

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

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

Paper No. 15

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte RICHARD D. PIKE

Appeal No. 1998-0240
Application 08/522,479¹

ON BRIEF

Before JOHN D. SMITH, WALTZ, and TIERNEY, Administrative Patent Judges.

TIERNEY, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. §134 from the examiner's final rejection of claims 1-7, 9-12, 14-17 and 25. Appellant has withdrawn claims 1-4, 6-7, 14-17 and 25 from appeal in order to reduce

¹Application for patent filed on August 30, 1995.

the number of issues on appeal. (Brief, p. 1 and Reply Brief, p. 1). Accordingly, this is a decision on appeal which involves claims 5 and 9-12.

The Invention

The appellant's invention relates to a helically crimped multicomponent conjugate fiber comprising a first thermoplastic polymer and a second thermoplastic polymer having different solidification periods. A nucleating agent is present in the polymer having the shorter solidification period or may be present in both polymers. (Specification, page 2, line 31 to page 3, line 10 and page 6, lines 14-19). Mineral particles are described as suitable nucleating agents for the polymers. (Specification, page 6, line 24 to page 7, line 1). Desirably, the nucleating agent is present in an amount ranging from about 0.005% to about 2% based on the total weight of the component composition. (Specification, page 6, lines 20-23). A copy of the claims under appeal is set forth in the appendix to the appellant's brief. Claims 5, which depends from claims 1-4, and claim 9 are illustrative of the invention. Claims 1-5 and 9 read as follows:

1. A helically crimped multicomponent conjugate fiber comprising at least a first composition and a second composition, said first composition comprising a first thermoplastic polymer and said second composition comprising a second thermoplastic polymer, said first and second thermoplastic polymers having different solidification periods, wherein at least one of said first and second compositions contains an amount of nucleating agent effective to modify the level of crimp within said fiber.
2. The conjugate fiber of claim 1 wherein said first and second thermoplastic polymers are selected from polyolefins, polyamides, polyesters, vinyl acetate-based polymers, and blends and copolymers thereof.

3. The conjugate fiber of claim 2 wherein said nucleating agent is selected from sorbitol nucleating agents; metal salts of benzoic acid, dicarboxylic acid and arylalkanoic acid; sodium 2,2'-methylene bis(4,6-di-t-butylphenyl) phosphate; and mineral particles.
4. The conjugate fiber of claim 3 wherein at least one of said component compositions comprises between about 0.005% and 2.0%, based on the total weight of said composition, of said nucleating agent.
5. The conjugate fiber of claim 4 wherein both said first and second compositions contain said nucleating agent.
9. A helically crimped multicomponent conjugate fiber comprising at least a first composition and a second composition, said first composition comprising a first thermoplastic polymer and said second composition a second thermoplastic polymer, said first thermoplastic polymer having a shorter solidification period and higher melting point than said second thermoplastic polymer, wherein said first composition contains an amount of nucleating agent effective to increase the level of crimp within said fiber.

The References

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Connor <i>et al.</i> (Connor)	5,366,786	Nov. 22, 1994
Pike <i>et al.</i> (Pike)	5,382,400	Jan. 17, 1995

Both Pike and Connor are available as a prior art references under 35 U.S.C. §102(a) or §102(e). Additionally, we note that both Pike and Connor are assigned to Kimberly-Clark Corporation, the assignee of the present application.

References Cited by the Board of Patent Appeals and Interferences

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The references cited by the Board are as follows:

Needham	5,366,675	Nov. 22, 1994
Bowen, Jr.	6,007,911	Dec. 28, 1999

Y. Lin *et al.*, “The Effect of Pigments on the Development of Structure and Properties of Polypropylene Filaments,” ANTEC 1991, pp. 1950-1954. (Y. Lin)

The Needham and Bowen patents are made of record and are cited on the attached PTO-892, with copies of these patents attached to this decision. Y. Lin was previously made of record in the Information Disclosure Statement, Paper No. 2, filed December 20, 1995.

The Rejections

- (1) Claims 9-12 stand rejected under 35 U.S.C. § 112, first paragraph for being broader than the enabling disclosure with respect to the term “higher melting point.”
- (2) Claims 5, 9-12 stand rejected under 35 U.S.C. § 112, second paragraph as indefinite due to the recitation of “between about” to define the amounts of nucleating agent present in the compositions.
- (3) Claim 9 stands rejected under 35 U.S.C. § 112, second paragraph as indefinite due to the recitation “increase” with regards to the level of crimping.
- (4) Claims 5 and 9-12 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Pike in view of Connor.

Opinion

We have carefully considered all of the arguments advanced by appellants and the examiner and agree with appellants that the aforementioned rejections are not well founded. Accordingly, we reverse the rejections.

1. *The Rejections Under 35 U.S.C. § 112, Second Paragraph*

The examiner has rejected claims 5 and 9-12 under 35 U.S.C. § 112, second paragraph for failing to particularly point out and distinctly claim the subject matter which appellant's regard as the invention. Specifically, the examiner has taken issue with the terminology "between about 0.005% and 2.0%" in claims 5 and 12 and the language "effective to increase the level of crimp within said fiber" as recited in claim 9.

For a lack of definiteness rejection under 35 U.S.C. § 112, second paragraph, the proper standard for definiteness is whether a claim reasonably apprises those of skill in the art of its scope. See *In re Warmerdam*, 33 F.3d 1354, 1361, 31 USPQ2d 1754, 1759 (Fed. Cir. 1994). Further, reviewing a claim for definiteness requires a determination of whether those skilled in the art could ascertain what is claimed when the claim is read in light of the specification. As discussed below, based upon our reading of the claims and the specification as originally filed, the disputed claim language reasonably apprises those skilled in the art of the scope of the claimed invention.

As to the language “between about 0.005% and 2.0%,” the examiner has failed to meet the burden that one skilled in the art would be unable to ascertain its scope. Here, the specific language “between about 0.005% and 2.0%” is clear, but flexible. The language allows appellant to include both the end points within the scope of the claim and also some finite amount beyond the end points.

As to the language “effective to increase the level of crimp within said fiber,” the examiner argues that the degree of “increase in the level of crimp is not defined by the claim.” The prior art reference Pike, however, describes a specific industry standardized test to measure the crimp of the fiber. (Pike, col. 11, lines 32-33; “crimp was measured according to ASTM D-3937-82.”). Accordingly, one skilled in the art would be able to ascertain the amount of crimping in a fiber that does not contain a nucleating agent and compare it to the level of crimping in a fiber containing a nucleating agent in order to determine if the amount of crimping was “increased.”

2. *The Rejection Under 35 U.S.C. § 112, First Paragraph*

The examiner has rejected claims 9-12 under 35 U.S.C. § 112, first paragraph as the disclosure is only enabled for claims limited in accordance with the specification at page 5, line 12.

More particularly, the examiner states that:

However, according to page 5 supra the fast solidifying component polymer has a melting point about 10°C or higher. Thus, claim 9 ‘higher melting point’ is broader in scope than the enabling disclosure. (Examiner’s Answer, page 4).

The examiner does not appear to provide any reasoning as to why one skilled in the art would be unable to make and/or use the invention recited in the claims. Furthermore, appellant's specification states that "the two component polymers may have similar melting points if their crystallization rates are measurably different." (Specification, page 5). As the specification describes the two component polymers as having similar melting points or that the fast solidifying polymer may have a melting point higher than the slower solidifying component, the claims are commensurate in scope with the subject matter described in the specification such that one skilled in the art could make and/or use the claimed invention.

3. *The Rejection Under 35 U.S.C. § 103(a) over Pike in view of Connor*

The examiner has rejected claims 5 and 9-12 under 35 U.S.C. § 103(a) over Pike in view of Connor. Briefly, the examiner relies upon Pike as teaching a helically crimped multicomponent conjugate fiber having a first component which can be polypropylene and a second component which can be polyethylene. The examiner, however, finds that Pike is silent as to the presence of nucleating agents. Connor is relied upon as teaching that it is well known in the art to incorporate nucleating agents in amounts ranging from 0.1 to 0.3% into thermoplastic polymers to improve their bonding. From this evidence, the examiner concludes that it would have been obvious to one skilled in the art to

incorporate the amount of nucleating agent taught by Connor in the first and/or second component filaments to improve the bonding of the filament.

It is well settled that to establish a *prima facie* case of obviousness, the prior art reference (or references when combined) must teach or suggest all the claim limitations. See *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970) (“All words in a claim must be considered in judging the patentability of that claim against the prior art.”). Furthermore, any motivation to modify the prior art references must flow from some teaching in the art that suggests the desirability or incentive to make the modification needed to arrive at the claimed invention. *In re Napier*, 55 F.3d 610, 613, 34 USPQ2d 1782, 1784 (Fed Cir. 1995); *In re Gorman*, 933 F.2d 982, 986, 18 USPQ2d 1885, 1888, (Fed. Cir. 1991)(“When it is necessary to select elements of various teachings in order to form the claimed invention, we ascertain whether

there is any suggestion or motivation in the prior art to make the selection made by the applicant.

[Citations omitted] ... The extent to which such suggestion must be explicit in, or may be fairly inferred from, the references, is decided on the facts of each case in the light of the prior art and its relationship to the applicants’ invention.”).

As urged by appellant, we conclude that the examiner has failed to establish a *prima facie* case of obviousness as to claims 5 and 9-12 over Pike in view of Connor. As described by appellant, the

claimed helically crimped multicomponent fibers may be bonded by heating the fiber to a temperature above the melting point of the low melting point compound yet below the melting point of the high melting point component. (See Brief, page 7, and Pike², col. 4, lines 37-43 and col. 9, lines 17-24). Connor, however, describes the addition of a nucleating agent to a thermoplastic polymer, such as polypropylene, in order to increase the bond strength of the thermally bonded fibers. (Connor, col. 2, lines 39-51 and col. 3, lines 30-37). Furthermore, Connor specifically states that “the nucleating agent additive can be considered to function as a bonding aid and not as an additive for enhancing fiber strength.” (Connor, col. 3, lines 32-35). Accordingly, one skilled in the art reading the Connor reference would expect that the addition of the nucleating agent to the Pike reference would increase the bonding strength of the low melting point, thermally bonded fiber. Yet, one skilled in the art would have no such expectation of improved bonding strength for the high melting point fibers as Pike teaches that nonwoven fabric webs are produced at temperatures below the melting point of the high melting point fiber and above the melting point of the low melting point fiber, *i.e.*, only the low melting point fiber melts to form bonds. Accordingly, the reference evidence relied on by the examiner fails to establish a *prima facie* case of obviousness for incorporating a nucleating agent in thermoplastic polymers having a shorter solidification period and/or higher melting point.

²Appellant’s specification incorporates the disclosure of Pike by reference in its entirety. (Specification, page 9, lines 11-14).

Remand for Further Consideration of Pike's Examples

As discussed above, appellant's invention relates to a helically crimped multicomponent conjugate fiber comprising a first thermoplastic polymer and a second thermoplastic polymer having different solidification periods. A nucleating agent is present in the polymer having the shorter solidification period or may be present in both polymers. (Specification, page 2, line 31 to page 3, line 10 and page 6, lines 14-19). Mineral particles, such as talc, fumed alumina and fumed silica are described as suitable nucleating agents for the polymers. (Specification, page 6, line 24 to page 7, line 1).

Pike describes a process for making nonwoven fabric made with multicomponent filaments having a helical crimp. (Abstract and col. 1, lines 6-9). One method of obtaining the crimp is to select a first and second component where the first component has a melting point less than the melting point of the second component. (Col. 4, lines 15-19 and col. 6, lines 28-41). The first component preferably comprises polypropylene or a random copolymer of propylene and ethylene and the second component preferably includes polyethylene. (Col. 4, lines 19-23 and col. 6, lines 42-46). In all of the examples of Pike, examples 1-22, Pike exemplifies a multicomponent fiber systems where the first fiber contains 98% polypropylene and 2% TiO₂ (titanium dioxide) concentrate and the second fiber contains 98% polyethylene and 2% TiO₂ concentrate. (Pike, examples 1-22). The TiO₂ concentrate is a mixture of 50% by weight TiO₂ and 50% by weight polypropylene. (Col. 11, lines 26-28).

Upon return of this application to the jurisdiction of the examiner, the examiner and appellant should determine whether Pike's exemplified TiO₂ concentrate is encompassed by appellant's "nucleating agents" especially in light of the specification's clear teaching that mineral particles are suitable nucleating agents. In particular, the examiner is directed to "The Effect of Pigments on the Development of Structure and Properties of Polypropylene Filaments" by Y. Lin et al., ANTEC 1991, pp. 1950-1954, which describes the effects of adding pigments to polypropylene fibers. Lin specifically tested the effects of TiO₂ as a white pigment for polypropylene. (Lin, page 1952, table 1). In particular, the examiner's attention is drawn to Lin's statement that:

The pigment additions act as nucleating agents and change the crystallization kinetics and morphology of spherulites. In the spinline the pigment additions cause crystallization to occur at higher temperatures and at shorter distances from the spinneret during melt spinning. (Lin, page 1951, col. 2).

Additionally, the examiner is directed to Needham, U.S. Patent No. 5,366,675 which teaches that titanium dioxide and talc are suitable nucleating agents for polyolefins, *e.g.*, polyethylene, and that the nucleating agents preferably have a particle size ranging from about 0.1 to 25 microns. (Needham, col. 2, lines 21-23, col. 4, lines 28-35 and col. 4, lines 46-48). Furthermore, the examiner is directed to Bowen, Jr., U.S. Patent No. 6,007,991³ which describes thermoplastic filaments having nucleating agents such as TiO₂ and talc. (Abstract and col. 6, lines 2-3).

³Although this reference is not available as prior art against the claimed subject matter it has been cited as representative of the state of the art.

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Accordingly, this application is remanded to the examiner for review and reconsideration of appealed claims 5 and 9-12 in light of the examples of Pike and the additional references discussed above.

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Conclusion

We reverse the examiner's rejections and remand the case to the examiner for further consideration.

REVERSED AND REMANDED

JOHN D. SMITH)
Administrative Patent Judge)
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)
) BOARD OF PATENT
THOMAS A. WALTZ)
Administrative Patent Judge) APPEALS AND
)
) INTERFERENCES
)
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