

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* NARASIMHARAO DONTULA, CHERYL J. BRICKEY,  
THOMAS J. DANNHAUSER, SHARON R. GIROLMO,  
and STEVEN J. NEERBASCH

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Appeal 2008-3760  
Application 11/099,398  
Technology Center 1700

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Decided: December 17, 2008

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Before PETER F. KRATZ, LINDA M. GAUDETTE, and  
KAREN M. HASTINGS, *Administrative Patent Judges*.

HASTINGS, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's decision rejecting claims 1-4, 6-9, 11-14, 18-26, 28, 37, and 38. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

## STATEMENT OF THE CASE

The invention relates to an inkjet recording product with a ink-receiving layer (Spec. 1:5-8). The ink receiving layer comprises a mixture of a hydrophilic polymer and a hydrophobic polymer (Spec. 1:7-10). The ink receiving layer is made using a melt extrusion process (Spec. 6:27-30).

Claims 1 and 37 are illustrative of the subject matter on appeal:

1. An inkjet recording element comprising a support having thereon at least one swellable, non-porous ink-receiving layer comprising an immiscible mixture of polymers in the form of a continuous phase and dispersed domains of a discontinuous phase, wherein the continuous phase comprises at least one hydrophilic thermoplastic polymer and the dispersed domains comprise at least one hydrophobic thermoplastic polymer that is essentially neutral and non-crosslinked, wherein the composition of the continuous phase and the composition of the discontinuous phase are both thermally stable at 150°C, and wherein the non-porous ink-receiving layer is formed from a material having a melt strength of 0.5 to 20 centiNewtons, wherein the non-porous ink-receiving layer is the product of melt extrusion, over said support, of said immiscible mixture.

37. An inkjet recording element comprising a support having thereon at least one swellable, non-porous ink-receiving layer comprising an immiscible mixture of polymers in the form of a continuous phase and dispersed domains of a discontinuous phase, wherein the continuous phase comprises at least one hydrophilic thermoplastic polymer and the dispersed domains comprise at least one hydrophobic thermoplastic polymer that is essentially neutral and non-crosslinked, and wherein the following equation is satisfied:

$$\phi_2 > \phi_1 \left( \frac{\eta_2}{\eta_1} \right)$$

(1)

wherein  $\eta_1$  and  $\eta_2$  are, respectively, melt viscosity at the same shear rate and temperature of the total hydrophobic thermoplastic polymer composition and total hydrophilic thermoplastic polymer composition, and  $\Phi_1$  and  $\Phi_2$  are their respective total volume fractions, wherein the sum of  $\Phi_1$  and  $\Phi_2$  is

equal to one, wherein the non-porous ink-receiving layer is the product of melt extrusion, over said support, of said immiscible mixture.

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

Nakano	US 2003/0186003 A1	Oct. 2, 2003
Ray	US 2004/0071900 A1	Apr. 15, 2004

The Examiner maintains the following rejections:

1. Claims 1-3, 6, 8, 9, 12-14, 18-24, 28, and 37 rejected under 35 U.S.C. § 102(a) as anticipated by Ray; and
2. Claims 4, 7, 11, 25, 26, and 38 are rejected under 35 U.S.C. § 103(a) as unpatentable over Ray in view of Nakano.

With respect to the first ground of rejection, Appellants do not separately argue the group of claims 1, 6, 8, 9, 12-14, 18-24, and 28. We therefore select claim 1 to represent this grouping. Appellants separately argue claims 2, 3, and 37 as a group. We therefore select claim 37 to represent this grouping. With respect to the second ground of rejection, Appellants do not present separate arguments as to any particular claim grouping. As such, we select claim 4 to decide the appeal as to this ground of rejection. 37 C.F.R. § 41.37(c)(1)(vii).

#### ISSUES ON APPEAL

Appellants contend that Ray does not teach the thermal stability of the composition of the continuous and discontinuous phases, nor the melt strength of the ink-receiving layer, as recited in claim 1, which properties are required in order to apply the ink-receiving layer as a “melt extrusion” onto the support. (App. Br. 5-7). However, the Examiner contends that Ray

anticipates the structure and composition of the claimed product and it is Appellants' burden to prove that the product of Ray would not necessarily have these properties. (Ans. 4-6).

Regarding claim 37, Appellants contends that Ray does not disclose the volume fraction of hydrophobic material necessary to satisfy equation 1 of independent claim 37. (App. Br. 7-11). The Examiner contends that claim 37 does not recite any amount for the hydrophobic material, and that since Ray teaches hydrophilic and hydrophobic polymers as claimed for the same use as Appellants for an ink receptive layer, it is reasonable to assume that the composition of Ray would inherently satisfy equation 1. (Ans. 4 and 6).

A first issue on appeal arising from these contentions of Appellants and the Examiner is: has the Examiner established a prima facie case of anticipation of the claimed product based on Ray; that is, is the product recited in claims 1 and 37 structurally distinct from the product taught by Ray due to the way the ink receiving layer is applied to the support?

Regarding dependent claim 4, the Examiner contends that optimizing the amount of hydrophilic polymer to be within the range recited in claim 4 would have been prima facie obvious (Ans. 4). Appellants contend that the relative amounts of polymers are important for the melt extrusion process and that "the method is clearly unobvious in view of the prior art." (App. Br. 12).

A second issue on appeal arising from the contentions of Appellants and the Examiner is: have Appellants shown that the Examiner failed to establish that it would have been prima facie obvious to use an amount of hydrophilic polymer as recited in claim 4 for the product of Ray?

## FINDINGS OF FACTS

The following findings of fact are supported by a preponderance of the evidence. Additional findings of fact as necessary appear in the Analysis portion of the opinion.

1. Claim 1 recites a product, that is, an “inkjet recording element *comprising . . . at least one . . . non-porous ink-receiving layer comprising an immiscible mixture of . . . at least one hydrophilic thermoplastic polymer*” and “at least one hydrophobic thermoplastic polymer that is essentially neutral and non-crosslinked”. (Claim 1; emphasis provided).

2. Appellants’ Specification teaches that the hydrophilic polymer may be poly(vinyl alcohol) (PVA) and includes “*all polyvinyl alcohols which are extrudable or which may be made extrudable by the addition of appropriate additives*” (See Spec. 10:27-30; emphasis provided).

2. Ray teaches an ink-receiving layer comprising a hydrophilic polymer; in a preferred embodiment, polyvinyl alcohol is present in the ink-receptive coating (p.1, ¶ [0017]; p. 2, ¶ [0021]).

3. Appellants’ Specification teaches that a “preferred” suitable hydrophobic polymer is “polyethylene” (Spec. 12: 14-23).

4. Ray teaches the ink-receiving layer may also comprise a polyethylene (p. 2; ¶ [0026]).

5. Ray teaches the ink-receptive coating layer may be applied by *any* conventional coating technique; including “slot die” (p. 2; ¶ [0027]; emphasis provided).

6. Appellants’ Specification discusses in the Background of the Invention various prior art patents which disclose melt extrusion of ink-receiving layers (Spec. pp. 3-6)

8. Appellants' Specification contains no explicit definition of "immiscible" (*see Spec., generally*).

9. The plain and ordinary meaning of "immiscible" includes "not miscible; incapable of being mixed".<sup>1</sup>

#### PRINCIPLES OF LAW

It has been well established that, for a claim to a product, the patentability of the product defined by the claim, rather than the process for making it must be gauged in light of the prior art. *In re Brown*, 459 F.2d 531, 535 (CCPA 1972). In *Brown*, the Court stated:

We are therefore of the opinion that when the prior art discloses a product which reasonably appears to be either identical with or only slightly different than a product claimed in a product-by-process claim, a rejection based alternatively on either section 102 or section 103 of the statute is eminently fair and acceptable. As a practical matter, the Office is not equipped to manufacture products . . . and then obtain prior art products and make physical comparisons therewith.

(*Id.*).

Likewise it has long been held that "[i]f the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *SmithKline Beecham Corp. v. Apotex Corp.*, 439 F.3d 1312, 1317 (Fed. Cir. 2006) (*quoting In re Thorpe*, 777 F.2d 695, [697] (Fed. Cir. 1985)).

"Where a product-by-process claim is rejected over a prior art product that appears to be identical, although produced by a different process, the

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<sup>1</sup> "immiscible." The Random House College Dictionary 664 (1973); *see also* Dictionary.com; <http://dictionary.reference.com/browse/immiscible>

burden is upon the applicants to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product.” *In re Marosi*, 710 F.2d 799, 803 (Fed. Cir. 1983).

However, Appellants’ attorney’s arguments do not take the place of evidence in the record. *In re Pearson*, 494 F.2d 1399, 1405 (CCPA 1974).

## ANALYSIS

### *First Issue*

The final product claimed is an ink-jet recording element with an ink-receiving layer thereon. The ink receiving layer must comprise an “immiscible mixture” of polymers, with a continuous phase of at least one hydrophilic polymer and a dispersed domain of at least one hydrophobic polymer. It is undisputed that the ink-receiving layer of Ray contains a hydrophilic polymer and a hydrophobic particulate polymer.

The Examiner’s position that Ray’s hydrophilic polymer and hydrophobic particulate polymer (e.g., polyethylene) will form an immiscible mixture as claimed appears reasonable. As the Examiner stated, all of the claimed ingredients are taught in Ray (Ans. 4) .

Appellants’ arguments that “immiscible mixture” means that both of the polymers must be in a liquid form are not persuasive (App. Br. 5-6). The Specification contains no express definition of this term. A broadest reasonable interpretation of the phrase “immiscible mixture” includes the ink-receptive layer mixture as set out in Ray.

Thus, we agree with the Examiner’s determination that Ray establishes a prima facie case of anticipation of claim 1.

The breadth of claim 1 also supports this determination. It is axiomatic that claims are given their broadest reasonable interpretation in

light of the specification as they would be interpreted by one of ordinary skill in the art. *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004). Although claims are to be interpreted in light of the specification, limitations from the specification are not to be read into the claims. *See In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993); *see also, e.g., In re Zletz*, 893 F.2d 319, 321-22 (Fed. Cir. 1989). An applicant seeking a narrower construction must either show why the broader construction is unreasonable or amend the claim to expressly state the scope intended. *In re Morris*, 127 F.3d 1048, 1057 (Fed. Cir. 1997).

Claim 1 notably does not require *any* minimum amounts of either the hydrophobic or hydrophilic polymer. Rather, the claim recites an “ink-receiving layer *comprising . . .* polymers in the form of a continuous phase and dispersed domains of a discontinuous phase” where the “continuous phase *comprises at least one* hydrophilic thermoplastic polymer” and the “dispersed domains *comprises at least one* hydrophobic thermoplastic polymer” (emphasis provided). We determine that the claim therefore encompasses as little as a trace amount of each of the recited thermoplastic polymers in the respective phase or domain, and in the ink-receiving layer.

Further, Appellants’ definition of “polyvinyl alcohol” (one of its disclosed hydrophilic polymers) includes “*all* polyvinyl alcohols which are extrudable *or which are made* extrudable by the addition of appropriate additives” (Spec. 10:27-30; emphasis provided).

Thus, we also agree with the Examiner’s analysis that the claimed hydrophilic polymer encompasses the hydrophilic polymer of Ray and would inherently have the claimed properties. That is, for example only, the polyvinyl alcohol of Ray, used for the same purpose as Appellants in an ink-

receiving layer on an element or a substrate, would prima facie be capable of being made extrudable (as encompassed by Appellants' description thereof in the Specification).

Likewise, the hydrophobic polymer (e.g., polyethylene) of Ray reasonably would appear to comprise a "dispersed domain" as claimed by its very nature of being a particulate, and thus would prima facie appear to have the same properties as claimed. The hydrophilic and hydrophobic polymers described in Ray are being used for the same purpose as Appellants, i.e., as an ink-receiving layer on a substrate.

For all these reasons, we are in agreement with the Examiner that the product of claim 1 appears to be substantially identical to Ray's ink-receptive layer product.

Thus, the burden was properly shifted to Appellants to prove that Ray's product is patentably different than the prior art product. *Marosi*, 710 F.2d at 803. In a case where patentability rests upon how the claimed product was made, the PTO has no reasonable ability to manufacture and determine whether there is, in fact, a patentable difference between the prior art product and the claimed product. Under the circumstances, it is reasonable to shift the burden to Appellants to show that the claimed product is, in fact, patentably different from the prior art product. *In re Thorpe*, 777 F.2d at 697; *see also In re Best*, 562 F.2d 1252, 1255 (CCPA 1977).

Appellants have not presented evidence sufficient to refute the Examiner's finding that there is no patentable difference between the products. Instead, Appellants provide unsupported attorney argument as to a skilled artisan's conclusions regarding the teachings of Ray. (App. Br. 7-11; Reply Br. 1-3). Attorney argument is no substitute for objective evidence

against the Examiner's finding. *Pearson*, 494 F.2d at 1405. Likewise, Appellants have not claimed nor demonstrated that any particular polymers are necessary to provide the claimed properties over the polymers taught by Ray. (See App. Br. and Reply Br., *generally*). Appellants' argument that the polyaminopropyl biguanidine of the embodiment described in Ray "likely" will not be stable at temperatures of 150°C is unsupported attorney argument (Reply Br. 2). In any event, claim 1 does not even require that all the components of the ink-receiving layer are stable at 150°C (due to the open-ended language used throughout the claim).

Further, Appellants state that the melt strength and thermal stability recited in claim 1 are the properties of the layer material *during the process of manufacturing the layer via melt extrusion* (see, e.g., App. Br. 9). Once again, it is only unsupported attorney argument that using polymer components with these properties during processing of the ink-receiving layer onto the substrate would translate into a patentably distinct **final** product.<sup>2</sup> There are no examples in Appellants' Specification comparing the properties of a product having the ink-receiving layer extrusion melted thereon versus a product having the ink-receiving layer coated thereon as a solution using, e.g., a slot-die as taught in Ray. (See *also*, Appellants' Background of the Invention section, Spec. 2:22-23 ("the coating solution may be coated as a solution using a slot-die."))

Thus, the substantial identity of the resultant end product *as claimed* with the product described in Ray indicates that Ray teaches a product identical to that claimed in claim 1. Therefore, we determine that on the

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<sup>2</sup> Again, it is the *claimed product* that must be patentably distinguished from the prior art *product*.

current record, the product (i.e., the ink-receiving layer on a substrate) taught by Ray is not structurally distinct from the product recited in claim 1 merely due to the way the ink-receiving layer is provided during the manufacturing process.

Appellants' arguments that no complete examples are found within Ray in order for them to establish that Ray does not inherently possess the claimed properties are unpersuasive. The claimed properties are properties of certain components of the composition during melt extrusion coating.<sup>3</sup> Appellants have claimed their final product such that it appears to be structurally indistinct from (i.e., identical to) the product described in Ray. In such a case, Appellants have the burden of proof as discussed above.

*Claims 2, 3, and 37*

We chose independent claim 37 to represent this group.

Appellants have chosen to describe their invention in terms of the equation set out in claim 37. Merely choosing to describe their invention in terms of variables not described in the prior art does not render the claimed subject matter patentable. *In re Skoner*, 517 F.2d 947, 950 (CCPA 1975).

The recited equation does not mandate any particular amounts of the hydrophobic and hydrophilic polymers. Appellants' Specification states this equation is merely an "empirical relationship . . . found to describe a structure where the hydrophilic thermoplastic polymer forms the continuous phase and the hydrophobic thermoplastic polymer forms the discrete or discontinuous phase." (Spec. 15:2-5).

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<sup>3</sup> See e.g., App. Br. 9; see also, e.g., Spec. p. 12, l. 28 to Spec. p. 13, l. 2 ("These resins are **not** individually extrusion coatable, although physical blends according to the invention were extrusion coatable." emphasis provided).

Indeed, the claim language already recites this structure in functional language. Appellants have therefore not met their burden to show the criticality of this equation, and how it defines over the product in Ray, especially in view of the open-ended language used throughout claim 37, similar to that of claim 1 as discussed previously.

The burden has therefore shifted to Appellants to show a structural difference between the ink-receiving layer on the ink-receptive substrate structure taught by Ray and the product claimed based on the difference in how the product was manufactured (i.e., via a melt extrusion process). *Marosi*, 710 F.2d at 803. Appellants' Specification and Appellants' Brief lack such a showing. (See App. Br. and Reply Br. generally).

Thus, we agree with the Examiner's determination that Ray provides a prima facie case of anticipation for claims 2, 3, and 37.

### *Second Issue*

#### *The 103 Rejection of Dependent Claims 4, 7, 11, 25, 26, and 38*

We chose claim 4 to represent this claim grouping.

Claim 4 recites that the amount of hydrophilic polymer is in the claimed range of "about 40 to 85 percent by weight of the total weight of the at least one hydrophobic . . . polymer and the at least one hydrophilic . . . polymer in the layer".

Appellants' argument that the "method is unobvious" is not germane to the question of obviousness of the amounts of components for a product as claimed (App. Br. 12). Optimizing the amounts of ingredients in a composition generally taught in the prior art is ordinarily within the skill of the art. It is normally expected that a change in temperature, or concentration, or in both, would be an unpatentable modification over the

prior art. *In re Aller*, 220 F.2d 454, 456 (CCPA 1955) (“[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.”) *See also In re Boesch*, 617 F.2d 272, 276 (CCPA 1980).

Furthermore, it is well settled that when patentability is predicated upon a change in a condition of a prior art composition, such as a change in concentration or the like, the burden is on Appellants to establish with objective evidence that the change is critical, i.e., it leads to a new unexpected result. *See In re Woodruff*, 919 F.2d 1575, 1578 (Fed. Cir. 1990).

The Appellants have not met this burden, since Appellants have presented no evidence of unexpected results for the claimed range of hydrophilic polymer.

Therefore, Appellants have not shown that the Examiner erred in rejecting claim 4 (as well as not separately argued claims 7, 11, 25, 26, and 38) as obvious over Ray in view of Nakano.

#### CONCLUSION

Appellants have not shown that the Examiner reversibly erred in establishing a prima facie case of anticipation of the claimed product based on Ray; that is, Appellants have provided no evidence to show that the product as claimed is structurally distinct from the product described in Ray due to the way the ink receiving layer is applied.

Appellants have not shown that the Examiner reversibly erred in determining that it would have been prima facie obvious to use an amount of hydrophilic polymer as recited in claim 4 for the product of Ray.

#### ORDER

Appeal 2008-3760  
Application 11/099,398

The Examiner's rejection of claims 1-3, 6, 8, 9, 12-14, 18-24, 28, and 37 under 35 U.S.C. § 102(a) as anticipated by Ray is affirmed.

The Examiner's rejection of claims 4, 7, 11, 25, 26, and 38 under 35 U.S.C. § 103(a) as unpatentable over Ray in view of Nakano is affirmed.

We affirm the Examiner's decision.

No time period for taking any subsequent action in connection with this appeal maybe extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

PL Initial:  
sld

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