

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. 26

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte RUDOLF W. GUNNERMAN

Appeal No. 1996-3826
Application 08/222,477

ON BRIEF

Before WARREN, KRATZ and DELMENDO, *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 35 and refusing to allow claims 36 through 45 as amended subsequent to the final rejection. Claims 1, 13 and 36¹ are illustrative of the claims on appeal:

1. A stable, storage fuel combustible in an internal combustion engine which is substantially nonflammable outside the engine comprising an at least two-phased fluid emulsion of 20 to 80 vol % water, carbonaceous fuel selected from the group consisting of gasoline, straight run gasoline, kerosene fuel, diesel fuel, gaseous carbon-containing fuel, carbon synthetic fuels, biomass derived oils and

¹ We have reproduced claims 1, 13 and 36 as they appear of record in the amendments of March 13, 1995 (Paper No. 10), August 11, 1995 (Paper No. 13) and November 13, 1995 (Paper No. 16), the latter entered by the examiner as set forth in the advisory action of November 30, 1995 (Paper No. 17). A copy of these claims is appended to appellant's brief as Exhibit C.

mixtures thereof, about 2 to less than 20 vol.% alcohol and about 0.3 to about 1 vol.% nonionic emulsifier, the resulting emulsion comprising a standard O/W emulsion with water being the external continuous phase.

13. A method of preparing a stable, storage fuel combustible in an internal combustion engine which is substantially nonflammable outside the engine comprising an at least two-phased fluid emulsion of 20 to 80 vol. % water, carbonaceous fuel selected from the group consisting of gasoline, straight run gasoline, kerosene fuel, diesel fuel, gaseous carbon-containing fuel, carbon bearing synthetic fuel, biomass derived oils and mixtures thereof, about 2 to less than 20 % alcohol and about 0.3 to about 1 vol.% of a nonionic emulsifier, said emulsion comprising a standard O/W emulsion with water being the external continuous phase, said method comprising:

- a) providing a mixture of carbonaceous fuel and emulsifier,
- b) combining 20 to 80 vol.% water with the mixture of step a and 2 to less than 20% alcohol, and
- c) combining the mixtures of steps a and b and thoroughly mixing the resulting mixture with sufficient agitation to produce a mixture.

36. A method of preparing an aqueous fuel comprising:

- (a) mixing a carbonaceous fuel selected from the group consisting of gasoline, naphtha, kerosene fuels, diesel fuels, gaseous carbon-containing fuels, and mixtures thereof, and emulsifier together;
- (b) providing a mixture of alcohol and water, and
- (c) adding the water-and-alcohol mixture to the fuel-and-emulsifier mixture to produce a mixture of carbonaceous fuel with 20 to 80 vol.% water, and about 2 to less than 20 vol.% alcohol.

The appealed claims as represented by claims 1, 13 and 36² are drawn to a stable, storage fuel which can be combusted in an internal combustion engine and is substantially nonflammable outside the engine. The fuel comprises at least a two-phased, standard O/W, that is, oil-in-water, emulsion containing 20 to 80 vol % water, about 2 to less than 20 vol.% alcohol, a nonionic emulsifier, which can be present in about 0.3 to about 1 vol.% (claims 1 and 13), and a carbonaceous fuel which is selected from the group consisting of gasoline, straight run gasoline, kerosene fuel, diesel fuel, gaseous carbon-

² Appellant in the brief (page 6) sets forth five groupings of claims which correspond to the grounds of rejection advanced on appeal by the examiner and has separately argued other groupings of claims (*id.*, e.g., pages 20-21). Accordingly, we have selected claims 1 through 3, 6, 13, 23, 24, 31 through 33, 36 and 43 as representative of the groupings of claims presented in the brief, the grounds of rejection and the subject matter on appeal and decide this appeal based on these claims. *See* 37 CFR § 1.192(c)(7) (1995).

containing fuel, carbon synthetic fuels, biomass derived oils and mixtures thereof in claims 1 (product) and 13 (method), and from the group consisting of gasoline, naphtha, kerosene fuels, diesel fuels, gaseous carbon-containing fuels, and mixtures thereof in claim 36 (method). Claims 28 through 35, which directly or ultimately dependent on claim 13, and claims 41 through 45, which directly or ultimately dependent on claim 36, claim a product further characterized by the process by which it is made. Claims 2, 4 and 11, dependent on claim 1, are drawn to fuels which contain gasoline, diesel fuel or straight run gasoline, respectively, about 40 to about 60% water, a lubricity enhancer and an emulsion stabilizer. The lubricity enhancer can comprise at least a polyorganosiloxane compound (e.g., claim 3, which depends on claim 2, and claim 23, which ultimately depends on claim 13). The methods of claims 13 and 36 require at least that the fuel and emulsifier are mixed separately from the other ingredients. According to appellant, the aqueous fuel will reduce “pollutants produced by internal combustion engines” (specification, e.g., page 2).

The references relied on by the examiner are:

Morehouse	3,233,986	Feb. 8, 1966
Dubin	5,284,492	Feb. 8, 1994
Kawaai et al. (Kawaai) ³ (Japanese Kokai Pat. Publication)	54-234	Jan. 5, 1979

The examiner has advanced the following grounds of rejection on appeal:⁴

Claim 1 stands rejected under 35 U.S.C. § 103 as being unpatentable over Kawaai;

Claims 2, 4, 6 through 11, 13 through 15, 17 through 22, 24 through 27 and 36 through 40 stand rejected under 35 U.S.C. § 103 as being unpatentable over Kawaai in view of Dubin;

Claims 3, 5, 12, 16 and 23 stand rejected under 35 U.S.C. § 103 as being unpatentable over Kawaai in view of Morehouse;

³ We refer in our opinion to the translation of Kawaai prepared for the USPTO by Diplomatic Language Services, Inc., in May 1996.

⁴ While the examiner states in the answer (sequential page 2.5) that the grounds of rejection “are set forth in the prior Office action paper number 11,” which is the Office action mailed June 1, 1995, we find several grounds of rejection set forth in the final rejection of October 24, 1995 (Paper No. 15). Thus, the grounds of rejection advanced on appeal are not found in the same “single prior action.” See *Manual of Patent Examining Procedure* § 1208 (6th ed., Rev. 1, Sept. 1995; 1200-14).

Claims 28 through 30, 33 through 35 and 41 through 45 stand rejected under 35 U.S.C. § 103 as being unpatentable over Kawaai in view of Dubin; and

Claims 31 and 32 stand rejected under 35 U.S.C. § 103 as being unpatentable over Kawaai in view of Dubin, further in view of Morehouse.

We affirm the grounds of rejections based on Kawaai, Kawaai in view of Dubin and, with respect to claim 32, Kawaai in view of Dubin, further in view of Morehouse. We reverse the ground of rejection based on Kawaai in view of Morehouse and, with respect to claim 31, Kawaai in view of Dubin, further in view of Morehouse. Accordingly, the decision of the examiner is affirmed-in-part.

Rather than reiterate the respective positions advanced by the examiner and appellant, we refer to the examiner's answer and to appellant's brief for a complete exposition thereof.

Opinion

We begin our review of the application of the applied prior art to appealed product claims 1 through 3 and 6, method claims 13, 23, 24 and 36 and product-by-process claims 31 through 33 and 43 by determining the invention encompassed by these claims, mindful that the terms thereof must be given the broadest reasonable interpretation consistent with appellant's specification as it would be interpreted by one of ordinary skill in this art. *See 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). The appealed claims encompass the claimed aqueous fuels of claims 1 through 3 and product-by-process claims 31 through 33 and 43, the latter, of course, drawn to products, *see In re Thorpe*, 777 F.2d 695, 697-98, 227 USPQ 964, 965-66 (Fed. Cir. 1985), and methods of making the same in claims 13, 23, 24 and 36, which we have generally described above (*see supra* pp. 2-3).⁵

⁵ We observe that in claim 13, step "b)" specifies "combining . . . water with the *mixture of step a* and . . . alcohol" and step "c)" specifies "combing the *mixtures of steps a and b*" (emphasis supplied), and that claim 14, dependent on claim 13, specifies that "a mixture of water and alcohol are added to the mixture of step a," which mixing of mixtures is inconsistent. We suggest that any further prosecution of claim 13, and claims dependent thereon, before the examiner include consideration of whether these claims, and claims dependent thereon, comply with 35 U.S.C. § 112, second paragraph. However, we find it is possible to make a reasonable, conditional interpretation of these claims consistent with the disclosure in appellant's specification that the fuel and emulsifier are mixed separately and then water and alcohol are added thereto either separately or in admixture (e.g., page 3, lines 1-11). Such an interpretation is adequate for the purpose of resolving patentability issues to avoid piecemeal appellate

We here considered the phrase “combustible in an internal combustion engine” in the preamble of claims 1 (product) and 13 (method) in the context of the claimed invention as a whole, including consideration thereof in light of the specification, and find that this limitation is not necessary to characterize the aqueous fuels and methods of preparing the same in order to give meaning to these claims, or any of dependent product claims 2, 3, 6 and 31 through 33 or dependent method claims 23 and 24, in order to properly define the invention. Thus, the phrase is not a claim limitation in any of these claims and therefore constitutes a statement of intended use. We further find that the phrase does not appear in claim 36 (method) or dependent claim 43 (product). *See generally, In re Fritch*, 972 F.2d 1260, 1262, 23 USPQ2d 1780, 1781 (Fed. Cir. 1992) (citing *Perkin-Elmer Corp. v. Computervision Corp.*, 732 F.2d 888, 896, 221 USPQ 669, 675 (Fed. Cir.), *cert. denied*, 469 U.S. 857 [225 USPQ 792] (1984)); *Corning Glass Works v. Sumitomo Elect. U.S.A., Inc.*, 868 F.2d 1251, 1257, 9 USPQ2d 1962, 1966 (Fed. Cir. 1989), *In re Stencel*, 828 F.2d 751, 754-55, 4 USPQ2d 1071, 1073 (Fed. Cir. 1987).

We recognize that appellant has specifically defined the term “internal combustion engine” in the specification (page 3) to “encompass any engine in which carbonaceous fuel is combusted with oxygen in one or more combustion chambers of the engine.” We find that one of ordinary skill in this art would consider that the scope of this definition is indeed broad, particularly in view of the scope of the examples of “such known engines,” which include turbine and diesel engines (*id.*), and thus would include engines in which the aqueous fuel is introduced into a combustion chamber by any means, including fuel injection devices which spray a fuel and air mixture into said chamber (*id.*, e.g., page 10, lines 12-13). Thus, for example, the definition would encompass the “combustion turbine” engines, in which the aqueous fuel is injected into the combustion chamber, that use the oil-in-water type aqueous fuel taught by Dubin (e.g., col. 1, lines 64-66. col. 3, lines 35-37, and col. 4, line 66, to col. 5, line 6). We further find that one of ordinary skill in this art would divine from this “combustion chamber”

review, which, in the interest of administrative and judicial economy, is an appropriate course wherever reasonably possible. *Cf. In re Steele*, 305 F.2d 859, 862, 134 USPQ 292, 295 (CCPA 1962); *Ex parte Saceman*, 27 USPQ2d 1472, 1474 (Bd. Pat. App. & Int. 1993); *Ex parte Ionescu*, 222 USPQ 537, 540 (Bd. App. 1984).

diversity no further limitation(s) of the claimed aqueous fuels other than those specified in claim 1, and claims dependent thereon, or of the claimed method for making such fuels other than those specified in claim 13, and method and product-by-process claims dependent thereon.

Furthermore, the transitional term “comprising” in claims 1, 13 and 36 open these claims to include at least the ingredients specified in claim 1 and the method steps and conditions specified in claims 13 and 36, *see Exxon Chemical Patents Inc. v. Lubrizol Corp.*, 64 F.3d 1553, 1555, 35 USPQ2d 1801, 1802 (Fed. Cir. 1995) (“The claimed composition is defined as comprising - meaning containing at least - five specific ingredients.”); *In re Baxter*, 656 F.2d 679, 686-87, 210 USPQ 795, 802-03 (CCPA 1981) (“As long as one of the monomers in the reaction is propylene, any other monomer may be present, because the term ‘comprises’ permits the *inclusion* of other steps, elements, or materials.”). The transitional term “consisting essentially of” in claim 2 would exclude other ingredients to the extent that such materials are shown in the specification to cause a material change in the basic and novel characteristics of the invention as claims. *See PPG Industries Inc. v. Guardian Indus. Corp.*, 156 F.3d 1351, 1354-57, 48 USPQ2d 1351, 1353-56 (Fed. Cir. 1998); *In re Herz*, 537 F.2d 549, 551-52, 190 USPQ 461, 463 (CCPA 1976); *Ex parte Boukidis*, 154 USPQ 444 (Bd. App. 1966). The use of the term “comprising” in the body of claim 2 would, in this instance, reasonably appear to further indicate that the claimed aqueous fuel can contain any “lubricity enhancer” and any “additive to improve resistance to phase separation at temperatures above about 170°C,” while the phrase “group consisting of” limits the claims to the specified carbonaceous fuels. Also, as pointed out by the examiner (Office action mailed June 1, 1995 (Paper No. 11; page 5)), in claim 24, and thus in claim 32 dependent thereon, the phrase “up to” is used in specifying the amount of dihydroxyethyl tallow glycinate that may be used as an “additive to improve resistance to phase separation at temperatures above about 170°C.” in the method of claim 17 on which it depends, which amount as stated is customarily interpreted as a specified amount that includes “zero.” *See In re Mochel*, 470 F.2d 638, 640, 176 USPQ 194, 195 (CCPA 1972).

Turning now to consideration of the grounds of rejection advanced on appeal, the threshold issue in applying the applied prior art to the appealed claims as we have interpreted them above, is whether Kawaai, used in all of the grounds of rejection, would have reasonably disclosed oil-in-water

type aqueous fuels falling within the claimed oil-in-water type aqueous fuels encompassed by appealed claim 1 to one of ordinary skill in this art (Office action of June 1, 1995 (Paper No. 11, page 2); answer, sequential page 2.5 to page 5). It is well settled that in considering the effect of a reference, we must consider the specific teachings thereof and the inferences one of ordinary skill in this art would reasonably be expected to draw therefrom. *In re Fritch*, 972 F.2d 1260, 1264-65, 23 USPQ2d 1780, 1782-83 (Fed. Cir. 1992); *In re Preda*, 401 F.2d 825, 826, 159 USPQ 342, 344 (CCPA 1968). Thus, the definition of a term or the meaning of a phrase in a reference must be construed within the context of the reference as interpreted by one of ordinary skill in this art. *See In re Salem*, 553 F.2d 676, 682-83, 193 USPQ 513, 518 (CCPA 1977). In evaluating the relevance of the various teachings of the reference, we must presume skill on the part of those of ordinary skill in this art. *See In re Sovish*, 769 F.2d 738, 743, 226 USPQ 771, 774 (Fed. Cir. 1985).

We find that Kawaai would have reasonably disclosed a stable, oil-in-water type emulsified fuel containing “70-85% by weight of water, and alcohol if needed, as a continuous phase,” “15-30% by weight of liquid oil as a dispersed phase” and “0.001-10% by weight of a surface active agent for the formation of an oil-in-water emulsion,” that can be spray-combusted in a furnace (pages 2-3; see also page 4). Kawaai would also have further reasonably disclosed that a similar “an oil-in-water type emulsified fuel containing 30-70% by weight of water, irrespective of the kind of oil . . . [which] can be combusted” was also known (page 3). Thus, one of ordinary skill in this art would have reasonably inferred from Kawaai that stable, oil-in-water type emulsified fuels that contain the ingredients taught in this reference would be obtained with less than 70 weight percent of water.⁶

We find that Kawaai teaches that the surfactant can be nonionic and that the stable, oil-in-water type emulsified fuel can further contain a stabilizer and a neutralizer (pages 4-5). Kawaai would have

⁶ Kawaai cites Japanese “Patent Application No. 47-108255” with respect to emulsified fuels containing 30-70% by weight of water. We observe that U.S. Patent No. 5,156,114 to appellant, cited in the specification, also discloses aqueous fuels containing about 20 to 80 vol.% of water, a mixture of an alcohol and carbonaceous fuels, and optionally a surfactant (e.g., cols. 1-4 and 11-13). We suggest that any further prosecution of the appealed claims before the examiner should include consideration of applicable patent literature based on said application cited by Kawaai and of the ‘114 patent which

disclosed to one of ordinary skill in the art that the “liquid oils” can “include various kinds of oily substances specified in the Fire Protection Law Item No. 4,” examples of which include “gasoline” (page 5). We find that one of ordinary skill in this art would have reasonably inferred from such disclosure that other kinds of combustible fuels, such as light fuel oils, including diesel fuel oil, as disclosed in Dubin (e.g., col. 3, line 45, to col. 4, line 4), can be used in the stable, oil-in-water type emulsified fuels of Kawaai.

With respect to the disclosure in Kawaai that the oil-in-water type emulsified fuels contain “70-85% by weight of water, *and alcohol if needed*, as a continuous phase” (e.g., page 2; emphasis supplied), we find that, as pointed out by the examiner (Office action of June 1, 1995 (Paper No. 11, page 2); answer, page 3), while Kawaai does not disclose a specific range of the amounts of water and, optionally, of alcohol necessary to form a continuous phase in the stable emulsified fuels thereof, the reference does disclose Kawaai Application Example 2 which exemplifies a method of preparation of emulsified fuels in which 2 parts of a nonionic surfactant are combined with “an alcohol-containing aqueous solution (containing 95 parts water and 5 parts of alcohol)” and fuel (page 8). We find from Fuels No. 1 through 5 in Kawaai Table 3 that, based on the entire emulsified fuel composition, the water content ranges from 65.196 to 83.824 wt.% and the alcohol content ranges from 3.431 to 4.412 wt.%, for a combined 68.627 to 88.235 wt.%, and the nonionic surfactant content ranges from 1.373 to 1.765 wt.%.⁷ We note that no alcohol is employed in the emulsified fuel compositions exemplified in Kawaai Application Example 1 which also contain a different nonionic surfactant.⁸ In comparing the viscosity of fuels having corresponding fuel/SW ratios of 30/70 and 20/80 in Examples 1 (Table 1) and 2 (Table 3), we observe that the fuels exemplified in Example 2 are reported to have lower viscosities that fall within the range taught in the reference (e.g., page 2). We find that one of ordinary skill in this

constitute additional evidence with respect to emulsified fuels containing an amount of water in the claimed range.

⁷ The sum of 102 parts of surfactant, water and alcohol comprises the “SW” of the “[fuel]/SW (Wt ratio).”

⁸ The fuels in these two examples were combusted in similar pressure jet-type oil burner as shown in the reference Figure.

art would have found in this disclosure the reasonable suggestion that alcohol would function in similar manner with other fuels as disclosed in the reference.

Thus, we agree with the examiner (answer, page 5) that, *prima facie*, Kawaai would have reasonably suggested to one of ordinary skill in this art that alcohol can be mixed with water to form the continuous phase of a stable oil-in-water type emulsion fuel containing, *inter alia*, gasoline, as a dispersed phase, as well as nonionic surfactants, stabilizers and neutralizers, in the amounts reasonably suggested by the reference, with the reasonable expectation that the stable oil-in-water type emulsified fuels obtained would have the viscosity taught in the reference and can be spray combusted. *See Merck & Co. Inc. v. Biocraft Laboratories Inc.*, 874 F.2d 804, 807, 10 USPQ2d 1843, 1845-46 (Fed. Cir. 1989); *In re Lemin*, 332 F.2d 839, 141 USPQ 814 (CCPA 1964).

Accordingly, because the amounts in wt.% of water, alcohol, surfactant and fuel as disclosed, suggested and exemplified in aqueous fuel compositions by Kawaai would reasonably appear to overlap with the amounts in vol. % of the same ingredients specified for the aqueous fuel compositions in appealed claim 1, which compositions can further contain the other ingredients disclosed in the reference, we find that, *prima facie*, one of ordinary skill in this art following the teachings of Kawaai would have reasonably arrived at stable oil-in-water type emulsified fuel compositions that are identical or substantially identical to the claimed stable oil-in-water type emulsified fuel compositions encompassed by claim 1. Indeed, we find that, *prima facie*, the disclosure of Kawaai would have reasonably suggested to one of ordinary skill in this art that stable water-in-oil type emulsified fuels that contain slightly greater and lesser amounts of fuel, water, alcohol and/or surfactant than disclosed in the reference would reasonably be expected to have the same or similar properties to those emulsified fuels containing the amounts of these ingredients disclosed therein. Thus, the burden has shifted to appellant to patentably distinguish the claimed fuels over the teachings of Kawaai. *See Titanium Metals Corp. v. Banner*, 778 F.2d 775,782-83, 227 USPQ 773, 779 (Fed. Cir. 1985) (“[T]he Russian article discloses two alloys having compositions very close to that of claim 3, which is 0.3% Mo and 0.8% Ni, balance titanium. The two alloys in the prior art have 0.25% Mo - 0.75% Ni and 0.31% Mo - 0.94% Ni, respectively. The proportions are so close that *prima facie* one skilled in the art would have expected them to have the same properties.”); *In re Boesch*, 617 F.2d 272, 275-76, 205 USPQ 215,

218-19 (CCPA 1980) (“Considering also, that the composition requirements of the claims and the cited references overlap, we agree with the Solicitor that the prior art would have suggested ‘the kind of experimentation necessary to achieve the claimed composition, including the proportional balancing described by appellants’ Nv equation. This accords with the rule that discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art. [Citations omitted.]”); *In re Best*, 562 F.2d 1252, 1255-56, 195 USPQ 430, 433-34 (CCPA 1977) (“Where, as here, the claimed and prior art products are identical or substantially identical, or 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. See *In re Ludtke* [441 F.2d 660, 169 USPQ 563 (CCPA 1971)]. Whether the rejection is based on “inherency” under 35 USC § 102, on “prima facie obviousness” under 35 USC § 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. [Footnote and citation omitted.]”); *In re Wertheim*, 541 F.2d 257, 271, 191 USPQ 90, 103-04 (CCPA 1976) (“The solids content and foam density ranges disclosed by Pfluger 1963 overlap those of appellants, and it appears, the Pfluger process using solids contents and foam densities overlapping those of appellants will produce instant coffee which is indistinguishable from appellants’ products. . . . That *some* of the products *covered* by appellants’ claims may not be disclosed or suggested by Pfluger 1963 is not relevant to patentability, since the claims embrace other subject matter completely disclosed by Pfluger 1963.”); *In re Malagari*, 499 F.2d 1297, 1303, 182 USPQ 549, 553 (CCPA 1974) (“The process taught by Gross is similar to that claimed by appellant, and the claimed range of carbon in the steel used as a starting material touches that in the ‘typical preferred range’ of the reference.”).

Accordingly, since a *prima facie* case of obviousness has been established over Kawaai with respect to the claimed aqueous fuels encompassed by appealed claim 1, we have again evaluated all of the evidence of obviousness and nonobviousness based on the record as a whole, giving due consideration to the weight of appellant’s arguments. See generally, *In re Johnson*, 747 F.2d 1456, 1460, 223 USPQ 1260, 1263 (Fed. Cir. 1984); *In re Piasecki*, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984).

We have carefully considered all of appellant's arguments and the evidence presented in the specification and the Declaration by Appellant Gunnerman.⁹ Appellant submits the view of the disclosure of Kawaai that "of the '85-70 weight percent of water and alcohol', the water or alcohol may comprise the majority constituent" and concludes that Kawaai does not "disclose an amount of alcohol in applicant's range" (brief, page 7). Thus, appellant points to the disclosure at pages 12-13 of his specification as "specifically [indicating] the important role that alcohol content, in the amount claimed, plays in contributing to the stability of the aqueous fuel emulsion; and stability is an obviously important aspect of the aqueous fuel formulation" (*id.*, pages 7-8). Appellant contends that such disclosure in the specification "establishes the unexpected results obtained by controlling the alcohol content" in the fuel (*id.*, page 9). Appellant further contends that evidence of patentability is found in the Gunnerman Declaration which he describes as "summarizing tests conducted to determine the effect of varying the alcohol content of the fuel composition described and claimed" between the low end and high end of the range set forth in appealed claim 1, that is, "about 2 to less than 20 vol.% alcohol" (*id.*; see also Gunnerman Declaration, pages 1-2). Appellant further submits that the Kawaai fuel composition is "described therein to be used by burning it in atomized form, probably in a burner" while the claimed aqueous fuel is "capable of use in an internal combustion engine" (*id.*, page 10). Appellant further argues that Kawaai discloses "'85-70 weight percent of water and alcohol'" and that "it is impossible to tell from the [Kawaai] disclosure not only the amount of alcohol to use, but the ratio of alcohol to water in the emulsion" and concludes that "the water and alcohol content . . . would be far outside the range set forth in applicant's claims as appropriate to achieve a stable fuel" (*id.*, page 12).

We cannot subscribe to appellant's position. The relevant disclosure of Kawaai is that the stable oil-in-water type emulsified fuel contains "70-85% by weight of water, *and alcohol if needed*, as a continuous phase" (emphasis supplied), which phrase, while different from the statement "85-70 weight percent of water *and* alcohol" (emphasis supplied) argued by appellant, does encompass appellant's statement to some extent. However, we found above that the exemplification of the optional use of alcohol as shown in Kawaai Example 2 established that alcohol would be used in

⁹ The declaration was submitted on August 11, 1995 (Paper No. 14).

providing a stable emulsified fuel having a viscosity as taught in the reference, and indeed, the amounts of fuel, water, alcohol and surfactant, stated in wt.%, used in these examples would appear to overlap the amounts of the same ingredients, stated in vol.%, specified in claim 1 (*see supra* pp. 8-9). Thus, contrary to appellant's contentions, one of ordinary skill in this art would have found in the disclosure of Kawaai the reasonable suggestion of the role of alcohol and guidance of the amounts thereof to be employed with respect thereto. We find no evidence of unexpected results either in appellant's specification or in the Gunnerman Declaration which would establish the criticality of the range of alcohol specified in claim 1 vis-à-vis the teachings of Kawaai with respect to this component. We agree with appellant's characterization that the evidence in the Declaration is a summary of tests that show the effect of varying the content of this ingredient and note that the cited portion of the specification is of similar content. Thus, we find that the evidence of record on which appellant relies is directed to alleged unexpected properties of the claimed aqueous fuel compositions rather than to an actual difference in properties between these claimed compositions and the aqueous fuel compositions of Kawaai. *See In re Hoch*, 428 F.2d 1341, 1343-44, 166 USPQ 406, 409 (CCPA 1970).

Furthermore, we are not convinced that the aqueous fuel compositions of Kawaai differ from the aqueous fuel compositions encompassed by appealed claim 1 simply because the reference teaches that the fuel compositions thereof are spray combusted in the combustion chamber of a burner rather than in a combustion chamber of an internal combustion engine. As we found above, based on this record, the phrase "combustible in an internal combustion engine" does not place any limitation(s) on the aqueous fuel compositions encompassed by appealed claim 1 and is a statement of intended use. Indeed, as we further found above, the breadth of the definition of the term "internal combustion engine" set forth in appellant's specification would include an engine with fuel injection means such that, to use appellant's words, the fuel would be injected into the combustion chamber "in atomized form." Appellant has not shown that the aqueous fuels of Kawaai could not be used with such a fuel injection system. To the extent that appellant contends that the cited language of claim 1 is a "method or process of use" limitation, such a limitation has no place in a composition of matter claim. *See In re Wiggins*, 397 F.2d 356, 359 n.4, 158 USPQ 199, 201-02 n.4 (CCPA 1968) ("[A]ppellant's discovery of the analgesic properties of 'O₂' and of a composition containing it could properly be claimed only as a

method or process of using that compound or composition in accordance with the provisions of 35 U.S.C. 100(b) and 101.”).

Accordingly, based on our consideration of the totality of the record before us, we have weighed the evidence of obviousness found in Kawaai with appellant’s countervailing evidence of and argument for nonobviousness and conclude that the claimed invention encompassed by appealed claim 1 would have been obvious as a matter of law under 35 U.S.C. § 103.

We consider together the grounds of rejection of claims 2, 6, 13, 24 and 36 and of claims 33 and 43, both based on Kawaai in view of Dubin (see Office action of June 1, 1995 (Paper No. 11, page 2-5 and 6-7); final rejection of October 24, 1995 (Paper No. 15; pages 6-7); answer, pages 5 to 9 and 9-10). With respect to these claims, the examiner finds that Kawaai does not disclose the use of a lubricity enhancer (claim 2) or an alkylphenoethoxylate nonionic surfactant (claim 6) in the aqueous fuels thereof. The examiner further finds that the reference would have suggested the range of “about 40 to about 60% water” (claim 2); that the claimed methods of preparing aqueous fuels (claims 13, 24 and 36) is different than the methods shown in Kawaai; and that the aqueous fuel compositions of Kawaai are identical or substantially identical to the claimed aqueous fuels prepared by the claimed methods (claims 33 and 43). The examiner finds that the combined teachings of Kawaai and Dubin would have reasonably suggested to one of ordinary skill in this art that these differences would be modifications that would reasonable be expected to result in stable oil-in-water type emulsified fuels and methods of preparing such fuels, which can be spray combusted.

We agree with the examiner. We have reviewed the teachings of Kawaai above and find here that the teachings of this reference differ from the claimed aqueous fuel compositions and methods of preparing the same encompassed by the appealed claims we consider here, as pointed out by the examiner. We find that Dubin (e.g., col. 3, line 11 to col. 4, line 29, col. 4, line 66, to col. 8, line 54) discloses stable oil-in-water type emulsified fuels for “combustion turbine” engines which contain from about 60% to about 90% by weight of water (e.g., col. 4, lines 5-15) and an emulsification system containing a nonionic surfactant, that can be a nonionic alkylphenoethoxylate (e.g., col. 5, lines 41-43), in similar manner to the stable oil-in-water type emulsified fuels disclosed in Kawaai. Indeed, we found above (*see supra* page 7) that while Kawaai discloses that the aqueous fuels can have “70-85% by

weight of water, and alcohol if needed,” along with a nonionic surfactant, this reference would have reasonably suggested to one of ordinary skill in this art that such fuels can contain a lesser amount of water, including the range of 30-70%. Dubin also teaches that the aqueous fuels thereof can contain the same type stabilizers (e.g., col. 6, line 54, to col. 7, line 3) as those of Kawaai in amounts specified in claim 2, and, as we found above (*see supra* page 8), the light fuel oils of Dubin (e.g., col. 3, line 45, to col. 4, line 4) would have reasonably been expected by one of ordinary skill in this art to be used in the stable, oil-in-water type emulsified fuels of Kawaai.

While Kawaai is silent with respect to a lubricity enhancer, Dubin would have reasonably suggested to one of ordinary skill in this art that the stable, oil-in-water type emulsified fuel of Kawaai, which can contain light fuel oil, can reasonably be expected to be used in “combustion turbine” engines and that a lubricity enhancer added to such aqueous fuels in amounts specified in claim 2 would reasonably be expected to avoid the mechanical problems known in the art (e.g., col. 3, lines 11-24, col. 7, lines 15-23, and col. 8, lines 28-35). We recognize that Dubin does not disclose the use of alcohol in the fuels thereof. However, we find that Kawaai would have reasonably suggested to one of ordinary skill in this art that alcohol can be used in stable oil-in-water type emulsified fuels having a viscosity that can be spray combusted and thus one of ordinary skill in this art would have reasonably expected that such an aqueous fuel can be injected into the combustion chamber of “combustion turbine” engines in the same manner as the stable oil-in-water type emulsified fuels of Dubin (e.g., col. 1, lines 64-66. col. 3, lines 35-37, and col. 4, line 66, to col. 5, line 6).

Accordingly, we find that, *prima facie*, the combined teachings of Kawaai and Dubin would have reasonably suggested to one of ordinary skill in this art that the stable oil-in-water type emulsified fuels of Kawaai can be modified by the use of a lubricity enhancer and an alkyphenolethoxylate as the nonionic surfactant in the reasonable expectation of obtaining a fuel that can be spray combusted. Thus, *prima facie*, one of ordinary skill in this art following the combined teachings of Kawaai and Dubin would have reasonably arrived at the claimed aqueous fuels encompassed by claims 2 and 6, in the absence of any unobvious properties. *See In re Vaeck*, 947 F.2d 488, 493, 20 USPQ2d 1438, 1442 (Fed. Cir. 1991) (“Both the suggestion and the reasonable expectation of success must be founded in the prior art, not in the applicant’s disclosure.”); *In re Keller*, 642 F.2d 413, 425, 208 USPQ 871,

881 (CCPA 1981)(“The test for obviousness is . . . what the combined teachings of the references would have suggested to those of ordinary skill in the art.”); *In re Castner*, 518 F.2d 1234, 1238-39, 186 USPQ 213, 217 (CCPA 1975) (“We agree with appellant that not every ingredient is shown in a single prior art reference. However, when the ingredients are associated in an obvious manner set forth in the claims, they do not co-act with each other in any new or unexpected way and define nothing patentable over the prior art. [Citation omitted.]”).

With respect to the claimed methods encompassed by claims 13 and 36, while the same require at least that the fuel and emulsifier are mixed separately from the other ingredients which are added, separately or combined, in admixture to form the aqueous fuel, neither claim otherwise specifies any parameters by which the ingredients are mixed. Kawaai teaches that the oil-in-water type emulsified fuels are prepared with an emulsifier which can be selected from a number of different mechanical and ultrasonic devices (page 5). In the Kawaai Examples, a “mixer (3,600 rotation/minute)” is used (page 5) and in Kawaai Example 2, the surfactant was apparently mixed with a solution containing a mixture of water and alcohol, and fuel, which combined mixture was then added to the mixer (page 8). Dubin teaches that “[e]mulsion stability is largely related to droplet size” with small droplets being preferred; can be “enhanced by the use of surfactants and the like, which act as emulsifiers or emulsion stabilizers;” and can be maintained by the use of an emulsion system, which contains a nonionic surfactant, in which some of the light fuel oil can be included, that “can in some cases increase emulsion stability of the emulsion itself” (col. 4, line 45, to col. 5, line 67). Dubin further teaches that

[t]he emulsion . . . can be formed using a suitable mechanical emulsifying apparatus which would be familiar to the skilled artisan. . . . The emulsion is formed by feeding both the water and the fuel oil in the desired proportions to the emulsifying apparatus, and the emulsification system can either be admixed or dispersed into one or both of the components before emulsification or can be added to the emulsion after it is formed. [Col. 7, lines 4-14.]

Based on this evidence, the examiner finds that it would have been *prima facie* obvious to one of ordinary skill in this art to prepare the stable oil-in-water type emulsified fuels of Kawaai by using the methods of Dubin because one of ordinary skill in this art could have determined the “proper sequence of adding four ingredients to obtain the most satisfactory mixture” (see Office action of June 1, 1995 (Paper No. 11, pages 4-5); answer, pages 8 to 9). We agree. Each of Kawaai and Dubin teach the

preparation of similar stable oil-in-water type emulsified fuels in which the same and similar ingredients are added in some order, if not already combined, to a device that will form the emulsion, without limitation on the type of device to be employed. Dubin teaches that an emulsion system, which can contain some of the fuel, can be admixed or dispersed into the water and/or fuel before emulsification or added separately during or after emulsification. Thus, we find that, *prima facie*, one of ordinary skill in this art following the combined teachings of Kawaai and Dubin would have selected the optimum method of combining the ingredients with respect to the emulsifying device to be used and the desired emulsion to be obtained by routine experimentation, and thus would have arrived at the claimed methods encompassed by claims 13, 24 and 36, in the absence of any unobvious results. *See In re Dow Chemical Co.*, 837 F.2d 469, 473, 5 USPQ2d 1529, 1531-32 (Fed. Cir. 1988). As we found above (*see supra* p. 6), claim 24 does not require the presence of any amount of dihydroxyethyl tallow glycolate.

The product-by-process claims 33 and 43 define an aqueous fuel in terms of the methods of claims 13 and 36, respectively, which claimed methods, we have found, would have been *prima facie* obvious to one of ordinary skill in this art from the combined teachings of Kawaai and Dubin as set forth above. Thus, we find that one of ordinary skill in this art in preparing the stable water-in-oil type emulsified fuels of Kawaai following the combined teachings of Kawaai and Dubin would have reasonably arrived at stable oil-in-water type emulsified fuel compositions that are identical or substantially identical to the claimed encompassed by 13 and 36. Accordingly, the burden falls upon appellant to establish by effective argument and/or objective evidence that the claimed invention patentably distinguishes over the teachings of this combination of references even though the rejection here is under § 103. *See Thorpe, supra; Best, supra; Wertheim, supra; In re Fessmann*, 489 F.2d 742, 744, 180 USPQ 324, 325-26 (CCPA 1974) *In re Brown*, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972). In similar manner to our discussion above (*see supra* p. 9), the amounts, in wt.%, of water, alcohol, surfactant and fuel as disclosed, suggested and exemplified in aqueous fuel compositions by Kawaai would reasonably appear to overlap with the amounts, in vol. %, of the same ingredients specified for the aqueous fuel compositions in appealed claim 33, and for water alone in claim 43, which compositions can further contain the other ingredients disclosed in Kawaai. Thus, we

find that, *prima facie*, one of ordinary skill in this art following the combined teachings of Kawaai and Dubin would have reasonably arrived at stable oil-in-water type emulsified fuel compositions that are identical or substantially identical to the claimed encompassed by claims 33 and 43. We further find here, as we did above, that, *prima facie*, the disclosure of Kawaai would have reasonably suggested to one of ordinary skill in this art that stable water-in-oil type emulsified fuels that contain slightly greater and lesser amounts of fuel, water, alcohol and surfactant than disclosed in the reference would reasonably be expected to have the same or similar properties to those emulsified fuels containing the amounts of these ingredients disclosed in the reference.

Accordingly, since a *prima facie* case of obviousness has been established over the combined teachings of Kawaai and Dubin with respect to the claimed aqueous fuels and methods of making the same encompassed by appealed claims 2, 6, 13, 24 and 36 and the claimed aqueous fuels encompassed by claims 33 and 43, we have again evaluated all of the evidence of obviousness and nonobviousness based on the record as a whole, giving due consideration to the weight of appellant's arguments. *See generally, Johnson, supra; Piasecki, supra.*

We have carefully considered all of appellant's arguments and the evidence presented in the specification. Appellant submits that because of the several differences between Kawaai and the claims we consider here, the "obviousness of the combination of references ceases to be apparent when the secondary reference does not supply all of the deficiencies" (brief, page 14). Appellant contends that Dubin would have lead one of ordinary skill in the art away from the claimed aqueous fuels and methods of making the same because the "relative nature of the [external] phase is not important to Dubin" (*id.*, page 15). Appellant points out that the aqueous fuel of Dubin is "to be injected through burner nozzles for combustion . . . [and] discloses a manifold to permit the dual injection of both natural gas and the emulsion" (original emphasis deleted) and there is no indication from the references that the "compositions disclosed by [Kawaai] and/or Dubin are capable of combustion in an internal combustion engine as in appellant's claims" (*id.*, page 16). Appellant further argues that "both references fail to disclose the importance of the role of alcohol in maintaining stability of fuel compositions" and thus there is no reason why one of ordinary skill in the art would have combined the references to modify the compositions of Kawaai (*id.*, pages 16-19). Appellant observes that Dubin does not disclose a fuel

composition that contains an alcohol, lubricity enhancer and stabilizer additive, and points to examples of lubricity enhancers, emulsifiers and stabilizer additives discloses in the specification (*id.*, page 20). Appellant also points out that a number of limitations contained by, e.g., claim 6, are not shown by Kawaai (*id.*, pages 20-21). Appellant further contends that there is no disclosure in Dubin of a method of preparing aqueous fuels which would fall within claims 13 and 36 and points out that the claimed methods are critical as set forth on pages 3 and 16-18 of the specification (*id.*, pages 21-23).

Appellant further submits, with respect to claims 33 and 43, that none of the references disclose the methods by which the claimed aqueous fuels are made, that such methods provide the fuels with “qualities not possessed by fuel compositions resulting from mere mixture of the stated components” and “[t]here is no evidence in the record that a method of preparation different than that claimed by applicant would produce the same or even a similar result” (brief, pages 24-27).¹⁰

We cannot agree with appellant’s position. We fail to find in Dubin any teaching which would have lead one or ordinary skill in this art away from using water-in-oil type emulsified fuels. Indeed, as pointed out by the examiner (answer, page 6), and as we found above, Dubin distinguishes between oil-in-water and water-in-oil fuel emulsions and teaches that either emulsion can be the separate fuel source used. We also found above that the “combustion turbine” engines set forth in Dubin fall within the broad definition of “internal combustion engine” in appellant’s specification and that the aqueous fuel composition of either Dubin or Kawaai can be spray combusted in the same. Thus, one of ordinary skill

¹⁰ We note appellant’s contention with respect to the rejection of claims 28 through 30, 33 through 35 and 41 through 45 over Kawaai and Dubin, that while paragraph 6 of the final rejection of October 24, 1995 (Paper No. 15; pages 6-7) stated the rejection, no further explanation was given for the rejection therein, and, therefore, a complete response to the rejection is prevented (brief, page 24). We observe that this contention appears for the first time in the brief as no such contention appears in the response after final rejection of November 13, 1995 (Paper No. 16), in which argument was presented with respect to this ground of rejection (pages 6-7). Indeed, we note that appellant did not take other action in response to the examiner’s position in the answer with respect to this matter (pages 9-10). We find the ground of rejection sufficiently clear from the record in view of the examiner’s statements in the final rejection and in the Office action of June 1, 1995 (Paper No. 11, pages 6-7) such that our review thereof does not require remanding the case to the examiner for further consideration or explanation. See 37 CFR § 1.196(a). We point out that the Board is not the appropriate forum in which to raise this issue.

in the would not have been discouraged from following the teachings of Dubin or led in a divergent direction than that taken by appellant. *See In re Gurley*, 27 F.3d 551, 553, 31 USPQ2d 1130, 1131 (Fed. Cir. 1994) (“A reference may be said to teach away when a person of ordinary skill, upon reading the reference would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant. The degree of teaching away will of course depend on the particular facts; in general, a reference will teach away if it suggests that the line of development flowing from the reference’s disclosure is unlikely to be productive of the result sought by the applicant. [Citations omitted.]”).

Furthermore, we find that one of ordinary skill in this art would have reasonably recognized that the teachings of both Kawaai and Dubin are directed to emulsified aqueous fuels that can be spray combusted and share such common ingredients as nonionic surfactants and stabilizers, and that Kawaai would have suggested that an alcohol can be used in the similar aqueous fuels of Dubin. Thus, one of ordinary skill in this art would have found in the combination of references the suggestion that an emulsified aqueous fuel containing an alcohol, lubricity enhancers, and stabilizer additives, even if such additives are not those disclosed in appellant’s specification. *Keller, supra*. Appellant has not shown that the appealed claims rejected in the grounds of rejection considered here are limited to the lubricity enhancers and stabilizers specifically disclosed in the specification or that the stabilizers disclosed in the references fall outside of the definition of “an additive to improve resistance to phase separation at temperatures above about 170°F,” that is, at 76.6°C, when used in an emulsified aqueous fuel composition taught by the references. *See Best, supra*. We also pointed out above the teachings of the references which pertain to the claim features discussed by appellant (brief, pages 20-21). We note here with respect to claim 9, that Dubin (col. 4, lines 30-37) would have disclosed to one of ordinary skill in this art the reasons why “demineralized water,” which would include “deionized water,” is desirable, as pointed out by the examiner (answer, page 8).

We cannot agree with appellant that the disclosure in the specification as cited establishes the criticality of the manner in which the fuel, water, alcohol and surfactant are combined to form a stable, oil-in-water type emulsified fuel vis-à-vis the teachings of the references. Kawaai discloses the use of a “mixer (3,600 rotation/minute)” which appears from Dubin to be a conventional device for forming an

emulsion, and a process using such a device would fall within claims 13 and 36 which do not specify the manner in which the ingredients as mixed are combined. We find no disclosure in appellant's specification which establishes that the alleged criticality in the mixing of the ingredients would obtain when such a device is used. In any event, as we pointed out above, Dubin suggests that the emulsifier, which can contain fuel, can be mixed with either water or fuel prior to combining the ingredients in a mixer, and appellant has not established that the alleged criticality is indeed an unobvious result in view of these teachings.

Accordingly, in view of the similarity in the teachings of Kawaai and Dubin and the absence of evidence in the record establishing the criticality of the processes of claims 13 and 36, we find that appellant has not established that the aqueous fuels encompassed by claims 33 and 43 have properties which distinguish the same from the aqueous fuels taught by the references. It is well settled that arguments of counsel which are not supported by evidence in the record are entitled to little, if any, weight. *See generally In re Payne*, 606 F.2d 303, 315, 203 USPQ 245, 256 (CCPA 1979).

Accordingly, based on our consideration of the totality of the record before us, we have weighed the evidence of obviousness found in the combined teachings of Kawaai and Dubin with appellant's countervailing evidence of and argument for nonobviousness and conclude that the claimed invention encompassed by appealed claims 2, 4, 6 through 11, 13 through 15, 17 through 22, 24 through 27 and 36 through 40, and the claimed invention encompassed by appealed claims 28 through 30, 33 through 35 and 41 through 45 would have been obvious as a matter of law under 35 U.S.C. § 103.

We now consider the ground of rejection of claim 32 over Kawaai in view of Dubin, further in view of Morehouse. We found above (*see supra* p. 6) that claim 32 does not require the presence of any amount of dihydroxyethyl tallow glycinolate. Thus, we affirm the rejection of claim 32 based on the combined teachings of Kawaai and Dubin for the reasons we set forth with respect to claims 33 and 43 above, including consideration of appellant's arguments with respect thereto. We find it unnecessary to our decision with respect to this issue to discuss Morehouse.

Accordingly, based on our consideration of the totality of the record before us, we have weighed the evidence of obviousness found in Kawaai in view of Dubin, further in view of Morehouse

with appellant's countervailing evidence of and argument for nonobviousness and conclude that the claimed invention encompassed by appealed claim 32 would have been obvious as a matter of law under 35 U.S.C. § 103.

We finally address the ground of rejection of claims 3 and 23 over Kawaai in view of Morehouse and the ground of rejection of claim 31 over Kawaai in view of Dubin, further in view of Morehouse. Each of these claims specify an aqueous fuel or method of making an aqueous fuel which contains a polyorganosiloxane as a lubricity enhancer. The examiner submits that the teaching in Morehouse to use a polyorganosiloxane to reduce foam in non-lubricating fluids would have suggested using this polymer to enhance the lubricating properties of the aqueous fuels of Kawaai, with and without Dubin (see Office action of June 1, 1995 (Paper No. 11, page 6); final rejection of October 24, 1995 (Paper No. 15; page 6); answer, page 9). We have carefully considered the examiner's position in light of appellant's arguments (brief, e.g., page 23) and find that we agree with appellant that one of ordinary skill in this art would not have combined Morehouse with Kawaai, with and without Dubin. We further find that Morehouse (col. 1, lines 60-66) teaches that the organic liquids to which the siloxane-polyoxyalkylene polymers would be added as an antifoaming agent include substantially anhydrous fuels in which "trace amounts of water that may be present," such as kerosene and gasoline. We find that, on this record, such teachings would not have reasonably suggested to one of ordinary skill in this art to add the polymer to an aqueous fuel. Accordingly, we reverse the ground of rejection of claims 3, 5, 12, 16 and 23 over Kawaai in view of Morehouse, and the ground of rejection of claim 31 over Kawaai in view of Dubin, further in view of Morehouse.

In summary, we have *affirmed* the following grounds of rejection under § 103: claim 1 over Kawaai; claims 2, 4, 6 through 11, 13 through 15, 17 through 22, 24 through 27 and 36 through 40 over Kawaai in view of Dubin; claims 28 through 30, 33 through 35 and 41 through 45 over Kawaai in view of Dubin; and claims 32 over Kawaai in view of Dubin, further in view of Morehouse. We have *reversed* the following grounds of rejection under § 103: claims 3, 5, 12, 16 and 23 over Kawaai in view of Morehouse; and Claim 31 over Kawaai in view of Dubin, further in view of Morehouse.

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

Appeal No. 1996-3826
Application 08/222,477

PETER F. KRATZ
Administrative Patent Judge

ROMULO H. DELMENDO
Administrative Patent Judge

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) BOARD OF PATENT
) APPEALS AND
) INTERFERENCES
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)
)

Townsend and Townsend and Crew, LLP
Two Embarcadero Center, 8th Floor
San Francisco, CA 94111-3834