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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 30

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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Ex parte MASAFUMI KAMIYAMA,
HARUHIKO YANO[1], MINORU TSUCHIDA
and EIJI O'SHIMA

———————

Appeal No. 1996-0584
Application No. 07/658,878[2]

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HEARD: November 1, 1999

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Before KIMLIN, WARREN, 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 8, 19 through 25, 27 and 29-33. Claims 12 through 18, the only other claims

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[1] Appellants should review the second inventor's name for accuracy because, according to related Application 07/840,181 which is a divisional of this application, the second inventor's name is YANO HARUHIKO, Haruhiko being the family name.

[2] Application for patent filed February 22, 1991.

pending in this application, have been withdrawn from further consideration under 37 C.F.R. § 1.142(b) as not readable on the elected invention. Claims 1 and 29 are illustrative:

> 1. A method of suspension polymerization of a monomeric composition to produce uniformly sized particles having a narrow distribution, which method comprises the steps of:
>
> (a) retaining in independent vessels a disperse phase component including said monomeric composition and a continuous phase component;
>
> (b) supplying said disperse phase component and said continuous phase component from their respective vessels simultaneously and continuously through associated independent passageways into a uniform shear force generating field of a disperser, said disperser including a stationary part having an inner surface and a tubular rotating part having an outer surface, said rotating part being rotatably provided within said stationary part, said inner surface and said outer surface having substantially the same shape and defining a space therebetween having a substantially uniform thickness, said uniform shear force generating field being provided in said space;
>
> (c) applying shear force to said disperse phase component and said continuous phase component in said shear force generating field to form a dispersion having droplets of a desired size;
>
> (d) removing said dispersion from said shear force generating field;
>
> (e) introducing said dispersion into a polymerization vessel; and
>
> (f) completing a polymerization reaction to produce uniformly sized particles having a narrow distribution.

> 29. A method of suspension polymerization of a monomeric composition to produce uniformly sized particles having a narrow distribution, which method comprises the steps of:
>
> (a) retaining in independent vessels a disperse phase component including said monomeric composition and a continuous phase component;
>
> (b) supplying said disperse phase component and said continuous phase component from their respective vessels simultaneously and continuously through associated independent passageways into a uniform shear force generating field of a disperser, said disperser comprising a stationary part having a first circular surface and

a second annular surface surrounding and concentric with said first surface, a rotating part having a third circular surface confronting said first surface and a fourth annular surface surrounding and concentric with said third surface and confronting said second surface, said first surface and said third surface having substantially the same shape and defining a space therebetween having a substantially uniform thickness, said uniform shear force generating field being disposed in said space, said second surface and said fourth surface having substantially the same shape and defining a substantially uniform gap therebetween in a range of about 1.8 mm or less;

(c) applying shear force to said disperse phase component and said continuous phase component in said shear force generating field to form a dispersion having droplets of desired size;

(d) removing said dispersion from said shear force generating field, wherein substantially all of the dispersion passes through said gap;

(e) introducing said dispersion into a polymerization vessel; and

(f) completing a polymerization reaction to produce uniformly sized particles having a narrow distribution.

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

Vanzo et al. (Vanzo)	4,071,670	Jan. 31, 1978

ISSUES

Claims 1-8, 19-25, 27 and 29-33 stand rejected under 35 U.S.C. § 103 as being unpatentable over Vanzo.[3] We **reverse**.

[3] By an apparently inadvertent error on the examiner's part, claims 4-8, 19, 22-24, 32 and 33 have not been listed in the statement of the rejection on page 3 of the answer. It is quite clear, however, that claims 4-8, 19, 22-24, 32 and 33 should be included in the rejection since these claims were listed in the statement of rejection on page 2 of the final Office action mailed August 22, 1994 (Paper No. 17). Moreover, the appellants in their brief have considered claims 4-8, 19, 22-24, 32 and 33 to be included in the above noted prior art rejection (see e.g., page 8). Under these circumstances, we also consider claims 4-8, 19, 22-24, 32 and 33 to be included in this rejection and further consider the examiner's aforementioned error to be harmless.

In reaching our decision in this appeal, we have given careful consideration to the appellants' specification and claims and to the respective positions articulated by the appellants and the examiner. We make reference to the examiner's answer (Paper No. 22, mailed June 9, 1995) for the examiner's reasoning in support of the rejection and to the appellants' brief (Paper No. 21, filed March 23, 1995) for the appellants' arguments thereagainst.

THE INVENTION

Appellants' claimed invention is a method of suspension polymerization of a monomeric composition to produce uniformly sized particles having a narrow size distribution[4], which method comprises the steps of retaining a disperse phase component composed of the monomeric composition and a continuous phase component composed of a medium in independent vessels, supplying the disperse phase component and the continuous phase component from their respective vessels into a uniform shear force generating field of a disperser simultaneously and continuously through associated independent passageways, applying shear force in the disperser to form a dispersion of droplets having a desired size, subsequently introducing the dispersion into a polymerization vessel, and completing a polymerization reaction to produce the uniformly sized particles having a narrow size distribution.

[4] Appellants argue that the "narrow" size distribution of Vanzo is significantly greater than the "narrow" size distribution claimed and described in the present specification (brief, page 9). However, the specification fails to provide a specific definition of the claimed "narrow" size distribution. The inventive examples in the specification were conducted using one specific combination of result effective variables, e.g., rotational speed, ratio of disperse and continuous phase, gap spacing, etc. and, therefore, are of limited definitional value. Thus, in the event of further prosecution, both the examiner and appellants should review whether the claimed "narrow" size distribution is sufficiently definite to satisfy the requirements of 35 U.S.C. § 112, second paragraph.

OPINION

To establish a *prima facie* case of obviousness, there must be some suggestion or motivation to modify the reference or combine reference teachings and a reasonable expectation of success. Furthermore, the prior art must teach or suggest all the claim limitations. *In re Vaeck*, 947 F.2d 488, 493, 20 USPQ2d 1438, 1442 (Fed. Cir. 1991).

Vanzo discloses a method of suspension polymerization of a monomeric composition to produce uniformly sized particles having a narrow size distribution (col. 1, lines 7-10; col. 2, lines 1-4), using a high speed and high shear mixer (col. 2, lines 63-67), preferably a rotor stator type mixer in which one element is stationary and the other rotates in close tolerance therewith while the liquid is drawn through apertures in the stator (col. 6, lines 6-11). Generally, the process comprises (a) dispersing a mixture of monomer, water and stabilization agent in a first chamber to a particle size range of about 15 microns and an average particle size less than about 50 microns and, after sizing, (b) transferring the initial suspension to a polymerization reactor to form particles (col. 2, lines 40-49).

According to the examiner,

> Holding and supplying the continuous and disperse phases to a disperser is found in col. 7, Example 1 at lines 3-10, Example 2 at lines 37-43. The disperser having a uniform thickness between a stationary and rotating part (stator-rotor combination) is presented in col. 6 lines 3-15. [Answer, page 3, lines 10-14.]

However, the claimed invention requires supplying the disperse phase component and the continuous phase component from their respective vessels into a uniform shear force generating field of a disperser simultaneously and continuously through associated independent passageways.

Vanzo's Examples I and II disclose pouring a disperse phase component (i.e., styrene monomer containing lauroyl peroxide polymerization initiator) along with a continuous phase component (i.e., water containing a polyvinyl alcohol stabilizer) into a blender jar equipped with a rotor-stator mixing head and then stirring. In other words, the shear force field is not generated until after the disperse phase and continuous phase components are mixed. Thus, Vanzo does not teach or suggest that the two phase components do not mix until they are in the shear force generating field, as argued by appellants (brief, page 9).

Secondly, while Vanzo discloses a rotor **31** in "close tolerance" with the stator **22** (col. 6, lines 30-32), the clearance between the edges of the three rotor blades **34** and the stator **22** is not the same as the clearance between the curved inner aspect of the rotor and the stator **22** as shown in Fig. 1. Thus, as argued by appellants (brief, pages 9-10), Vanzo does not disclose or suggest producing a shear force generating field which is uniform because Vanzo does not disclose or suggest the specific shape of the claimed disperser.

Therefore, we conclude that the examiner has not established a *prima facie* case of obviousness as to claims 1 and 29 which both require supplying the disperse phase component and the

continuous phase component from their respective vessels into a uniform shear force generating field of a disperser simultaneously and continuously through associated independent passageways.

Since all the limitations of independent claims 1 and 29 are not disclosed or suggested by the applied prior art, Vanzo, under 35 U.S.C. § 103, we will not sustain the rejection of dependent claims 2-8, 19-25, 27 and 30-33 under § 103. 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).

Having concluded that the examiner has not established a *prima facie* case of obviousness, we do not reach the rebuttal evidence of unexpected results discussed on pages 10-13 of the brief.

OTHER MATTERS

U.S. Patent 1,690,688, issued November 6, 1928 to China et al. (China) was applied as prior art in a related appeal in Application 08/181,539 which application, according to appellants is a continuation of Application 07/840,141, filed February 24, 1992, now abandoned, application which is a division of the Application present. China discloses a suspension polymerization method using mill mixers having two separate feed inlets for materials wherein the feed mixes between the working surfaces of two opposed upper and lower rotors in Fig. 4. Fig. 5 shows a rotor-stator combination wherein particles are held tightly pressed against the surface producing a film shear. In the event of any

further prosecution, both the examiner and the appellants should take China into account and determine what effect its disclosure has on the patentability of the claimed subject matter.

CONCLUSION

To summarize, the decision of the examiner to reject claims 1-8, 19-25, 27 and 29-33 under 35 U.S.C. § 103 as being unpatentable over Vanzo is **reversed**.

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

REVERSED

EDWARD C. KIMLIN	)
Administrative Patent Judge	)
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	) BOARD OF PATENT
CHARLES F. WARREN	) APPEALS
Administrative Patent Judge	) AND
	) INTERFERENCES
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CAROL A. SPIEGEL)
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