

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 99

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte HIDEKUNI ODA, TATUO KINOSHITA
and AKIYOSHI SHIMUZU

Appeal No. 95-3484
Application 08/098,236¹

ON BRIEF

Before WINTERS, WILLIAM F. SMITH and OWENS, *Administrative Patent Judges*.

OWENS, *Administrative Patent Judge*.

DECISION ON APPEAL

¹ Application for patent filed July 29, 1993. According to appellants, the application is a continuation of Application 07/813,043, filed December 23, 1991, now abandoned, which is a continuation of Application 07/567,709, filed August 14, 1990, now abandoned, which is a continuation of Application 07/364,535, filed June 12, 1989, now abandoned, which is a continuation of Application 07/220,954, filed June 23, 1988, now abandoned, which is a continuation of Application 06/885,399, filed July 18, 1986, now abandoned, which is a continuation of Application 06/770,019, filed August 29, 1985, now abandoned, which is a continuation of Application 06/553,873, filed November 21, 1983, now abandoned, which is a continuation of Application 06/338,138, filed January 8, 1982, now abandoned.

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This is an appeal from the examiner's final rejection of claims 1, 4-8, 38-46 and 49-53, which are all of the claims remaining in the application.

THE INVENTION

Appellants claim a copolymer of ethylene and an alpha-olefin. The copolymer is a transparent liquid at 20E and has an ethylene content, number average molecular weight, ratio of weight average molecular weight to number average molecular weight, and ratio of maximum value of the molecular weight to minimum value of the molecular weight, which are within recited ranges. Appellants state that the copolymer is useful as a synthetic lubricant oil, a lubricant oil additive, and a fuel oil additive (specification, page 1). Claim 1 is illustrative and reads as follows:

1. A copolymer of ethylene and an alpha-olefin having a ethylene content of from 40 to 60 mole%, a number average molecular weight of from 300 to 8,200 and a molecular weight distribution value Q , which is the ratio of the weight average molecular weight to the number average molecular weight, of not more than 3 and a Z value, which is the ratio of the maximum value of the molecular weight to the minimum value of the molecular weight when the molecular weight is measured by gel permeation chromatography, of from 15 to 200 said copolymer being a transparent liquid at 20EC.

THE REFERENCES

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Biswell et al. (Biswell)	3,679,380	Jul. 25,
1972 Stearns et al. (Stearns)	3,851,011	Nov.
26, 1974		

THE REJECTION

Claims 1, 4-8, 38-46 and 49-53 stand rejected under 35 U.S.C. § 103 as being unpatentable over Stearns in view of Biswell.

OPINION

One of the applications (Application 06/885,399) in the chain of continuation applications which led to the present application has been before the board (Appeal No. 87-3093). Claim 1 of that application differed from claim 1 of the present application only in that the recited ethylene content of the polymer was 30-90 mol% and there was no recitation that the copolymer is a transparent liquid at 20EC. The sole rejection in that case was under 35 U.S.C. § 103 over Biswell, which discloses a copolymer containing 58-68 wt% (67.4-76.1 mol%) ethylene units. The board, relying upon *In re Best*, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977), held that appellants' claimed copolymer was *prima facie* obvious over Biswell because the copolymers of appellants and Biswell appeared to be

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identical or substantial identical and that, consequently, appellants had the burden of providing competent objective evidence to the contrary (decision, pages 3-4). The board found the evidence relied upon by appellants to be deficient and affirmed the rejection (decision, pages 4-7). Appellants subsequently narrowed the recited range of the ethylene content of the copolymer to 40-60 mol%, which is outside the range disclosed by Biswell. The examiner now rejects the claims over Stearns in view of Biswell, and the issue of the propriety of the examiner's rejection over this combination of references is before us in the present appeal.

We have carefully considered all of the arguments advanced by appellants and the examiner and agree with appellants that the examiner's rejection is not well founded. Accordingly, we do not sustain this rejection.

Stearns discloses an ethylene-propylene copolymer having an ethylene content of 29-71 mol%, preferably about 40-60 mol%, and a number average molecular weight of 300-4000 (col. 1, line 68 - col. 2, line 1; col. 3, lines 50-52; col. 5, lines 13-16; col. 6, lines 55-57; col. 10, lines 6-10), which is useful as a lubricating oil (col. 1, lines 59-61).

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Biswell discloses an additive which improves the low temperature fluidity and pourability of middle distillate fuel oils (col. 1, lines 39-42 and 49-53). The additive is a substantially linear ethylene copolymer which is soluble in fuel

oil and consists of 58-68 wt% (67.4-76.1 mol%) polymerized ethylene units, 32-42 wt% polymerized propylene units, and up to 10 wt% polymerized 1,4-hexadiene units, and has a number average molecular weight of about 1,000 to 10,000 (col. 1, lines 60-71). The preferred ratio of weight average molecular weight to number average molecular weight of the copolymer, i.e., "Q" in appellants' claims 1 and 42, is about 2 to 6 (col. 2, lines 68-70).

Neither reference discloses any value of the Z parameter defined in appellants' claims 1 and 42.

Appellants point out that Stearns is directed toward providing lubricating oils whereas Biswell is directed toward providing pour improvers for middle distillate fuels, and argue that due to the disparate utilities of the copolymers in

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the references, one of ordinary skill in the art would not use the teachings of one of the references to modify the teachings of the other reference (reply brief, page 5).

The examiner argues that the motivation to combine the references is that both references disclose the preparation of ethylene-propylene copolymers in the lubricating oil range, with considerable overlap of ethylene content and molecular weight,

using the same catalyst and polymerization conditions (answer, page 10). The examiner, however, provides no evidence that one of ordinary skill in the art would have considered Biswell's disclosure of properties of a copolymer which improves the flowability and pourability of fuel oils to be suggestive of desirable properties of Stearns' copolymer which serves as a lubricating oil. Biswell teaches (col. 3, lines 2-4) that "[c]opolymers falling within this narrow definition [of molecular structure, composition, molecular weight and Q range of 2-6] are soluble in the middle distillate fuel oils and provide the desired improvement in flowability." The examiner does not explain, and it is not apparent, why this

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teaching or any other teaching in Biswell would have led one of ordinary skill in the art to prepare Stearns' copolymers, which are to have properties which render them suitable for use as a lubricating oil, such that they have a Q value of no more than 3 as recited in appellants' claim 1 or no more than 2.8 as recited in appellants' claim 42.

The examiner argues that due to the similarities of the processes for preparing the Biswell and Stearns copolymers, the properties of Biswell's copolymers having Q values of 3-6 are

inherent in Stearns' copolymers (answer, page 7). It appears that the examiner is arguing that Biswell indicates that the Q value of Stearns' copolymers can be 3, which is within the range recited in appellants' claim 1. The examiner's argument is not persuasive because the examiner has not explained why the teachings of Stearns and Biswell would have led one of ordinary skill in the art to prepare any Stearns' copolymer such that it has a Q value of no more than 3.

If a copolymer such as that of Stearns reasonably appears to be the same or substantially the same as appellants'

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claimed copolymer, then the burden shifts to appellants to provide evidence that the prior art copolymer does not necessarily or inherently possess the relied-upon characteristics of appellants' claimed copolymer. See *In re Fitzgerald*, 619 F.2d 67, 70, 205 USPQ 594, 596 (CCPA 1980); *Best*, 562 F.2d at 1255, 195 USPQ at 433-34; *In re Fessmann*, 489 F.2d 742, 745, 180 USPQ 324, 326 (CCPA 1974). The reason is that the Patent and Trademark Office is not able to manufacture and compare products. See *Best*, 562 F.2d at 1255, 195 USPQ at 434; *In re Brown*, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972).

The Stearns copolymers and the method of making them are similar to those of appellants. The preferred Stearns copolymers have an ethylene content of about 40-60 mol% (col. 10, lines 8-10), which is essentially the same as that recited in appellants' only independent claims, i.e., claims 1 and 42, and have a molecular weight in the 300-4000 range (col. 5, lines 13-16; col. 6, lines 55-57), which is within the range

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recited in those claims. The Stearns copolymers are prepared using a two-component catalyst wherein one component is an aluminum alkyl halide and the other component can be a vanadium compound having the formula $VOCl_{3-n}(RO)_n$, wherein R is an alkyl radical and n is 0 to 2 (col. 4, lines 14-24). Appellants also use a two-component catalyst wherein one component is an organoaluminum compound which can be an aluminum alkyl halide, and the other component can be a vanadium compound having the formula $VO(OR)_nX_{3-n}$, where R is an aliphatic hydrocarbon group having 1-20 carbon atoms, X is a halogen atom, and n is a number from 0 to 3 (specification, page 3, line 27 - page 4, line 3; page 5, lines 1-23). The Al/V ratio of Stearns' catalyst is 1-14 (col. 6, lines 18-19), whereas that of appellants is 2-50, preferably 3-20 (specification, page

7, lines 18-21). Stearns' preferred reaction temperature is 15-55EC (col. 4, lines 59-60), whereas that of appellants is 20-80EC (specification, page 8, lines 21-23), and both reactions are carried out in the liquid phase (Stearns, col.

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8, lines 65-66; specification, page 5, lines 32-33).

Appellants, however, provide in the declaration of Tatsuo Kinoshita (filed on April 21, 1983, paper no. 8, Appendix G of appellants' brief), test results which show the Q and Z values of the copolymers of Examples I-IV of U.S. 3,676,521 to Stearns et al.² These examples are the same as Examples I-IV of the Stearns reference relied upon by the examiner. The declaration (page 2) shows that the Q and Z values of the Stearns examples range, respectively, from 3.4 to 4.96 and from 470 to 6700. All of the Q and Z values are outside the ranges recited in appellants' independent claims 1 and 42, which are appellants' only independent claims. Thus, the declaration indicates that the Q and Z values recited in appellants' claims are not inherent properties of Stearns' copolymers.

The examiner argues that the molecular weights of the copolymers in the declaration are not within Stearns' range of

² A discussion of the other declarations of record (Appendices B to F of appellants' brief) is not necessary to our decision.

1500-4000 (answer, page 9). This argument is based on an incorrect reading of Stearns, which discloses molecular weights of 300-4000 (col. 5, lines 13-16; col. 6, lines 55-57).

We note that there is a difference between the number average molecular weights in Stearns' Examples I and II the corresponding number average molecular weights in the declaration.^{3,4} In Stearns' Examples I and II, the molecular weights are, respectively, 706 and 453, whereas the corresponding molecular weights in the declaration are, respectively, 650 and 570. The reason for this discrepancy, and whether it indicates that the values of Q and Z for Examples I and II in the declaration are questionable, are issues which were not raised by the examiner or appellants. On the basis of the present record, we find, in view of the Kinoshita declaration filed on April 21, 1983, that the Q and Z values recited in appellants' claims are not inherent

³ Stearns states that the molecular weights throughout the specification are number average molecular weights (col. 3, lines 50-52).

⁴ The molecular weight for Stearns' Example III is similar in Stearns and the declaration, i.e., 1059 in Stearns (col. 13, line 73) and 1029 in the declaration (page 2). The molecular weight for Example IV prior to hydrocracking is not reported by Stearns.

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properties of the copolymers disclosed by Stearns.

For the above reasons, we do not sustain the examiner's rejection.

DECISION

The rejection of claims 1, 4-8, 38-46 and 49-53 under 35 U.S.C. § 103 over Stearns in view of Biswell is reversed.

REVERSED

SHERMAN D. WINTERS)	
Administrative Patent Judge)	
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WILLIAM F. SMITH)	BOARD OF PATENT
Administrative Patent Judge)	APPEALS AND
)	INTERFERENCES
)	
)	
TERRY J. OWENS)	
Administrative Patent Judge)	

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Sherman & Shalloway
P.O. Box 788
Alexandria, VA 22313

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