

AFFIRMED-IN-PART

Donald E. Adams Administrative Patent Judge	))))) BOARD OF PATENT
Eric B. Grimes Administrative Patent Judge	)) APPEALS AND)) INTERFERENCES
Nancy J. Linck Administrative Patent Judge	))

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