

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte SCOTT D. SCHWAB and DENNIS J. MALFER

Appeal 2007-2828
Application 09/953,087
Technology Center 1700

Decided: November 29, 2007

Before EDWARD C. KIMLIN, CHUNG K. PAK, and
LINDA M. GAUDETTE, *Administrative Patent Judges*.

PAK, *Administrative Patent Judge*.

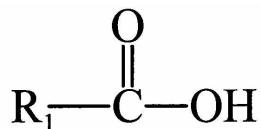
DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134 from the Examiner's final rejection of claims 1 through 18, 30, 31, and 33, all of the claims pending in the above-identified application. We have jurisdiction pursuant to 35 U.S.C. § 6.

STATEMENT OF THE CASE

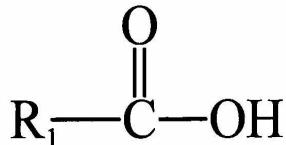
The subject matter on appeal is directed to fuel compositions and methods of using the fuel compositions to control deposits in a direct injection gasoline engine (Spec. 1, ll. 5-10). Further details of the appealed subject matter are recited in representative claims 1, 30, and 31 reproduced below:

1. A method for controlling deposits in a direct injection gasoline engine which comprises introducing into a direct injection gasoline engine with the combustion intake charge a spark-ignition fuel comprising a) a spark-ignition fuel and b) a fuel-soluble compound comprising the reaction products of (i) a monocarboxylic acid of the formula:



wherein R₁ is a saturated or unsaturated; linear, branched or cyclic; C₇₋₂₃ hydrocarbyl group; and (ii) an amine of the formula NH₂-CH₂-CH₂-NH-R₂, wherein R₂ comprises (C_xH_{2x}Z)_yH, wherein x = 2 or 3, y = 0-4 and z = NH or O.

30. A fuel composition comprising a) a spark-ignition fuel; b) the reaction products obtained by reacting (i) a monocarboxylic acid of the formula:



wherein R₁ is a saturated or unsaturated; linear, branched or cyclic; C₇₋₂₃ hydrocarbyl group; and (ii) an amine of the

formula $\text{NH}_2\text{-CH}_2\text{-CH}_2\text{-NH-R}_2$, wherein R_2 is selected from the group consisting of $(\text{C}_x\text{H}_{2x}\text{Z})_y\text{H}$, wherein $x = 2$ or 3 , $y = 0\text{-}4$ and $\text{Z} = \text{NH}$ or O ; and c) an amine detergent selected from the group consisting of nitrogen-containing derivatives of hydrocarbyl succinic acylating agents, Mannich condensation products, hydrocarbyl amines and polyetheramines;

wherein the fuel composition further comprises a carrier fluid selected from the group consisting of 1) a mineral oil or a blend of mineral oils that have a viscosity index of less than about 120, 2) one or more poly-a-olefin oligomers, 3) one or more poly (oxyalkylene) compounds having an average molecular weight in the range of about 500 to about 3000, 4) one or more polyalkenes, 5) one or more polyalkyl-substituted hydroxyaromatic compounds and 6) mixtures thereof.

31. The fuel composition of claim 30 wherein the carrier fluid comprises at least one poly (oxyalkylene) compound.

As evidence of unpatentability of the claimed subject matter, the Examiner has relied upon the following references:

Bonazza	US 4,247,300	Jan. 27, 1981
Wang	US 5,024,677	Jun. 18, 1991
Malfer	US 5,725,612	Mar. 10, 1998

The Examiner has rejected the claims on appeal as follows:

1. Claims 1 through 3, 5 through 14, 18, and 33 under 35 U.S.C. § 103(a) as unpatentable over the disclosure of Bonazza;
2. Claims 4, 15 through 17, 30, and 31 under 35 U.S.C. § 103(a) as unpatentable over the combined disclosures of Bonazza and Malfer; and
3. Claims 1 through 15 and 33 under 35 U.S.C. § 103(a) as unpatentable over the disclosure of Wang.

The Appellants appeal from the Examiner's decision rejecting the claims on appeal under 35 U.S.C. § 103(a).¹

PRINCIPLES OF LAW, FACTS, ISSUES and ANALYSES

Under 35 U.S.C. § 103, the factual inquiry into obviousness requires a determination of: (1) the scope and content of the prior art; (2) the differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) secondary considerations (e.g., unexpected results). *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17-18 (1966). “[A]nalysis [of whether the subject matter of a claim would be obvious] need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *KSR Int'l v. Teleflex, Inc.*, 127 S. Ct. 1727, 1740-41 (2007), quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006), *see also DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1361 (Fed. Cir. 2006)(“The motivation need not be found in the references sought to be combined, but may be found in any number of sources, including common knowledge, the prior art as a whole, or the nature of the problem itself.”); *In re Bozek*, 416 F.2d 1385, 1390 (CCPA 1969)(“Having established that this knowledge was in the art, the examiner could then properly rely, as put forth by the solicitor, on a conclusion of obviousness ‘from common knowledge and common sense of the person of ordinary skill in the art without any specific hint or suggestion in a particular reference.’”).

¹ We limit our discussion to claims 1, 30, and 31 consistent with 37 C.F. R. § 41.37(c)(1)(vii) (2005).

As evidence of obviousness of the subject matter defined by representative claim 1 under 35 U.S.C. § 103(a), the Examiner relies on the disclosure of either Bonazza or Wang.² As is apparent from the Answer dated January 12, 2007 (Ans.), the Brief dated October 25, 2006 (Br.), and the Reply Brief dated February 15, 2007 (Reply Br.), the Appellants do not challenge the Examiner’s finding that Bonazza and Wang teach a method of controlling deposits in internal combustion engines with fuel compositions comprising spark-ignition fuel and fuel-soluble additives embraced by the claims on appeal. Although both Bonazza and Wang do not specifically mention a direct injection gasoline engine, the Appellants acknowledge that one of ordinary skill in the art is aware that the direct injection gasoline engine is a known internal combustion engine (Spec. 1-3 and Tr. 4). Moreover, we find that both Bonazza and Wang do not limit the application of their improved fuel compositions to any particular internal combustion engine (Bonazza, col. 1, ll. 28-38 and col. 4, ll. 46-60 and Wang, col. 1, ll. 53-60). We find that Bonazza’s “spray gump deposit test” conditions, for example, appear to be similar to the conditions confronted in a direct injection gasoline engine (col. 4, ll. 46-60).

Given the above circumstances, we concur with the Examiner that one of ordinary skill in the art would have been led to employ the fuel compositions taught by Bonazza or Wang in an internal combustion engine, such as a known direct injection gasoline engine, with a reasonable expectation of successfully reducing deposits therein.

² The Appellants do not separately argue the claims rejected under 35 U.S.C. § 103 as unpatentable over the disclosure of Bonazza or Wang. Therefore, for purposes of this appeal, we decide the propriety of these rejections based on claim 1 alone consistent with 37 C.F.R. § 41.37(c)(1)(vii)(2005).

As a rebuttal to the prima facie case of obviousness established by the Examiner, the Appellants contend that one of ordinary skill in the art would not have been led to employ the fuel compositions taught by Bonazza or Wang in direct injection gasoline engines because fuel additives useful for conventional internal combustion engines would not have been reasonably expected to be useful for a direct injection gasoline engine (Br. 5-7 and Reply Br. 1-3). In support of this contention, the Appellants refer to alleged experimental data in the form of a graph (Br. 6-7). This graph is said to show that two of the six known internal combustion fuel additives tested were not effective in reducing deposits in a direct injection gasoline engine (Br. 6).

The dispositive question is, therefore, whether this graph is sufficient to rebut the prima facie case of obviousness established by the Examiner. On this record, we answer this question in the negative.

As correctly stated by the Examiner (Ans. 8-9), it cannot be ascertained from the graph what, in fact, contributed to the data relied upon by the Appellants. In this regard, we note that the graph does not provide the details of the experiment allegedly carried out to obtain its data. Accordingly, we find that the graph does not provide sufficient facts to support the Appellants' assertions.

We also note that the graph relied upon by the Appellants is unreliable since it is not in the form of a declaration or an affidavit. As explained in *Ex parte Gray*, 10 USPQ2d 1922, 1928 (BPAI 1989):

The reason for requiring evidence in declaration or affidavit form is to obtain the assurance that any statements or representations made are correct, as provided by 35 U.S.C. § 25 and 18 U.S.C. § 1001.

Even were we to accept the Appellants' assertion that the graph shows two out of six conventional fuel additives as ineffective in reducing deposits in a direct injection gasoline engine, our conclusion would not be altered. In our view, the data in the graph provides evidence that one of ordinary skill in the art would have been led to, not discouraged from, testing conventional internal combustion fuel additives, including those taught by Bonazza or Wang, through routine experimentation and determine suitable fuel additives, such as those taught by Bonazza or Wang, for a direct injection gasoline engine. *See In re Boesch*, 617 F.2d 272, 276 (CCPA 1980) ("[D]iscovery of an optimum value of a result effective variable...is ordinarily within the skill of the art."); *In re Aller*, 220 F.2d 454, 456 (CCPA 1955) ("[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation."). As is apparent from the Appellants' representation of the data provided in the graph, more than half of the conventional internal combustion fuel additives tested were shown to be effective for reducing deposits in a direct injection gasoline engine. From the disclosure of Bonazza and Wang discussed above, we determine that one of ordinary skill in the art would have reasonably expected that the claimed fuel additives would have been especially effective for reducing deposits and corrosion in a direct injection gasoline engine (Bonazza, col. 5, ll. 24-36, and Wang, col. 4, ll. 37-68).

Thus, based on the factual findings set forth in the Answer and above, we determine that the preponderance of evidence weighs most heavily in favor of obviousness within the meaning of 35 U.S.C. § 103(a). Accordingly, we affirm the Examiner's § 103 rejections of claims 1 through

3, 5 through 14, 18 and 33 as unpatentable over Bonazza and claims 1 through 15 and 33 as unpatentable over Wang.

As evidence of obviousness of the subject matter defined by claims 4, 15 through 17, 30, and 31 under 35 U.S.C. § 103(a), the Examiner relies on the combined disclosures of Bonazza and Malfer. The Appellants do not question the Examiner's determination that Bonazza and Malfer would have rendered the subject matter recited in claims 4 and 15 through 17 obvious to one of ordinary skill in the art (Br. 7-10).³ Rather, the Appellants contend that Bonazza and Malfer would not have suggested the claimed combination of the fuel compositions discussed above and the claimed carrier fluid as required by claims 30 and 31 (*id*).

The dispositive question is, therefore, whether one of ordinary skill in the art would have been led to employ the fuel compositions taught by Bonazza with the claimed carrier fluid within the meaning of 35 U.S.C. § 103(a). On this record, we answer this question in the affirmative.

As is apparent from column 3, lines 25-39, of Bonazza, the disclosed fuel compositions can be used with any known conventional additives. We find that Malfer teaches that such conventional additives include, *inter alia*, conventional carrier fluids including those claimed (col. 8, l. 63 to col. 9, l. 18, together with col. 5, ll. 49-66). Thus, we concur with the Examiner that one of ordinary skill in the art would have been led to employ the fuel compositions taught by Bonazza with various conventional additives, including the claimed carrier fluids, with a reasonable expectation of

³ To the extent that the Appellants are relying on the same arguments addressed above, we concur with the Examiner that Bonazza and Malfer would have rendered the subject matter defined by claims 4 and 15 through 17 obvious for the factual findings set forth above.

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successfully using them to reduce deposits in internal combustion engines.

KSR Int'l Co. v. Teleflex Inc., 127 S. Ct. at 1740 (*quoting Sakraida v. Ag Pro, Inc.*, 425 U.S. 273, 282 (1976)) (“[W]hen a patent ‘simply arranges old elements with each performing the same function it had been known to perform’ and yields no more than one would expect from such an arrangement, the combination is obvious.”).

Accordingly, based on the factual findings set forth in the Answer and above, we also affirm the Examiner’s § 103 rejection of claims 4, 15 through 17, 30, and 31 as unpatentable over the combined disclosures of Bonazza and Malfer.

ORDER

In view of the forgoing, the decision of the Examiner is affirmed.

TIME PERIOD

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

AFFIRMED

PL Initials
sld

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