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(2) is not binding precedent of the Board.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. 15

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MICHAEL J. KEOGH
and GEOFFREY D. BROWN

Appeal No. 95-1211
Application 07/887,904[1]

ON BRIEF

Before KIMLIN, WEIFFENBACH and WARREN, *Administrative Patent Judges*.

WARREN, *Administrative Patent Judge*.

Decision on Appeal

This is an appeal under 35 U.S.C. § 134 from the decision of the examiner finally rejecting claims 1 through 17. Claims 12 through 15 have not been argued by appellants (principal brief, page 1) and, thus, we dismiss the appeal as to these claims. Accordingly, only claims 1 through 11, 16 and 17 remain for our consideration on appeal. Claim 1 is illustrative of the claims on appeal:

1. An article of manufacture comprising (i) a plurality of electrical conductors having interstices therebetween, each electrical conductor being surrounded by one or more layers of a mixture comprising one or more polyolefins and the reaction product of (a) a functionalized hindered amine amic

[1] Application for patent filed May 26, 1992.

acid hydrazide and (b) a functionalized hindered phenol or a functionalized hindered amine hydrazide and (ii) hydrocarbon cable filler grease within the interstices.

The appealed claims as represented by claim 1[2] are drawn to a wire or cable construction wherein the wire or cable is jacketed and insulated by a mixture comprised of one or more polyolefins and an antioxidant which is the reaction product of (a) a functionalized hindered amine amic acid hydrazide and (b) a functionalized hindered phenol or a functionalized hindered amine hydrazide, the construction being filled with a hydrocarbon cable filler grease. According to appellants, the antioxidant "will resist extraction and be maintained at a satisfactory level" in the wire or cable construction (e.g., specification, page 2).

The references relied on by the examiner are:[3]

Turbett	4,044,200	Aug. 23, 1977
Baron et al. (Baron)	4,874,803	Oct. 17, 1989
MacLeay et al. (MacLeay)[4] (published Eur. Pat. Application)	0 434 080	Jun. 26, 1991

The examiner has rejected appealed claims 1 through 11, 16 and 17 on appeal under 35 U.S.C. § 103 as being unpatentable over Turbett[5] in combination with Baron, MacLeay and appellants' specification (page 1, line 6, to page 2, line 25). We affirm with respect to appealed

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[2] Appellants state in their principal brief (page 2) that the appealed claims are "argued in five separate groups." However, appellants do not argue the separate patentability of any of claims 2 (and 4 to 11), 3 and 16 over the applied prior art with specificity (principal brief, page 5). We further have treated claim 17 in the manner set forth below. Thus, we decide this appeal based on appealed claims 1 and 17. 37 CFR § 1.192(c)(5) and (6)(1993).

[3] The examiner cited Amembal et al., U.S. Patent No. 4,234,656, issued Nov. 18, 1980, to show that the antioxidant recited in claim 17 was "well known" and "not as prior art" (answer, page 6). Appellants admit that this antioxidant was known in the art (reply brief, page 2) and we find that it is disclosed in Turbett (col. 5, lines 16-17). Because reliance on the disclosure of Amembal would be required to apply this antioxidant to appealed claim 17 in the manner set forth by the examiner, this reference should have been included in the statement of the rejection. This type of error can be grounds for reversal. *See In re Hoch*, 428 F.2d 1341, 1342 n.3, 166 USPQ 406, 407 n.3 (CCPA 1970); *compare Ex parte Raske*, 28 USPQ2d 1304, 1304-05 (Bd. Pat. App. & Int. 1993). However, in view of the disclosure in Turbett and appellants' admission, we do not rely on Amembal et al.

[4] The examiner styled this reference as "EP '080" in the answer (page 4).

[5] The examiner withdrew Turbett, Patent No. 3,997,713, issued Dec. 14, 1976, on appeal as cumulative to Turbett (answer, page 2).

claims 1 through 11 and 16 but we reverse with respect to appealed claim 17.

Rather than reiterate the respective positions advanced by the examiner and appellants, we refer to the examiner's answer and to appellants' principal and reply briefs for a complete exposition thereof.

Opinion

We have carefully reviewed the record on this appeal and based thereon conclude that the claimed articles of manufacture as a whole would have been *prima facie* obvious over the combination of Turbett, Baron, MacLeay and the background information provided by appellants in their specification (page 1, line 6, to page 2, line 25) taken as a whole to one of ordinary skill in the art at the time the claimed invention was made. As shown by Turbett (cols. 1-2) and acknowledged by appellants in their specification and in their principal brief (page 2), it is well recognized in the art that hydrocarbon cable filler grease causes the degradation of the polyolefin resin and stabilizer mixtures used as insulation for electrical conductors, and particularly by the extraction of stabilizers therefrom. Turbett addressed this problem by utilizing a stabilizer composition of a copper deactivator which can be a hindered phenol having hydrazide functionality (cols. 4-5 and 7-8), and an antioxidant which contains at least four hindered phenol groups (cols. 6 and 7-8) in combination with certain ethylene copolymers (col. 4). Appellants admit that the copper deactivator at col. 5, lines 16-17, of Turbett is also an antioxidant (*see supra*, note 3).

We are of the view that one of ordinary skill in this art would have been motivated to address this problem on a broader scale. MacLeay discloses hindered amine amic acid hydrazides which provide thermal and oxidative stabilization and are not readily lost from polymeric systems via volatilization, migration or extraction (e.g., abstract, page 6, lines 38-44, and pages 28-29). These compounds can be , *inter alia*, the reaction products of a functionalized hindered amine amic acid hydrazides and functionalized hindered phenols. An example of such a stabilizer is found in MacLeay Example XXIV. MacLeay teaches that the stabilizers thereof can stabilize polymeric compositions "which are normally subject to thermal [and] oxidative . . . degradation" and "are particularly useful in the stabilization of polyolefins" (page 28, lines 6-7, and page 29, line 36). The broad range of "polyolefins" disclosed (pages 28-29) is at least commensurate with the scope of this term as set forth in appellants' specification (pages 3-6). *In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023,

1027 (Fed. Cir. 1997); *In re Zletz*, 893 F.2d 319**,** 321-22, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989).

We are mindful that it is well settled that the combination of references taken as a whole must provide the suggestion or motivation to one of ordinary skill in the art to make the selection of elements necessary to arrive at the claimed invention without recourse to appellants' specification, with

> [t]he extent to which such suggestion must be explicit in, or may be fairly inferred from, the reference, is decided on the facts of each case, in light of the prior art and its relationship to the applicant's invention.

In re Gorman, 933 F.2d 982, 986-87, 18 USPQ2d 1885, 1888-89 (Fed. Cir. 1991); *see also In re Young*, 927 F.2d 588, 591, 18 USPQ2d 1089, 1091 (Fed. Cir. 1991); *In re Sovish*, 769 F.2d 738, 742-43, 226 USPQ 771, 773-74 (Fed. Cir. 1985); *In re Keller*, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981); *In re Warner*, 379 F.2d 1011, 1014-17, 154 USPQ 173, 175-78 (CCPA 1967), *cert. denied*, 389 U.S. 1057 (1968). Accordingly, we are of the opinion that based on the evidence presented in the references as we outlined above, one of ordinary skill in this art would have been motivated to address the art recognized problem of the extraction of stabilizers by hydrocarbon cable filler grease from polyolefin mixtures by employing hindered amine amic acid hydrazides as disclosed by MacLeay with polyolefins used to insulate electrical conductors with the reasonable expectation of successfully providing thermal and oxidative stabilization to these polyolefin systems, which are normally subject to thermal and oxidative degradation, and resisting antioxidant extraction from such systems. We are reinforced in our view since Turbett teaches that hindered phenols with hydrazide functionality and other hindered phenols are used as stabilizers in polyolefins systems and are compatible with filler grease. *See In re O'Farrell*, 853 F.2d 894, 903-04, 7 USPQ2d 1673, 1680-81 (Fed. Cir. 1988). Thus, the article of manufacture set forth in appealed claim 1 was *prima facie* within the ordinary skill in this art at the time it was made.

With respect to appealed claim 17, we recognize that the hindered amine amic acid hydrazide stabilizer of MacLeay Example XXIV is the species specified in appealed claim 16, and is "antioxidant A" of specification Examples 2-4 (pages 16-20). However, while MacLeay teaches that the hindered amine amic acid hydrazide stabilizers may be used with other additives including hindered phenolic and

hindered amine stabilizers, which may be synergistic with the hindered amine amic acid hydrazide stabilizers (page 28, lines 7-9, and page 29, lines 39-43 and 47-48), the hindered phenol with hydrazine functionality which is the stabilizer set forth in appealed claim 17, and is "antioxidant C" of specification Examples 1 and 4 (pages 16-20), is not *per se* disclosed in this reference. As we pointed out above, the stabilizer of claim 17 is disclosed by Turbett to be useful in polyolefin systems used to insulate electrical conductors as a copper deactivator and is admitted by appellants to be an antioxidant. This stabilizer also falls within those antioxidants which MacLeay discloses can be used with hindered amine amic acid hydrazide stabilizers. Thus, one of ordinary skill in this art would have been motivated to address the art recognized problem of the extraction of stabilizers by hydrocarbon cable filler grease from polyolefin mixtures by employing a mixture of a hindered amine amic acid hydrazides and another known antioxidant as disclosed by MacLeay with polyolefins used to insulate electrical conductors with the reasonable expectation of successfully providing thermal and oxidative stabilization to these polyolefin polymeric systems, which are normally subject to thermal and oxidative degradation, and resisting antioxidant extraction from such systems. *O'Farrell*, *supra*. Thus, the article of manufacture set forth in appealed claim 17 was *prima facie* within the ordinary skill in this art at the time it was made.

A discussion of Baron is not necessary to our decision.

We have carefully considered all of appellants' arguments in their principal and reply briefs and the evidence in their specification in light of their arguments presented in rebuttal to the *prima facie* case in again assessing patentability of the claimed invention as a whole based on the record as a whole, including all the evidence of obviousness and of nonobviousness. *See generally In re Johnson*, 747 F.2d 1456, 1460, 223 USPQ 1260, 1263 (Fed. Cir. 1984). Appellants have based their case for nonobviousness on the evidence presented in specification Examples 1-4 (pages 16-20). We find that the results from the comparison provided by specification Example 1, representing the prior art with a mixture of antioxidants, and specification Examples 2 and 3, representing claims 1-11 and 16 with the hindered amine amic acid hydrazide of MacLeay Example XXIV, are no more than the results which one of ordinary skill in this art would have reasonably expected from the teachings in MacLeay that amine amic acid hydrazides would successfully providing oxidative stabilization to polyolefin systems

and resist antioxidant extraction from such systems. Thus, in the absence of evidence explaining the practical significance of such results and that the results are unexpected in view of MacLeay, we are of the view that the evidence is indicative of obviousness rather than nonobviousness. *In re Geisler*, 116 F.3d 1465, 1470, 43 USPQ2d 1362, 1365-66 (Fed. Cir. 1997); *In re Merck*, 800 F.2d 1091, 1099, 231 USPQ 375, 381 (Fed. Cir. 1986); *In re Hoffmann*, 556 F.2d 539, 541, 194 USPQ 126, 128 (CCPA 1977); *In re Klosak*, 455 F.2d 1077, 1080, 173 USPQ 14, 16 (CCPA 1972); *In re D'Ancicco*, 439 F.2d 1244, 1248, 169 USPQ 303, 306 (CCPA 1971); *In re Gershon*, 372 F.2d 535, 537 152 USPQ 602, 604 (CCPA 1967).

The evidence directed to appealed claim 17 is another matter. This evidence involves a comparison of specification Example 4, representing claim 17 which specifies a mixture of two specific antioxidants, and specification Example 1, which is a mixture of prior art antioxidants one of which is used in the mixture in specification Example 4. We find that the results demonstrate a substantial difference in oxidation induction time (OIT) on the part of specification Example 4 over the course of the 20 week test period, and are characterized by appellants as an unexpected seven fold difference demonstrating a synergistic effect over the mixture of specification Example 1 (principal brief, page 3; reply brief, page 2). We observe that the result in specification Example 4 also demonstrates a substantial difference of about four fold as compared to specification Examples 2 and 3. We further note that while MacLeay discloses that other antioxidants may act as synergists with the amine amic acid hydrazides, there is no evidence of record that one of ordinary skill in the art would have reasonably expected such a result with the antioxidant mixture of appealed claim 17. *See In re Soni*, 54 F.3d 746, 751, 34 USPQ2d 1684, 1688 (Fed. Cir. 1995).

Furthermore, we find that the results of the compared specification Examples do not carry beyond the specific antioxidants employed. Indeed, the evidence based on a single amine amic acid hydrazides, alone and in admixture, does not provide a reasonable basis on which to conclude that the remainder of the great number of mixtures of polyolefins and the specified reaction products, with and without other stabilizer additives such as antioxidants, as provided for by MacLeay and encompassed by appealed claims 1 through 11 and 16, would behave in the same manner. Thus, the evidence is not commensurate in scope with appealed claims 1 through 11 and 16. *See In re Lindner*, 457 F.2d 506,

508, 173 USPQ 356, 358 (CCPA 1972); *In re Susi*, 440 F.2d 442, 446, 169 USPQ 423, 426 (CCPA 1971).

Accordingly, based on our consideration of the totality of the record before us, we have weighed the evidence of obviousness found in the combination of Turbett, Baron, MacLeay and appellants' specification as a whole with appellants' countervailing evidence of and argument for nonobviousness and conclude that by a preponderance of the evidence the claimed invention encompassed by claims 1 through 11 and 16 on appeal as a whole would have been obvious as a matter of law under 35 U.S.C. § 103. We further conclude based on the same evidence and argument that by a preponderance of the evidence the claimed invention encompassed by claim 17 on appeal as a whole would have been nonobvious as a matter of law under 35 U.S.C. § 103.

In summary, we have affirmed the rejection of appealed claims 1 through 11 and 16 but have reversed the rejection of appealed claim 17.

The examiner's decision is affirmed-in-part.

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

EDWARD C. KIMLIN Administrative Patent Judge	)	
CAMERON WEIFFENBACH Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
CHARLES F. WARREN Administrative Patent Judge	)	

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