

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* HIROYUKI SHIMO and  
NOBUHIRO HATA

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Appeal 2008-4488  
Application 10/639,514  
Technology Center 1700

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Decided: December 12, 2008

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Before TERRY J. OWENS, PETER F. KRATZ, and  
KAREN M. HASTINGS, *Administrative Patent Judges*.

OWENS, *Administrative Patent Judge*.

DECISION ON APPEAL  
STATEMENT OF THE CASE

The Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's rejection of claims 20-25, 27, 30 and 31. Claims 26, 28 and 29, which are

the only other pending claims, stand withdrawn from consideration by the Examiner. We have jurisdiction under 35 U.S.C. § 6(b).

*The Invention*

The Appellants claim a resin composition and a method for making it.

Claim 20 is illustrative:

Claim 20: A resin composition, comprising: (A) 75 to 97 parts by weight of an ethylene-vinyl alcohol copolymer having an ethylene content of 20 to 70 mol %; (B) 3 to 25 parts by weight of a polyamide resin; and (C) 0.1 to 30 parts by weight of a hydrophobic plasticizer, wherein the amount of (A) and (B), together, totals 100 parts by weight, said ethylene-vinyl alcohol copolymer contains admixed therewith a phosphate compound in an amount of 10 to 300 ppm based on phosphate radical and an alkali metal salt or an alkaline earth metal salt in amount of 10 to 500 ppm based on metal ion; and the polyamide resin is nylon 6/12, and the ethylene content of (A) and the solubility parameter of (C) as calculated from Fedors equation satisfies the relationship (1):

$$15 \leq \{\text{CH(A)}\}^{\frac{1}{2}} + \text{SP(C)} \leq 22 \quad (1)$$

wherein CH(A) is the ethylene content of (A) in mol%, and SP(C) is the solubility parameter of (C) as calculated from Fedors equation, and wherein the amounts of said phosphate radical and said metal ion are based on the amount of component (A).

*The References*

Moritani	4,613,644	Sep. 23, 1986
Yonezu	5,118,743	Jun. 2, 1992
Negi	5,344,715	Sep. 6, 1994

*The Rejection*

Claims 20-25, 27, 30 and 31 stand rejected under 35 U.S.C. § 103(a) over Moritani in combination with Negi and Yonezu.<sup>1</sup>

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<sup>1</sup> A rejection of claims 20-25, 27, 30 and 31 under 35 U.S.C. § 112, second paragraph, is withdrawn in the Examiner's Answer (Ans. 3).

## OPINION

We affirm the Examiner's rejection.

The Appellants separately argue only claims 21-23 (Br. 12-13). Regarding those claims, however, the Appellants merely argue that the references do not disclose or suggest what is recited in the claims. That is tantamount to merely pointing out the differences in what the claims cover, and is not a substantive argument as to the separate patentability of those claims. Hence, the Appellants' claims stand or fall together and we limit our discussion to one claim, i.e., claim 20. *See* 37 C.F.R. § 41.37(c)(1)(vii) (2007).

### *Issue*

Have the Appellants shown reversible error in the Examiner's determination that the Appellants' claimed invention would have been *prima facie* obvious to one of ordinary skill in the art?

### *Findings of Fact*

Moritani discloses a resin composition that "provides good-looking coextrusion moldings having a high interlaminar strength, and are superior in gas barrier properties and mechanical properties" (col. 1, ll. 57-60) and are free of fish eyes (abstract). The resinous composition "can be formed into film, sheet, tube, or bottle" (col. 5, ll. 31-32). The resinous composition comprises (A) a thermoplastic resin that can be a polyamide such as nylon 6/12 (col. 2, ll. 4-12, 29-36), (B) a saponified product of ethylene-vinyl acetate copolymer (EVOH) having an ethylene content of 20 to 50 mol% (col. 1, ll. 13-14; col. 3, ll. 5-16), and (C) a low molecular weight salt or oxide containing at least one element selected from groups I to III of the Periodic Table which can be hydrotalcites (which can be a phosphate

compound) and salts of calcium (an alkaline earth metal), in an amount of 0.00001 to 10 parts by weight per 100 parts by weight of (A) and (B) (col. 3, ll. 20-26; col. 4, ll. 7-15). In “compositions containing less thermoplastic resin (A) than EVOH (B), the weight ratio of (A) to (B) is 1:99 to 40:60, preferably 5:99 to 30:70” (col. 4, ll. 3-6). The resin composition can contain a plasticizer, in an amount that does not detract from the effect of the invention, that can be dioctyl phthalate and phosphate ester (col. 4, ll. 62-67; col. 5, ll. 12-14), which are two of the Appellants’ hydrophobic plasticizers (Spec. 12-13).

Negi discloses “a multilayered film that has, while maintaining the high gas barrier properties inherent to EVOH, excellent stretchability, in particular that under low tension, and heat shrinkability causing little thickness nonuniformity after shrinkage” (col. 2, ll. 42-46). The EVOH has an ethylene content of 20 to 60 mol% (abstract) and can be blended with other resins, which can be polyamide,<sup>2</sup> “within limits not to impair the purpose of the present invention” (col. 5, ll. 20-29). Negi’s layer C contains (A) 100 parts by weight of EVOH, and (B) 0.1 to 30 parts by weight of a hydrophobic plasticizer, and satisfies

$$5.5 \geq 19 - \text{CH(A)} \times 0.1 - \text{SP(B)} \geq 1.5$$

where CH(A) is the average ethylene content in mol% of EVOH (A), and SP(B) is the solubility parameter of component (B) calculated from Fedors’ formula (col. 5, ll. 53-67; col. 7, ll. 25-28). Additives, which can be hydrotalcites, phosphates and calcium salts, and are present preferably in an amount of 0.001 to 1 part by weight per 100 parts by weight of EVOH (A),

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<sup>2</sup> The polyamides disclosed as suitable in layer D include nylon 6/12 (col. 8, ll. 64-67).

can be used to improve the compatibility of the EVOH (A) and component (B) and the thermal stability (col. 7, ll. 29-58).

Yonezu is relied upon by the Examiner (Ans. 4) for a disclosure of an EVOH composition that contains a salt of a metal in group II of the Periodic Table in an amount converted to the metal of 0.0005 to 0.05% by weight, which can yield a molded article having no fish eyes or streaky irregularities (col. 1, ll. 56-64).

#### *Analysis*

The Appellants argue (Br. 11):

Importantly, neither Yonezu et al[.] nor Negi et al[.] disclose any layers that contain EVOH, a polyamide resin, and a hydrophobic plasticizer **in one layer**. While Moritani et al[.] may contain these components in one layer, when the optional plasticizer is present, there is no further disclosure or direction in Moritani et al[.] that various parameters with regard to these components **could** be adjusted in order to obtain the superior properties disclosed and shown herein, let alone **how** to adjust them.

Negi discloses generally that the EVOH (A) can have polyamide blended therewith (col. 5, ll. 21-29), and discloses EVOH (A) and hydrophobic plasticizer (B) in a single layer (col. 5, ll. 53-56; col. 6, ll. 49-50). Hence, Negi would have led one of ordinary skill in the art, through no more than ordinary creativity, to use EVOH (A) containing polyamide in the layer containing hydrophobic plasticizer (B). *See KSR Int'l. Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1741 (2007) (In making an obviousness determination one “can take account of the inferences and creative steps that a person of ordinary skill in the art would employ”).

As for the relative amounts of the components, Negi discloses that the polyamide can be used “within limits not to impair the purpose of the

present invention” (col. 5, ll. 21-22). The purpose of Negi’s invention is to provide a multilayered film “having excellent heat stretchability, in particular that under low tension, that can be stretched while forming no pinholes, cracks, local non-uniform thicknesses or like defects, and having excellent heat shrinkability and gas barrier properties” (col. 1, ll. 10-15). Moritani has a similar purpose, i.e., providing a resin composition that yields molded items, which can be films, that have high interlaminar strength and superior gas barrier and mechanical properties, and are free of fish eyes (abstract; col. 1, ll. 57-60; col. 5, ll. 31-32). Thus, one of ordinary skill in the art reasonably would have considered the amount of polyamide used by Moritani, i.e., a weight ratio of polyamide to EVOH of 1:99 to 40:60 (col. 4, ll. 3-6), to be suitable in Negi’s composition. Likewise, such a person reasonably would have considered the amount of hydrophobic plasticizer used by Negi, i.e., 0.1-30 parts by weight per 100 parts by weight of EVOH (col. 6, ll. 49-50; col. 7, ll. 25-28), to be suitable in Moritani’s composition.

The Appellants argue that there is no direction to choose Moritani’s sole phosphate salt (col. 3, l. 54) (Reply Br. 4).

The fact that many salts are disclosed would not have made any of them less obvious. *See Merck & Co. v. Biocraft Labs.*, 874 F.2d 804, 807 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989); *In re Lemin*, 332 F.2d 839, 841 (CCPA 1964).

The Appellants argue that “Moritani et al[.] does not appreciate the requirement herein of the presence of both the phosphate radical and the alkali metal or the alkaline earth metal salt” (Reply Br. 4).

The disclosure by Moritani that the disclosed salts and oxides, which include a phosphate salt (a hydrotalcite) and calcium salts, improves the

miscibility of the thermoplastic resin (A) (e.g., polyamide) and the EVOH (B) (col. 3, ll. 20-57; col. 4, ll. 7-20), and the disclosure by Negi that additives, which can be phosphate salts and calcium salts and can be used in combination, improve the compatibility of EVOH (A) and compound (B) (e.g., hydrophobic plasticizer) and the thermal stability (col. 7, ll. 29-58), would have led one of ordinary skill in the art, through no more than ordinary creativity, to use combinations of salts including combinations of phosphate and calcium salts to obtain their combined benefit. *See KSR*, 127 S. Ct. at 1741.

The Appellants argue that “one could randomly pick and choose ethylene contents of EVOH and hydrophobic plasticizers from the broad disclosure of Negi et al[.] that would incidentally satisfy relationship (1) of present Claim 20, but the applied prior art contains no direction to do so nor does it appreciate the superior results obtained by such satisfaction” (Reply Br. 2).

The Appellants’ Examples which, the Appellants state, fall within the Appellants’ claims, i.e., Examples 1, 5, 7, 9 and 11-13 (Br. 7), all satisfy Negi’s Equation iv (col. 5, l. 61).<sup>3</sup> The Appellants’ Comparative Examples 8 and 13 which, the Appellants point out (Reply Br. 2), fall within the scope of the Appellants’ claim 20 except for not satisfying Equation 1, also do not satisfy Negi’s Equation iv.<sup>4</sup> Moreover, using Negi’s average

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<sup>3</sup> The values of  $19 - \text{CH(A)} \times 0.1 - \text{SP(B)}$  in Negi’s Equation (iv) for the Appellants’ Examples 1, 5, 7, 9 and 11-13 are, respectively, 2.2, 3.3, 4.7, 4.9, 4.9, 4.7 and 2.6, all of which are within Negi’s range of 1.5 to 5.5.

<sup>4</sup> The values of  $19 - \text{CH(A)} \times 0.1 - \text{SP(B)}$  in Negi’s Equation iv for the Appellants’ Comparative Examples 8 and 13 are both 6.7, which is outside the range of 1.5 to 5.5 in Negi’s Equation iv.

SP(B) of 10 (average of 9, 10 and 11 in Table 1), the range of ethylene contents that satisfy Negi's Equation iv is 35 to 75 mol%. The Appellants' Equation 1, when SP(C) is 10, is satisfied for Negi's entire ethylene content range of 35 to 75 mol%.<sup>5</sup> Hence, we are not persuaded by the Appellants' argument that ethylene contents and solubility parameters that satisfy Negi's Equation iv might only incidentally satisfy the Appellants' Equation 1.

#### *Conclusion of Law*

The Appellants have not shown reversible error in the Examiner's determination that the Appellants' claimed invention would have been *prima facie* obvious to one of ordinary skill in the art.

#### *Issue*

Have the Appellants shown reversible error in the Examiner's determination that the Appellants' evidence of unexpected results fails to overcome the *prima facie* case of obviousness?

#### *Analysis*

The Appellants argue that some of their Comparative Examples are closer to the claimed invention than any composition disclosed or suggested by Moritani, and that the Appellants' Comparative Examples are inferior to the Examples in at least one of stretchability, heat shrinkability, oxygen permeability, thermoformability, and skin packaging (Br. 7-9, 11).

For the following reasons, the Appellants' evidence is not sufficient for overcoming the *prima facie* case of obviousness.

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<sup>5</sup> When SP(C) is 10 in the Appellants' Equation 1, the value of  $\text{CH}(\text{A})^{1/2} + \text{SP}(\text{C})$  for an ethylene content range of 35 to 75 mol% is 15.9 to 18.7, which is within the Equation 1 range of 15 to 22.

First, the Appellants have not established that their visual observation test for stretchability, wrinkling after heat shrinkage, thermoforming and skin packaging (Spec. 21-23, 30-32) is an art-recognized test or is reliable.

Second, it is not enough for the Appellants to show that the results for the Appellants' invention and the comparative examples differ. The difference must be shown to be an unexpected difference. *See In re Freeman*, 474 F.2d 1318, 1324 (CCPA 1973); *In re Klosak*, 455 F.2d 1077, 1080 (CCPA 1972). One of ordinary skill in the art would have expected resin compositions that satisfy Negi's Equation iv to have superior properties compared to those that do not satisfy that equation. Because, as pointed out above, the ethylene contents at Negi's average solubility parameter that satisfy Negi's Equation iv satisfy the Appellants' Equation 1, it appears that the superior properties one of ordinary skill in the art would have expected Negi's composition to possess include those shown by the Appellants.

Third, the evidence is not commensurate in scope with the claims. *See In re Grasselli*, 713 F.2d 731, 743 (Fed. Cir. 1983); *In re Clemens*, 622 F.2d 1029, 1035 (CCPA 1980). Claim 1 encompasses an ethylene content range of 20 to 70 mol%, yet the Appellants' examples cover only the more narrow range of 32 to 48 mol% (Spec. 37-38; Table 1). We find in the evidence of record no reasonable basis for concluding that compositions having ethylene contents within the wide range encompassed by the Appellants' claims would behave in the same manner as the tested compositions having a more narrow ethylene content range. *See In re Lindner*, 457 F.2d 506, 508 (CCPA 1972); *In re Susi*, 440 F.2d 442, 445-46 (CCPA 1971).

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*Conclusion of Law*

The Appellants have not shown reversible error in the Examiner's determination that the Appellants' evidence of unexpected results fails to overcome the *prima facie* case of obviousness.

DECISION/ORDER

The rejection of claims 20-25, 27, 30 and 31 under 35 U.S.C. § 103(a) over Moritani in combination with Negi and Yonezu is affirmed.

It is ordered that the Examiner's decision 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).

AFFIRMED

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