

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 24

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte GREGG M. SKLEDAR
and
KENNETH D. HOPE

Appeal No. 2003-0808
Application No. 09/343,334

ON BRIEF

Before WARREN, TIMM, and DELMENDO, Administrative Patent Judges.
DELMENDO, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134 (2002) from the examiner's final rejection of claims 1 through 28 (final Office action mailed Mar. 20, 2002, paper 15), which are all the claims pending in the above-identified application.

The subject matter on appeal relates to a method of producing a high oxidative stability polyalphaolefin (claims 1-12 and 26-28), a lubricant composition comprising a

polyalphaolefin (claims 13-24), and to a method of producing a composition comprising a highly oxidatively stable polyalphaolefin and a diphenylamine antioxidant (claim 25).

Further details of this appealed subject matter are recited in representative claims 1, 5, 6, 9, 10, 13, 25, and 26 reproduced from the application below:

1. A method of producing a high oxidative stability polyalphaolefin comprising the step of hydrogenating polyalphaolefin to a level of hydrogenation in which a Bromine Index of less than 200 mg Bromine per 100 gram sample of polyalphaolefin is achieved.

5. A method according to Claim 1 further comprising distilling the polyalphaolefin to remove impurities before the hydrogenating step.

6. A method according to Claim 5 wherein a Bromine Index of less than 100 mg Bromine per 100 gram sample of polyalphaolefin is achieved.

9. A method according to Claim 5 further comprising a preliminary hydrogenating of the polyalphaolefin before the distilling step.

10. A method according to Claim 9 wherein a Bromine Index of less than 100 mg Bromine per 100 gram sample of polyalphaolefin is achieved.

13. A lubricant composition comprising a polyalphaolefin having a Bromine Index of less than 200 mg Bromine per 100 gram sample of polyalphaolefin.

25. A method of producing a composition comprising a highly oxidatively stable polyalphaolefin and a diphenylamine antioxidant, comprising:

hydrogenating polyalphaolefin to a level of hydrogenation in which an RBOT level of at least 2200 minutes is achieved; and

adding a diphenylamine antioxidant to the polyalphaolefin, to form the composition.

26. A method of producing a highly oxidatively stable polyalphaolefin comprising the step of hydrogenating a polyalphaolefin to a level of hydrogenation in which a Lube Oil Oxidator level of at least 45 hours is achieved when pressures between 35 and 2500 psi are applied.

The examiner relies on the following prior art references as evidence of unpatentability:

Van Dyck Fear	2,980,603	Apr. 18, 1961
Sauer	3,113,167	Dec. 3, 1963
Cupples et al. (Cupples)	4,282,392	Aug. 4, 1981
Wu et al. (Wu)	5,276,227	Jan. 4, 1994

The claims on appeal stand rejected as follows (examiner's answer mailed Oct. 1, 2002, paper 20, pages 3-7):

- I. claims 13 through 24 under 35 U.S.C. § 102(b) as anticipated by Wu;
- II. claims 1 through 8, 10 through 12, and 27 under 35 U.S.C. § 103(a) as unpatentable over Sauer in view of Wu;
- III. claims 1 through 4, 6 through 12, 26, and 28 under 35 U.S.C. § 103(a) as unpatentable over Cupples in view of Wu; and

IV. claim 25 under 35 U.S.C. § 103(a) as unpatentable over
"Cupples [] in view of Wu [] as applied to claims 1-4,
6-12, 26 and 28 above and/or claims 1-8, 10-12 and 27
as applied to Sauer [] in view of Wu []above, and
further in view of Van Dyck Fear []."

We affirm rejection II as applied against claims 1 through
8 and 27. We also affirm rejections III and IV. We reverse,
however, rejection I in its entirety and rejection II as applied
against claims 10 through 12.¹

I. 35 U.S.C. § 102(b): Claims 13-24 over Wu

The examiner's position is as follows:

The reference of Wu [] discloses a
polyalphaolefin with a Bromine number less than 4
(e.g. 04). See column 3, lines 50-51. Since the
Bromine Index is equal to 1000 times the Bromine
Number, the reference of Wu [] succeeds in disclosing
a polyalphaolefin with a Bromine Index of 0 to 4000 mg
of bromine per 100 g [of polyalphaolefin].^[2]

¹ The appellants state that the appealed claims should be
grouped as follows: (i) claims 1-4; (ii) claims 5-8 and 27;
(iii) claims 9-12 and 28; (iv) claims 13-24; (v) claim 25; and
(vi) claim 26. (Appeal brief filed Aug. 8, 2002, paper 19, pp.
8-9.) Accordingly, for rejection II, we limit our discussion to
claims 1, 5, and 10. For rejection III, we limit our discussion
to claims 1, 6, 9, and 26. 37 CFR § 1.192(c)(7)(1995).

^[2] Bromine number is determined according to ASTM D1159,
while the appellants' recited Bromine Index is measured
according to a modified version of ASTM D2710, designated as
K801. (Specification, pp. 5-6.) Both the examiner and the
appellants seem to agree that Bromine Number is 1000 times the
Bromine Index. (Specification, p. 5; answer, p. 3.)

Since the teachings of the reference encompass polyalphaolefins with Bromine Index ranges less than 200, appellants' polyalphaolefin product is anticipated by the reference of Wu...

We cannot agree with the examiner on this issue. As pointed out by the appellants (appeal brief, page 10), the relied upon prior art disclosure of "characterized by low bromine number, usually lower than 4" is not sufficiently specific to describe the here claimed range of "a Bromine Index of less than 200 mg Bromine per 100 gram sample of polyalphaolefin." The phrase "bromine number...usually lower than 4" (i.e., a bromine index of lower than 4,000), without more, may be interpreted as indicating a bromine number such as 3.99 (or a bromine index of 3,990), which is outside the appellants' claimed range. In this regard, it is important to note that Wu does not disclose the degree or the nature of hydrogenation. (Column 3, lines 51-57.)

Under these circumstances, we hold that the examiner has not established a prima facie case of anticipation.³

³ On return of this application to the jurisdiction of the examiner, the appellants and the examiner must analyze whether the subject matter of appealed claims 13-24 would have been obvious over Wu, taken alone or in combination with other prior art, within the meaning of 35 U.S.C. § 103.

II. 35 U.S.C. § 103(a): Claims 1-8, 10-12, and 27
over Sauer in View of Wu

Sauer describes a method for producing a polyalphaolefin (e.g., a polyalphaolefin based on C₆-C₁₆ alpha olefins) comprising the step of hydrogenating the polyalphaolefin. (Column 1, lines 50-57; column 6, lines 21.) Sauer further teaches that a distillation step may precede the hydrogenation step. (Column 8, lines 43-54.) Concerning the hydrogenation step, Sauer teaches:

The hydrogenation of the polymers may be carried out according to conventional procedures and with conventional hydrogenation catalysts. It has been found that polymers may be hydrogenated at pressures ranging from 2000 to 3000 p.s.i. at temperatures ranging between 350° F. and 450° F. employing either a nickel-on-kieselguhr commercial hydrogenation catalyst or a platinum dioxide commercial hydrogenation catalyst. In general, reaction times of about 8 hours have been used to insure complete hydrogenation of the polymer. [Emphasis added.]

Given that Sauer ensures "complete hydrogenation," it reasonably appears that Sauer's completely hydrogenated polyalphaolefin would necessarily or inherently possess a level of hydrogenation within the appellants' range recited in appealed claim 1. Thus, the burden of proof was on the appellants to show that Sauer's hydrogenated polyalphaolefin would not necessarily or inherently possess the claimed

property.⁴ In re Spada, 911 F.2d 705, 708, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990); In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433-34 (CCPA 1977). Whether the rejection is based on inherency under 35 U.S.C. § 102 or on obviousness under 35 U.S.C. § 103, jointly or alternatively, the burden of proof is the same, and its fairness is evidenced by the PTO's inability to manufacture products or to obtain and compare prior art products. In re Best, 562 F.2d at 1255, 195 USPQ at 433-34.

Under these circumstances, we hold that Sauer alone establishes a prima facie case of anticipation against appealed claims 1 and 5. While the examiner's rejection of appealed claims 1 and 5 has been made under 35 U.S.C. § 103, a prior art disclosure that anticipates under 35 U.S.C. § 102 also renders the claim obvious under 35 U.S.C. § 103, for anticipation is the epitome of obviousness. In re Baxter Travenol Laboratories, 952 F.2d 388, 391, 21 USPQ2d 1281, 1284-85 (Fed. Cir. 1991); In re Fracalossi, 681 F.2d 792, 794, 215 USPQ 569, 571 (CCPA 1982); In re May, 574 F.2d 1082, 1089, 197 USPQ 601, 607 (CCPA 1978).

⁴ On this point, the appellants state that the recited bromine index is measured according to a modified procedure based on ASTM D2710 but fail to inform one skilled in the relevant art the exact nature of the modifications. Hence, it is inappropriate to place the burden of proof on the examiner in this instance.

As to separately argued claims 10 through 12, the appellants correctly argue that "[n]either Sauer nor Wu teaches or suggests hydrogenating prior to distilling and hydrogenating." (Appeal brief, page 15.) The examiner does not respond to this argument. We therefore reverse this ground of rejection as applied against claims 10 through 12.

III. 35 U.S.C. § 103(a): Claims 1-4, 6-12, 26, and 28
over Cupples in View of Wu

Cupples describes a method for preparing a polyalphaolefin oligomer comprising the step of hydrogenating a liquid oligomer. (Column 1, lines 11-16.) Specifically, Cupples teaches (column 4, lines 4-27):

In our hydrogenation procedure, liquid oligomer at an elevated temperature is flowed or trickled over the surface of particles or pellets of the catalyst packed into a column in the presence of hydrogen at elevated pressure. This procedure involves an exceptionally intimate contact of the total liquid oligomer with the catalyst for a substantial period of time, since substantially all of the oligomer is present as a thin liquid film on the catalyst as the oligomer passes through the column. In this trickle-through procedure the great bulk of liquid oligomer is located on the catalyst surface with hydrogen gas predominating in the interstitial spaces between the pellets. Therefore, there is no large bulk of the liquid oligomer far removed from catalyst surface at any time during the hydrogenation reaction.

The hydrogenation is preferably carried out at an elevated temperature of between about 100° C. to about 300° C. and preferably between about 150° C. and about 220° C., and a hydrogen pressure between about 200 psi. and about 2,000 psi., or higher, and preferably between about 300 psi., and about 1,000 psi. These

temperature ranges refer to the average temperature in the hottest zone of the catalyst bed as determined by thermocouple probes in the bed.

Because Cupples teaches a hydrogenation step that involves "intimate contact of the total liquid oligomer with the catalyst for a substantial period of time," it would reasonably appear that the polyalphaolefin of Cupples would necessarily or inherently possess a bromine index within the appellants' claimed range. In re Spada, 911 F.2d at 708, 15 USPQ2d at 1658; In re Best, 562 F.2d at 1255, 195 USPQ at 433-34. Whether the rejection is based on inherency under 35 U.S.C. § 102 or on obviousness under 35 U.S.C. § 103, jointly or alternatively, the burden of proof is the same, and its fairness is evidenced by the PTO's inability to manufacture products or to obtain and compare prior art products. In re Best, 562 F.2d at 1255, 195 USPQ at 433-34.

We therefore hold that Cupples by itself establishes a prima facie case of anticipation against appealed claim 1. While the examiner's rejection of appealed claim 1 has been made under 35 U.S.C. § 103, a prior art disclosure that anticipates under 35 U.S.C. § 102 also renders the claim obvious under 35 U.S.C. § 103, for anticipation is the epitome of obviousness.

In re Baxter Travenol Laboratories, 952 F.2d at 391, 21 USPQ2d at 1284-85; In re Fracalossi, 681 F.2d at 794, 215 USPQ at 571; In re May, 574 F.2d at 1089, 197 USPQ at 607.

Regarding separately argued claims 6 and 9, the appellants are correct in pointing out that Cupples teaches distillation after hydrogenation. (Column 6, lines 2-4; column 6 line 67 to column 7, line 1; column 7, lines 23-26 and 58-61.) However, we disagree with the appellants that the prior art would not have suggested a further hydrogenation step.

Although Cupples does not teach further hydrogenation following distillation, "[i]t has long been known that hydrogenation to achieve [sic, obtain] a PAO which is predominantly saturated achieves [sic, provides] a more desirable product, [i.e.,] one that is more stable to oxidation and heat."⁵ (Specification, page 2, lines 8-10.) Accordingly, in the case where the distilled oligomer of Cupples was not hydrogenated to completion, one of ordinary skill would have found it prima facie obvious to further hydrogenate the distilled product in order to improve the stability of the product to oxidation and heat.

⁵ See In re Hedges, 783 F.2d 1038, 1039-40, 228 USPQ 685, 686 (Fed. Cir. 1986).

With respect to separately argued claim 26, it would reasonably appear that the polyalphaolefin of Cupples would necessarily or inherently possess the claimed level of hydrogenation, because Cupples teaches the "intimate contact of the total liquid oligomer with the catalyst for a substantial period of time." In re Spada, 911 F.2d at 708, 15 USPQ2d at 1658; In re Best, 562 F.2d at 1255, 195 USPQ at 433-34. Whether the rejection is based on inherency under 35 U.S.C. § 102 or on obviousness under 35 U.S.C. § 103, jointly or alternatively, the burden of proof is the same, and its fairness is evidenced by the PTO's inability to manufacture products or to obtain and compare prior art products. In re Best, 562 F.2d at 1255, 195 USPQ at 433-34.

For these reasons, we uphold the examiner's rejection on this ground.

IV. 35 U.S.C. § 103(a): Claim 25 over Cupples, Wu, Sauer, and Van Dyck Fear

The examiner found that neither Cupples nor Sauer teaches the use of diphenylamine as an antioxidant. (Answer, page 7.) Nevertheless, the examiner found that Van Dyck Fear teaches that diphenylamine is a known antioxidant for lubricating oil compositions. (Column 5, lines 41-46.) Based on the collective teachings of the prior art, the examiner determined one of

ordinary skill in the art would have been led, prima facie, to add diphenylamine into the lubricating composition of either Cupples or Sauer in order to increase oxidative stability.

(Answer, page 7.)

The appellants merely argue that "none of the polyalphaolefins of Cupples, Sauer, or Wu has been hydrogenated to a modified Bromine Index less than 433." (Appeal brief, page 18.) As we discussed above, however, Cupples and Sauer both appear to teach hydrogenated products having bromine indexes within the appellants' claimed ranges. The appellants have not satisfied their burden of proving otherwise.

For these reasons, we uphold the examiner's rejection on this ground.

Summary

In summary, our disposition of this appeal is as follows:

- I. the rejection under 35 U.S.C. § 102(b) of appealed claims 13 through 24 as anticipated by Wu is reversed;
- II. the rejection under 35 U.S.C. § 103(a) of appealed claims 1 through 8 and 27 as unpatentable over Sauer in view of Wu is affirmed, but the rejection under 35 U.S.C. § 103(a) of claims 10 through 12 as unpatentable over Sauer in view of Wu is reversed;

III. the rejection under 35 U.S.C. § 103(a) of appealed claims 1 through 4, 6 through 12, 26, and 28 as unpatentable over Cupples in view of Wu is affirmed; and

IV. the rejection under 35 U.S.C. § 103(a) of appealed claim 25 as unpatentable over "Cupples [] in view of Wu [] as applied to claims 1-4, 6-12, 26 and 28 above and/or claims 1-8, 10-12 and 27 as applied to Sauer [] in view of Wu []above, and further in view of Van Dyck Fear []" is affirmed.

The decision of the examiner to reject the appealed claims is therefore affirmed in part.

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

AFFIRMED IN PART

Charles F. Warren)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
Catherine Timm)	
Administrative Patent Judge)	APPEALS AND
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