

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.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. 17

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte CYRIL A. MIGDAL and RONALD D. ABBOTT

Appeal No. 2001-2094
Application 09/203,894

ON BRIEF

Before GARRIS, OWENS and LIEBERMAN, *Administrative Patent Judges*.
OWENS, *Administrative Patent Judge*.

DECISION ON APPEAL

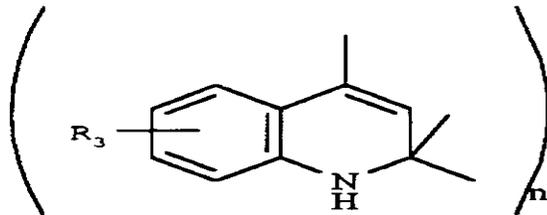
This is an appeal from the refusal to allow claims 1-5, 7, 8, 10-19, 21, 22 and 24-28 as amended after final rejection. These are all of the claims remaining in the application.

THE INVENTION

The appellants claim a composition containing lubricating oil and two specified antioxidants, and claim a method for increasing the oxidation stability of lubricating oil by adding

the two specified antioxidants to the lubricating oil. Claim 1, directed toward the composition, is illustrative:

1. A composition comprising lubricating oil and at least a first antioxidant and a second antioxidant, the first antioxidant being a secondary diarylamine of the formula R_1-NH-R_2 where R_1 and R_2 each independently represent a substituted or unsubstituted aryl group having from 6 to 46 carbon atoms and the second antioxidant being a 2,2,4-trialkyl-1,2-dihydroquinoline or a polymer thereof of the structure:



where $n=1-1000$ and R_3 is hydrogen, alkyl, or alkoxy.

THE REFERENCES

Jones et al. (Jones)	2,647,824	Aug. 4, 1953
Rasberger et al. (Rasberger)	4,692,258	Sep. 8, 1987
Meier et al. (Meier)	4,965,006	Oct. 23, 1990
Evans	5,246,606	Sep. 21, 1993

THE REJECTION

Claims 1-5, 7, 8, 10-19, 21, 22 and 24-28 stand rejected under 35 U.S.C. § 103 as being unpatentable over Jones taken with Meier, Evans and Rasberger.

OPINION

We reverse the aforementioned rejection and remand the application to the examiner. We need to address only claim 1, which is the broadest composition claim.¹

Jones discloses an antioxidant composition for oxidation unstable materials such as lubricating oil (col. 1, lines 1-9). The composition includes quinolines having either the heterocyclic ring or both the heterocyclic and benzene rings of the compound saturated with hydrogen, one of the quinolines being 1,2,3,4-tetrahydroquinoline (col. 3, lines 1-14). The quinoline preferably is used in combination with a conventional amine or phenol antioxidant, one of the disclosed amines being a secondary diarylamine (phenyl- β -naphthylamine) within the formula in the appellants' claim 1 (col. 1, lines 41-42; col. 3, lines 17-22). Jones states that "it has been discovered that hydrogenated quinolines in some manner act with conventional types of antioxidants to provide a synergistic effect, remarkably enhancing the antioxidant properties of these compounds" (col. 2, lines 13-17). Jones does not disclose that the quinoline can be a dihydroquinoline.

¹ The broadest method claim (15) recites adding to a lubricating oil the composition recited in claim 1.

Rasberger discloses that 1,2-dihydroquinolines were known in the art as antioxidants for polymeric plastics and, in combination with phenolic antioxidants, as antioxidants for lubricants (col. 1, lines 22-29). Rasberger states that "[i]t has now been found that monomeric 1,2,3,4-tetrahydroquinolines on their own, and particularly in combination with phenolic antioxidants, exhibit in lubricants an excellent antioxidation action with a satisfactory corrosion behaviour" (col. 1, lines 35-35). Rasberger teaches that the antioxidant composition can contain further antioxidants, the disclosed examples including secondary diarylamines ((2,2,3,3-tetramethyl-butyl)-phenyl- α - and β -naphthylamines, and phenyl- α -naphthylamine) which fall within the appellants' claim 1 (col. 4, lines 56-68). Rasberger does not disclose the dihydroquinolines recited in the appellants' claim 1, or teach that the disclosed dihydroquinolines can be used in combination with a secondary diarylamine antioxidant.

Evans discloses that dihydroquinoline derivatives which fall within the appellants' claim 1 were known in the art as antioxidants for industrial products, in particular natural and synthetic rubber, as preservatives for feedstuffs and, in combination with organic halides, as color formers in

photosensitive recording materials (col. 1, lines 9-30). Evans teaches that tetrahydroquinolines were known as stabilizers for lubricants (col. 1, lines 28-30). Evans states that "it has now been found that dimeric, trimeric and tetrameric tetrahydroquinoline derivatives are particularly suitable as stabilisers for organic material" (col. 1, lines 31-34). The disclosed organic materials include lubricants (col. 3, lines 17-23; col. 7, lines 4-9). The tetrahydroquinoline derivatives, when used as antioxidants for lubricants, can be used with other antioxidants, some of the disclosed other antioxidants being secondary diarylamines (col. 11, lines 3-10 and 19-24). Evans does not disclose a composition which includes the prior art dihydroquinolines and either lubricating oil or secondary diarylamines.

Meier discloses lubricants containing N-substituted 1,2,3,4-tetrahydroquinolines as antioxidants, and optionally containing additional antioxidants which can be secondary diarylamines which fall within the appellants' claim 1 (col. 1, lines 8-15; col. 7, lines 5-8; col. 8, lines 29-35). Meier does not disclose dihydroquinolines.

The examiner argues that "[g]iven the proven interchangeability of 1,2-dihydroquinolines for the tetrahydroquinolines as related by Rasberger and the use of members of the latter genus synergistically with aromatic amines as related by Jones et al, it would be prima facie obvious to expect the 1,2-dihydroquinoline genus to manifest the same type of improvement by incorporating as well diaryl amines" (office action mailed March 29, 2000, paper no. 3, pages 2-3). Rasberger, however, does not indicate that 1,2-dihydroquinolines and tetrahydroquinolines are interchangeable. Nor does Rasberger teach that aromatic amines are alternatives to phenols in promoting the effectiveness of both dihydroquinolines and tetrahydroquinolines as argued by the examiner (answer, pages 4-5). Rasberger teaches that the prior art 1,2-dihydroquinolines were known to be useful, in combination with phenolic antioxidants, as lubricant additives (col. 1, lines 22-29). It is only 1,2,3,4-tetrahydroquinolines that Rasberger teaches can be used with aromatic amine oxidants (col. 1, lines 35-39; col. 4, lines 55-68).

The record, therefore, indicates that the motivation relied upon by the examiner for substituting 1,2-dihydroquinolines for Jones' tetrahydroquinolines comes from the appellants' disclosure

Appeal No. 2001-2094
Application 09/203,894

of their invention in the specification rather than coming from the applied prior art. Hence, the record indicates that the examiner used impermissible hindsight when rejecting the claims. See *W.L. Gore & Associates v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 USPQ 303, 312-13 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984); *In re Rothermel*, 276 F.2d 393, 396, 125 USPQ 328, 331 (CCPA 1960). Accordingly, we reverse the examiner's rejection.

REMAND

The examiner has not addressed on the record the appellants' admitted prior art. The appellants acknowledge that "[t]he secondary diarylamines are well known antioxidants" (specification, page 4, line 12) and that "[l]ubricant compositions containing various secondary diarylamines are widely known in the art. The use of 2,2,4-trimethyl-1,2-dihydroquinoline polymers is also known, although to a lesser extent" (specification, page 1, lines 19-21). The examiner and the appellants should address on the record whether it would have been obvious to one of ordinary skill in the art add to a lubricating oil a combination of the known secondary diarylamine and 2,2,4-trimethyl-1,2-dihydroquinoline polymer lubricating oil antioxidants. *In re Kerkhoven*, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980).

Appeal No. 2001-2094
Application 09/203,894

The appellants also acknowledge that "JP 57115493 (July 17, 1982) discloses 2,2,4-trimethyl-1,2-dihydroquinoline polymer as a useful antioxidant for lubricating oils" (specification, page 1, lines 25-26). The examiner indicated, by initialing the appellants' information disclosure statement (filed December 2, 1998, paper no. 2), that this reference has been considered. However, we do not find in the file an English translation, or even an English abstract, of this reference, and the examiner has not addressed on the record the relevance of this reference. The examiner should obtain an English translation of JP 57115493 and the examiner and the appellants should address on the record whether it would have been obvious to one of ordinary skill in the art to combine the 2,2,4-trimethyl-1,2-dihydroquinoline polymer lubricating oil antioxidant disclosed therein with a secondary diarylamine lubricant oil antioxidant which the appellants have acknowledged to be well known.

Appeal No. 2001-2094
Application 09/203,894

DECISION

The rejection of claims 1-5, 7, 8, 10-19, 21, 22 and 24-28 under 35 U.S.C. § 103 over Jones taken with Meier, Evans and Rasberger is reversed. The application is remanded to the examiner.

REVERSED and REMANDED

)	
BRADLEY R. GARRIS)	
Administrative Patent Judge)	
)	
)	
)	BOARD OF PATENT
TERRY J. OWENS)	
Administrative Patent Judge)	APPEALS AND
)	
)	INTERFERENCES
)	
PAUL LIEBERMAN)	
Administrative Patent Judge)	

TJO/ki

Appeal No. 2001-2094
Application 09/203,894

Raymond D. Thompson
Uniroyal Chemical Company, Inc.
World Headquarters
Middlebury, CT 06749