



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/037,773	02/26/2008	Tsutomu Yoshida	TS8114 (US)	4444
23632	7590	11/30/2016	EXAMINER	
SHELL OIL COMPANY P O BOX 2463 HOUSTON, TX 77252-2463			HINES, LATOSHA D	
			ART UNIT	PAPER NUMBER
			1771	
			NOTIFICATION DATE	DELIVERY MODE
			11/30/2016	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

USPatents@Shell.com

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE PATENT TRIAL AND APPEAL BOARD

---

*Ex parte* TSUTOMU YOSHIDA,  
NOBUHIRO OKABE, and HIROKI YOSHIDA

---

Appeal 2015-004876  
Application 12/037,773  
Technology Center 1700

---

Before KAREN M. HASTINGS, GEORGE C. BEST, and  
N. WHITNEY WILSON, *Administrative Patent Judges*.

WILSON, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants<sup>1</sup> appeal under 35 U.S.C. § 134(a) from the Examiner's October 28, 2013 decision finally rejecting claims 1, 2, and 7–20<sup>2</sup> as unpatentable under 35 U.S.C. § 103(a). We have jurisdiction over the appeal under 35 U.S.C. § 6(b).

We affirm.

---

<sup>1</sup> Appellants identify the real party in interest as Shell Oil Company (Br. 2).

<sup>2</sup> Dependent claims 13 and 14 depend from claims 5 and 6, respectively. Appellants canceled claims 5 and 6 by Amendment (filed July 5, 2013). For purposes of this appeal, we have assumed that claims 13 and 14 depend from claims 1 and 2 (this would make them essentially duplicative of claims 11 and 12). If prosecution continues, a correction must be made to the dependency of claims 13 and 14 or they should be cancelled.

CLAIMED SUBJECT MATTER

Appellants' invention is directed to a fuel composition for diesel engines with improved oxidation stability at high temperature (Spec. 1:1–3; 3:3–6). Claim 1 is representative and is reproduced below from the Claims Appendix of the Appeal Brief (paragraphing added; *key claim limitations shown in italics*):

1. A fuel composition for diesel engines having oxidation stability capable of withstanding practical use even under a high-temperature environment in a common rail type fuel injection device comprising:

*(1) up to 80% volume of one or more intermediate fractions selected from the group consisting of a straight-run kerosene fraction, a straight-run light oil fraction, a cracked light oil fraction, a cracked kerosene fraction and hydrodesulphurised products of these; and*

*(2) at least 20% volume of gas-to-liquid product, and no more than 200 ppmw of an antioxidant,*

*wherein, in a test of oxidation stability in accordance with the EN14112 test, the time until a change of electrical conductivity occurs at a liquid temperature of 150°C is at least four hours,*

wherein the antioxidant is an amine-based antioxidant or a phenol-based antioxidant.

Br. 10 (Claims App.).

## REJECTION

Appellants appeal the rejection of claims 1, 2, and 7–20 as unpatentable under 35 U.S.C. § 103(a) over Millington<sup>3</sup> in view of Carter.<sup>4</sup>

Appellants make substantive arguments in support of the patentability of all claims based on limitations present in independent claim 1 (*see generally*, Br. 5–9). Accordingly, our discussion will focus on the obviousness rejection of claim 1.

## DISCUSSION

The Examiner finds that Millington teaches clause (2)’s limitation reciting “at least 20% volume of gas-to-liquid product” because Millington discloses Fischer-Tropsch derived fuel compositions “of at least 70% w/w” (Ans. 3, citing Millington ¶¶ 63–67, 79; *see also* Ans. 4–5), which includes those derived by so-called “Gas-to-Liquids” technology (Ans. 3, citing Millington ¶ 77).

The Examiner further finds that Millington teaches clause (1)’s limitation reciting “up to 80% volume of one or more intermediate fractions” and the requisite Markush group which follows, because Millington teaches that “the fuel composition may contain, in addition to the Fischer-Tropsch derived fuel, one or more other fuel components . . . , in particular diesel fuel components . . . .” (Ans. 3–4, citing Millington ¶ 63). According to the Examiner, Millington further suggests clause (1)’s “intermediate fractions”

---

<sup>3</sup> Millington et al., U.S. Patent Pub. 2005/0086854 A1, published April 28, 2005 (“Millington”).

<sup>4</sup> Carter et al., U.S. Patent Pub. 2007/0197412 A1, published August 23, 2007 (“Carter”).

element because Millington discloses that “typical diesel fuel components may comprise liquid hydrocarbon **middle distillate fuel oils** . . . in the amount of 0 to 90 vol/vol%” (Ans. 4, emphasis in original, citing Millington ¶ 67; Table 1).

Although Millington is silent with respect to: (i) any oxidation stability results provided by testing the disclosed composition or (ii) specifically disclosing the claimed antioxidants therein, the Examiner determines that because

the claimed products appear to be identical to the diesel fuel disclosed in Millington . . . , it would have been obvious to one of ordinary skill in the art that placing the Millington fuel composition under the same test conditions of EN 14112 . . . would produce the same or similar results claimed by the present invention.

(Ans. 5). The Examiner further finds that Carter “discloses the use of at least one additive [such as a phenolic antioxidant] in order to increase the thermal stability of a hydrocarbon composition for diesel engines . . . in a quantity relative to the hydrocarbon composition . . . comprised between 1 to 1000 ppm” (Ans. 4, citing Carter ¶¶ 12, 55; *see also* Ans. 11, citing Carter ¶¶ 55, 58). Therefore, according to the Examiner, it would have been obvious to the ordinary skilled artisan “to use [Carter’s] antioxidant . . . in [Millington’s] composition . . . in order to increase the thermal stability of hydrocarbon compositions” (Ans. 6, citing Carter ¶ 58).

Appellants make the following arguments urging reversal of the Examiner’s § 103(a) rejection: (1) “[t]he claimed fuel composition is different than the compositions disclosed in the references” (Br. 5); (2) “[n]o teaching in either reference has been raised to the claimed oxidation stability” (*id.*); (3) “[n]o teaching in either reference has been raised to the

claimed concentration of antioxidants” (*id.*); and (4) “[o]ne of skill in the art would not seek to combine the cited references” (*id.* at 6).

With regard to argument (1), Appellants argue that Millington’s “fuel compositions . . . and the [fuel composition of the] present claims are neither the same nor similar to the claimed fuel composition” because “Millington utilizes finished fuels[.]” whereas “the present claims specify the use of refinery intermediate fractions” ((original emphasis) *id.*). Appellants conclude that “one of skill in the art would not expect refinery intermediate fractions to perform the same as finished fuels” (*id.*).

It is, however, well established that when claimed and prior art products are produced by identical or substantially identical processes, the PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his claimed product. *In re Best*, 562 F.2d 1252, 1255 (CCPA 1977). This is true whether the rejection is under 35 U.S.C. § 102 (anticipation) or 35 U.S.C. § 103 (obviousness), and is based on the fact that the PTO is not in a position to manufacture products or to obtain and compare prior art products. *Id.*

Appellants’ arguments are not persuasive because the Examiner has explained why Millington’s middle distillate fuel oils, specifically petroleum derived gas oils, are produced by substantially similar processes described in Appellants’ Specification (Ans. 3–4, 7, citing Millington ¶ 67); *see also* Spec. 5, ll. 8, 14–18 (“[t]he intermediate fraction[s] . . . are obtained by normal pressure distillation of crude oil . . . contact cracking or thermocracking or hydrocracking, etc. of heavy oil.”)).

Moreover, the Examiner has explained why Millington’s Fischer-Tropsch derived gas oils, specifically Shell™ “Gas-to-Liquids”, i.e., GTL

products, are derived by substantially similar processes described in Appellants' Specification as well (Ans. 2–3; 7, citing Millington ¶¶ 63–67, 77); *see also* Spec. 4, ll. 8, 4–13 (*e.g.*, disclosing that “the GTL may be obtained by performing a Fischer-Tropsch reaction on synthesis gas . . .”).

Placing the burden on Appellants is appropriate under these circumstances. *Best*, 562 F.2d at 1255. Appellants have not met this burden—the record evidence is silent as to any demonstration that Millington's disclosed processes would not form the claimed combination of an intermediate fraction (petroleum derived gas oils) in the amount of up to 80 volume % and the Fischer-Tropsch gas-to-liquid product in the amount of at least 20 volume % (*see, e.g.*, Millington, Table 1, experiment nos. 1.3–1.6 testing compositions varying in volume % Fischer-Tropsch (SDMS, *i.e.*, GTL (*see id.* at ¶ 77)) derived gas oil fuel F1 and volume % conventional petroleum derived ultra low sulphur diesel fuel F2).<sup>5</sup> Therefore, we are unpersuaded by Appellants' argument (1).

Appellants contend, in connection with argument (2), that “Millington is completely silent with respect to the presence of oxidants in the composition, in the claimed concentration[,] and is similarly silent with respect to the claimed oxidation stability of the fuel composition” (Br. 6).

Appellants' arguments are unpersuasive because the claims do not recite a specific concentration of oxidants. Rather, the claims recite a specific concentration of antioxidant. As the Examiner found, “Millington

---

<sup>5</sup> The Examiner's determination that Millington suggests the specific volume percentage proportions of the compositions recited in claim 1's clauses (1) and (2) is not in dispute (*see, e.g.*, Ans. 3, 4, *generally* Br.).

discloses . . . additional additives that are used in the fuel[,] such as antioxidants” (Ans. 5, citing *Millington* ¶ 25).

Appellants, moreover, are incorrect in arguing that a reference in the Examiner’s proposed combination must suggest the same problem addressed by the inventors. *Cross Med. Prods., Inc. v. Medtronic Sofamor Danek, Inc.*, 424 F.3d 1293, 1323 (Fed. Cir. 2005) (“One of ordinary skill in the art need not see the identical problem addressed in a prior art reference to be motivated to apply its teachings.”); *see also KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 419–20 (2007) (“In determining whether the subject matter of a patent claim is obvious, neither the particular motivation nor the avowed purpose of the patentee controls . . . . The first error of the Court of Appeals in this case was . . . holding that courts and patent examiners should look only to the problem the patentee was trying to solve.”).

Appellants further argue that “[b]ecause [*Millington*] completely fails to disclose or even suggest antioxidants or the oxidation stability of the resulting fuel composition, there is no motivation for one of skill in the art to perform” the claimed EN14112 test for oxidation stability (Br. 6).

Appellants’ arguments are not persuasive. As the Examiner found, “*Millington* specifically teaches the claimed fuel composition of combining an intermediate fraction and a gas-to-liquid fuel composition” and suggests antioxidants as an additive (Ans. 5, 9). Placing the burden on Appellants to show that *Millington*’s products do not necessarily or inherently possess the requisite performance on the EN14112 test is appropriate under these circumstances as well. *Best*, 562 F.2d at 1255. Appellants have not met this burden. Therefore, we are unpersuaded by Appellants’ argument (2).

With respect to argument (3), Appellants argue that the Examiner's reliance on Carter's antioxidant teachings is misplaced because "Carter specifically relates to a method to increase the overall concentration of antioxidant additives in biodiesel fuels" (Br. 6). Appellants further argue that "[o]ne of skill in the art understands that the chemistry of biodiesels is drastically different than that of the intermediate fraction specified in the present claims and would not find the teachings of Millington and Carter instructive" (*id.*).

We are unpersuaded because, *inter alia*, the Examiner's determination that Carter suggests overlapping ranges for the antioxidant component recited in claim 1 is not in dispute (*see, e.g.,* Ans. 9–10, *generally* Br.).

It is well established that:

a prima facie case of obviousness arises when the ranges of a claimed composition overlap the ranges disclosed in the prior art. [Citations omitted.] Where the 'claimed ranges are completely encompassed by the prior art, the conclusion [that the claims are prima facie obvious] is even more compelling than in cases of mere overlap.'

*In re Harris*, 409 F.3d 1339, 1341 (Fed. Cir. 2005) (quoting *In re Peterson*, 315 F.3d 1325, 1330 (Fed. Cir. 2003)).

When the difference between the claimed invention and the prior art is some range or other variable within the claims, the Federal Circuit has consistently held that the Appellants must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range. *See, e.g., Peterson*, 315 F.3d at 1329; *In re Woodruff*, 919 F.2d 1575, 1578 (Fed. Cir. 1990). The burden rests with Appellants to establish (1) that the alleged unexpected results presented as being associated with the claimed invention are, in fact, unexpected,

(2) that the comparisons are to the disclosure of closest prior art, and (3) that the supplied evidentiary showing is commensurate in scope with the claimed subject matter. *See In re Klosak*, 455 F.2d 1077, 1080 (CCPA 1972).

On this record, Appellants have not made such a showing.

In connection with arguments (3) and (4), the Supreme Court has made clear that an obviousness analysis “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*, 550 U.S. at 418. That is because “[a] person of ordinary skill is also a person of ordinary creativity, not an automaton.” *Id.* at 421. It is also well established that a reference is good for all it fairly teaches a person having ordinary skill in the art, even when the teaching is a cursory mention. *E.g., In re Mills*, 470 F.2d 649, 651 (CCPA 1972). As pointed out by the Examiner, although Carter specifically teaches that oxygenated solvents are needed to increase the antioxidant’s stability in biodiesels, Carter fairly teaches that antioxidant addition further increases oxidative stability (Ans. 11 (citing Carter ¶ 15)). The Examiner further found that Carter exemplifies that it was known to add antioxidants to increase the oxidative stability of a blended fuel of biodiesel and petroleum distillates (*e.g.*, Ans. 11; *see* Carter Abstract).

Thus, a preponderance of the evidence supports the Examiner’s reasonable position that it would have been *prima facie* obvious to combine fuel compositions, comprised of an intermediate fraction (petroleum derived gas oils) in the amount of up to 80 volume %, the Fischer-Tropsch gas-to-liquid product in the amount of at least 20 volume % components, and a phenol-based antioxidant that overlaps the claimed range, and that the

resultant fuel composition would have met the requisite functional limitation, as required by the claim.

Because of the Examiner's finding of overlapping ranges of phenol-based antioxidant recited in the fuel composition, as well as the predictable combination of an intermediate fraction in the amount of up to 80 volume % and the Fischer-Tropsch gas-to-liquid product in the amount of at least 20 volume %, the Examiner's determination that the specific oxidation stability property recited in the claim would follow is reasonable. Stated differently, the fact that Appellants have recognized other properties which would flow naturally from following the applied prior arts' teaching or suggestion for the amounts of the components of the composition, cannot be the basis for patentability when the differences, if any, would otherwise have been obvious. *See Ex parte Obiaya*, 227 USPQ 58, 60 (BPAI 1985). *Cf. In re Papesch*, 315 F.2d 381, 391 (CCPA 1963) ("From the standpoint of patent law, a compound and all of its properties are inseparable; they are one and the same thing").

As explained above and in the Answer, the Examiner had a reasonable basis to believe that the fuel composition of the combined applied prior art would have the oxidation stability recited in the claims. Appellants have not offered persuasive evidence to the contrary. We, therefore, discern no error in the Examiner's determination that the applied prior art renders obvious the fuel composition of claims 1 and 17, and the process of claim 16 to provide the fuel composition of Appellants' invention for diesel engine operation. Therefore, we are unpersuaded by arguments (3) and (4).

Appellants have not persuasively argued that the facts and reasons relied on by the Examiner are insufficient to establish a prima facie case of

Appeal 2015-004876  
Application 12/037,773

obviousness as to claims 1, 16, and 17. Dependent claims 2, 7–15, and 18–20 will fall with each of their respective independent claims. 37 C.F.R. § 41.37(c)(1)(iv).

Accordingly, we affirm the rejection of claims 1, 2, and 7–20 for the reasons set forth above and explained in the Examiner’s Answer.

#### CONCLUSION

We AFFIRM the rejection of claims 1, 2, and 7–20 under 35 U.S.C. § 103(a) as obvious over Millington in view of Carter.

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