THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 22

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte IZURU MATSUI and KAZUFUMI TOMITA

Appeal No. 96-0473
Application No. 08/082,727[1]

HEARD: August 03, 1999

Before METZ, WALTZ, and SPIEGEL, *Administrative Patent Judges*.

SPIEGEL, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 1 through 7, which are all of the claims pending in this application. Claim 1 is illustrative:

> 1. A microcapsule toner comprising a core containing a fixable component, and provided thereon a shell, wherein the fixable component has a micro phase separation structure composed of a liquid continuous phase and a disperse phase containing a resin and having a glass transition temperature of not higher than 20EC, and said fixable component contains a block and/or graft copolymer comprising two or more monomer components, at least one of the

[1] Application for patent filed June 28, 1993.

monomer components being compatible with said disperse phase with the other monomer component or components being compatible with said continuous phase.

The examiner relies upon the following references as evidence of obviousness:

Azar et al. (Azar)	3,893,932	Jul. 08, 1975
Crystal	3,974,078	Aug. 10, 1976
Wellman et al. (Wellman)	4,016,099	Apr. 05, 1977
Sawai et al. (Sawai)	4,254,201	Mar. 03, 1981

Appellants' claimed invention is directed to a microcapsule toner comprising a core containing a fixable component, and provided thereon a shell, wherein the fixable component has a micro phase separation structure composed of a liquid continuous phase and a disperse phase containing a resin and having a glass transition temperature of not higher than 20EC, and said fixable component contains a block and/or graft copolymer comprising two or more monomer components, at least one of the monomer components being compatible with said disperse phase with the other monomer component or components being compatible with said continuous phase. According to appellants, the block and/or graft copolymer assists in dispersing one part of the fixable component, i.e., the disperse phase containing a resin, within another part of the fixable component, i.e., the liquid continuous phase. In other words, the block and/or graft copolymer forms a micro phase separation structure within the core of the microcapsule, not between the core and the wall material. (*See* Brief, page 7, para. 3.)

ISSUES

I. Claims 1, 2 and 5 through 7 stand rejected under 35 U.S.C. § 103 as being unpatentable over Wellman in view of Crystal.

II. Claims 1, 2 and 4 through 7 stand rejected under 35 U.S.C. § 103 as being unpatentable over Wellman in view of Crystal and further in view of Azar.

III. Claims 1 through 7 stand rejected under 35 U.S.C. § 103 as being unpatentable over Wellman in view of Crystal further in view of Azar and further in view of Sawai.

We *reverse* for reasons which follow.

In reaching our decision in this appeal, we have given careful consideration to the appellants' specification and claims, to the applied prior art references and to the respective positions articulated by the appellants and the examiner. We make reference to the examiner's answer (Paper no. 14, mailed June 20, 1995) for the examiner's complete reasoning in support of the rejections, and to the appellants' brief (Paper no. 13, filed May 08, 1995) and appellants' reply brief (Paper no. 15, filed August 03, 1995) for the appellants' arguments thereagainst.

As a preliminary matter, we note that appellants have stated "the rejected claims will stand or fall together" (Brief, page 4). Therefore, we decide this appeal on the basis of claim 1 alone in accordance with 37 C.F.R. § 1.192(c)(7)(1995).

OPINION

I. Rejection of claims 1, 2 and 5 through 7 under 35 U.S.C. § 103 as being unpatentable over Wellman in view of Crystal.

The examiner found that Wellman substantially teaches the claimed invention, except for (a) the disperse phase having a glass transition temperature of not higher than 20EC and (b) the use of a block and/or graft copolymer with at least one monomer being compatible with the disperse phase and the other monomer being compatible with the continuous phase. The examiner also found that Crystal teaches toners with (a) a disperse phase having a glass transition temperature below 20EC and (b) the use of a block and/or graft copolymer having one monomer compatible with the continuous phase and the other monomer compatible with the disperse phase. The examiner concluded it would have been obvious to one of ordinary skill in the art to modify Wellman's toner by using (a) a disperse phase with a glass transition temperature of less than 20EC and (b) a block and/or graft copolymer as claimed because Crystal taught (a) that low glass transition temperature resins have desirable fixing properties and (b) that the block and/or graft copolymer allows more complete dispersion of the disperse phase in the continuous phase. *See* Answer, pages 3-5.

Appellants argue that none of the references of record disclose or suggest the claimed micro phase separation structure (Brief, pages 4-5). Appellants argue both Wellman and Crystal disclose a simple microcapsule structure wherein a *continuous core material* is encapsulated by a wall material, *not* a macrocapsule wherein a *dispersed core material* forms a micro phase separation structure of one core component dispersed in a second core component, all of which is then encapsulated by a wall material (Brief, pages 7-12). Therefore, appellants argue, any combination of Wellman and Crystal would result in a block and/or graft copolymer supporting the dispersion of a core material in a wall material, i.e., a microcapsule with a continuous core, not a microcapsule wherein the core material itself comprises a micro phase separation structure (Brief, pages 13-14).

Wellman discloses a microcapsule toner comprising a core of a solid or liquid material within a protective wall or shell (col. 1, lines 7-10). The toner is formed by (i) forming a dispersion of core material in a solution of wall material in a solvent, (ii) effecting phase separation of the wall material whereby the wall material deposits about the core material to form a dilute dispersion of particles comprising the core material encapsulated with the wall material, and (iii) recovering the encapsulated particles (col. 2, lines 2-15; col. 8, line 61 - col. 9, line 16). The core material may be any suitable liquid or solid material dispersible in the same solvent as the wall material (col. 4, lines 51-55), including any organic polymer including homopolymers and copolymers (col. 6, lines 3-5).

Crystal discloses a toner comprising a soft polymer component dispersed in a tough polymer matrix in a plurality of discrete domains by use of a block and/or graft copolymer dispersing agent, the copolymer dispersing agent having one component identical to the dispersed

soft component and a second component identical to the tough matrix component (col. 4, lines 33-60). The soft polymer has a glass transition temperature of less than about 30EC, preferably from about -50E to about 10EC, and more preferably from about -50E to about 0EC (col. 3, lines 34-38).

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on the applicants' disclosure. *In re Vaeck,* 947 F.2d 488, 493, 20 USPQ2d 1438, 1442 (Fed. Cir. 1991).

Here, the claimed invention requires a core component comprising a dispersion of at least two materials, i.e., a liquid continuous phase and a disperse phase containing a resin, wherein the dispersion

is assisted by and maintained by a block and/or graft copolymer which compatibilizes these two separate materials within the core component.

While conceding that the microphase separation structure of Crystal is formed between the disperse phase and the encapsulating matrix (Answer, para. bridging pages 7-8), the examiner maintains

> Wellman et al., while teaching the core can be solvent poor, teach that the core is not solvent free (col. 9, l. 5-17) and Wellman et al. teach the core can be a mixture of various materials, both liquid and solid and that the resin is dispersed in a liquid (col. 4, l. 51 to col. 5, l. 40; and col. 6, l. 3-46). Therefore, Wellman et al. teach the core material comprises two or more materials. [Answer, page 7]

The examiner's position is not well taken for the following reasons.

First, Wellman discloses that the core material may be any suitable liquid or solid material soluble or dispersible in the same solvent or mixture of solvents as the wall material (col. 4, lines 51-55). Wellman goes on to provide a number of examples of suitable liquid core materials and *mixtures thereof* (col. 4, line 55 - col. 5, line 5), suitable semi-solid core materials and *mixtures thereof* (col. 5, lines 5-17), and suitable solid core materials and *mixtures thereof* (col. 5, lines 17-37). While Wellman specifies that mixtures within each group are acceptable, we do not find where Wellman

discloses or suggests that the core material may be a mixture of a liquid core material and a solid core material.

Second, Wellman also discloses the core material may be any organic polymer including homopolymers and copolymers (col. 6, lines 3-5). Again, while Wellman discloses that different monomers may be incorporated into the polymeric core material, we do not find where Wellman discloses or suggests a mixture of different polymers as the core material.

Finally, Wellman discloses (1) obtaining a dispersion of core material in a solution of wall material, (2) drowning that dispersion with a large excess of non-solvent liquid (i.e., liquid which is miscible with the solvent for the wall material, yet liquid in which is a non-solvent of the wall material), (3) to effect phase separation of the wall material whereby (4) the wall material deposits on and encapsulates the core material (5) forming a dilute dispersed phase within a continuous phase of the non-solvent liquid (col. 8, line 61 - col. 9, line 5). The materials and solvents are selected so that the core material will separate as a solvent poor phase in a solution of wall material (col. 9, lines 5-12). Thus, the examiner apparently concludes the separated core material comprises at least two materials, i.e., the core material and the residual solvent. However, "solvent" refers to the solvent for the wall material. The examiner has not explained why one of ordinary skill in the art would have used a solvent for the wall material as the liquid continuous phase of a core material encapsulated by that wall material, especially since Wellman suggests the separated core material should be "poor" in that solvent. The

examiner has not rebutted appellants' argument that a solvent poor phase "indicates that a phase separation exists between the core and the wall material, and that any phase separation in the core does not contain a liquid continuous phase since the core is solvent poor" (Reply brief, page 2, first full para.).

Accordingly, we conclude that the examiner has not established a *prima facie* case of obviousness. The rejection of claims 1, 2 and 5 through 7 under 35 U.S.C. § 103 as being unpatentable over Wellman in view of Crystal is reversed.

II. Rejection of claims 1, 2 and 4 through 7 under 35 U.S.C. § 103 as being unpatentable over Wellman in view of Crystal and further in view of Azar.

and

III. Rejection of claims 1 through 7 under 35 U.S.C. § 103 as being unpatentable over Wellman in view of Crystal further in view of Azar and further in view of Sawai.

Since all the limitations of independent claim 1 are not disclosed or suggested by the applied prior art of Wellman and Crystal under 35 U.S.C. § 103, we will not sustain the rejection of dependent claims 3 and 4.[2] Dependent claims are nonobvious under § 103 if the independent claims from which they depend are nonobvious. *In re Fine*, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988).

[2] We have also reviewed the Azar and Sawai references additionally applied in the rejections of dependent claims 4 and 3, respectively, but find nothing therein which makes up for the deficiencies of Wellman and Crystal discussed above regarding claim 1.

For these reasons, we do not sustain any of the examiner's rejections of claims 1-7 under 35 U.S.C. § 103 as unpatentable over any combination based on Wellman and Crystal.

CONCLUSION

To summarize, (I) the decision of the examiner to reject claims 1, 2 and 5 through 7 under 35 U.S.C. § 103 as being unpatentable over Wellman in view of Crystal is *reversed*, (II) the decision of the examiner to reject claims 1, 2 and 4 through 7 under 35 U.S.C. § 103 as being unpatentable over Wellman in view of Crystal and further in view of Azar is *reversed*, and (III)

the decision of the examiner to reject claims 1 through 7 under 35 U.S.C. § 103 as being unpatentable over Wellman in view of Crystal further in view of Azar and further in view of Sawai is *reversed*.

REVERSED

ANDREW H. METZ)
Administrative Patent Judge)
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	) BOARD OF PATENT
THOMAS A. WALTZ	) APPEALS
Administrative Patent Judge	) AND
	) INTERFERENCES
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CAROL A. SPIEGEL	)
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CAS/kis

Appeal No. 96-0473
Application No. 08/082,727

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APPEAL NO. 96-0473 - JUDGE SPIEGEL
APPLICATION NO. 08/082,727

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DECISION: **REVERSED**

Prepared By:

DRAFT TYPED: 13 Apr 00

FINAL TYPED: