

**UNITED STATES PATENT AND TRADEMARK OFFICE**

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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

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*Ex parte* ALBRECHT DORSCHNER and ANJA KNUPPEL

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Appeal 2008-3536<sup>1</sup>  
Application 11/106,257  
Technology Center 1600

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Decided: July 30, 2008

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Before TONI R. SCHEINER, LORA M. GREEN, and  
FRANCISCO C. PRATS, *Administrative Patent Judges*.

PRATS, *Administrative Patent Judge*.

**DECISION ON APPEAL**

This is an appeal under 35 U.S.C. § 134 involving claims to self-tanning oil-in-water emulsions. The Examiner has rejected the claims as anticipated and obvious. We have jurisdiction under 35 U.S.C. § 6(b). We affirm.

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<sup>1</sup> Heard July 15, 2008.

STATEMENT OF THE CASE

Claims 30-58 are pending and on appeal (App. Br. 4). Claims 30 and 57 are representative and read as follows:

30. A process for preparing a self-tanning oil-in-water emulsion, wherein the process comprises changing a pH of a mixture comprising an aqueous phase, an oil phase, dihydroxyac[e]tone and one or more emulsifiers A whose lipophilicity is pH-dependent to effect a phase inversion which results in the self-tanning oil-in-water emulsion.

57. A method of tanning skin, wherein the method comprises topically applying an emulsion obtained by the process of claim 30 to skin in an amount which is effective to tan skin.

The Examiner relies on the following documents:

Ascione	US 5,858,334	Jan. 12, 1999
Alban	US 5,318,774	Jun. 7, 1994
Gers-Barlag	US 5,876,702	Mar. 2, 1999

The following rejections are before us for review:

Claims 57 and 58 stand rejected under 35 U.S.C. § 102(b) as anticipated by Ascione (Ans. 3-4).

Claims 57 and 58 stand rejected under 35 U.S.C. § 102(b) as anticipated by Alban (Ans. 4).

Claims 30-56 stand rejected under 35 U.S.C. § 103(a) as being obvious in view of Ascione and Gers-Barlag (Ans. 5-8).

Claims 30-58 stand rejected under 35 U.S.C. § 103(a) as being obvious in view of Gers-Barlag and Alban (Ans. 9-12).

ANTICIPATION -- ASCIONE

*ISSUE*

The Examiner cites Ascione as disclosing “oil-in-water ultra-fine emulsions containing dihydroxyacetone for tanning the skin” (Ans. 3). The Examiner notes that “the emulsifiers used in the composition read on the instant emulsifier A as defined by [Appellants’] specification [at] pages 19-20” (*id.*).

The Examiner contends that the limitation in claim 57, requiring the product used in that claim to be made by the process of claim 30, “is a product-by-process limitation” which does not distinguish the claimed product from identical prior art products (*id.*). Therefore, the Examiner finds, “in [the] instant case the same emulsion is used to tan the skin and thus the process limitation does not provide a patentable difference to the product” (*id.* at 4).

Appellants contend that “a phase inversion initiated by a pH change (as recited in claims 30 and 42 from which claims 57 and 58 depend) necessarily implies that a compound which increases or lowers the pH is employed during the preparation of the emulsion. For example, in Example 6 of GERS-BARLAG NaOH is added to the system until a pH of 7 is reached” (App. Br. 10 (citing Gers-Barlag, col. 21, ll. 1-3)).

Thus, Appellants argue, “an emulsion employed in the processes of present claims 57 and 58 would necessarily comprise a substance which can be traced back to the presence of significantly acidic or basic compound in the materials which are employed for preparing the emulsion” (App. Br. 10). In contrast, Appellants contend, the materials used in Ascione’s emulsions do not appear to contain “any significantly acidic or basic compound at all.

This means that the emulsion of Example I of ASCIONE does not comprise any substance which can be traced back to the presence of significantly acidic or basic compound in the materials which are employed for preparing the emulsion” (*id.*). Therefore, Appellants conclude, Ascione’s emulsions are “necessarily different from the emulsions recited in present claims 57 and 58,” and Ascione therefore “does not anticipate present claims 57 and 58” (*id.*)

Appellants do not argue claims 57 and 58 separately. We select claim 57 as representative of the rejected claims. 37 C.F.R. § 41.37(c)(1)(vii). The issue with respect to this rejection, then, is whether Appellants have shown that the Examiner erred in finding that Ascione meets all of the limitations recited in claim 57.

*FINDINGS OF FACT (“FF”)*

1. Claim 57 recites a method of tanning skin in which an emulsion obtained by the process of claim 30 is topically applied to skin in an amount effective to tan the skin.

Claim 30, in turn, recites a process for preparing a self-tanning oil-in-water emulsion. The process has one step: changing the pH of a mixture in order to effect a phase inversion which results in the self-tanning oil-in-water emulsion. The mixture contains an aqueous phase, an oil phase, dihydroxyacetone, and one or more emulsifiers “A” whose lipophilicity is pH-dependent.

2. The Specification discloses the “[t]he emulsifier(s) A is/are particularly advantageously chosen from the group of mono-, oligo- and polyethoxylated compounds, in particular polyethoxylated mono- or polybasic alcohols or fatty acids, for example . . . - fatty alcohol ethoxylates”

(Spec. 19). The Specification further discloses that “[i]t is advantageous to choose the fatty alcohol ethoxylates from the group of ethoxylated stearyl alcohols, cetyl alcohols, [or] cetylstearyl alcohols” (*id.* at 20). Cetareth-20 is listed among the suitable fatty alcohol ethoxylate emulsifiers (*id.* at 21).

3. Ascione discloses “artificial suntan compositions having improved activity . . . which comprise specific oil-in-water emulsions (in a cosmetically acceptable vehicle or carrier) containing dihydroxyacetone as the self-tanning agent” (Ascione, col. 1, ll. 15-19). Ascione discloses that when its composition is “applied to the skin, especially to the face, it elicits a tanning effect, the appearance of which is similar to that which may result from prolonged exposure to the sun (natural tan) or under a UV lamp” (*id.* at col. 1, ll. 24-27). Ascione therefore discloses the step in claim 57 of applying the oil-in-water emulsion to the skin in an amount effective to tan skin.

4. Ascione discloses that its self-tanning oil-in-water emulsions have the following composition:

(i) aqueous phase: from 50% to 95% by weight, preferably from 70% to 90% by weight, relative to the total weight of the formulation;

(ii) oily phase: from 5% to 50% by weight, preferably from 10% to 30% by weight, relative to the total weight of the formulation;

(iii) dihydroxyacetone: from 0.5% to 10% by weight, preferably from 1% to 7% by weight, relative to the total weight of the formulation; and

(iv) (co)emulsifier(s): from 0.5% to 20% by weight, preferably from 2% to 10% by weight, relative to the total weight of the formulation.

(Ascione, col. 3, l. 58, through col. 4, l. 3.)

5. Ascione discloses that “the emulsifier systems appropriate to the present invention are nonionic emulsifiers and, more particularly, are polyoxyethylenated and/or polyoxypropylenated fatty alcohols (i.e., compounds prepared by reacting an aliphatic fatty alcohol such as behenyl alcohol or cetyl alcohol, with ethylene oxide or propylene oxide or an ethylene oxide/propylene oxide mixture)” (Ascione, col. 4, ll. 41-48).
6. Example 1 of Ascione is an oil-in-water emulsion, obtained by temperature change-induced phase inversion, that contains dihydroxyacetone and cetylstearyl alcohol containing 15 mol of ethylene oxide (*see id.* at col. 5, ll. 15-59). The composition of claim 1 is also disclosed as containing fragrance and preservatives (*id.* at col. 5, ll. 44-46).
7. Ascione discloses that its compositions can contain a variety of additional ingredients consistent with the self-tanning utility:

Exemplary traditional cosmetic adjuvants and additives suitable for formulation into the aqueous phase and/or into the fatty phase of the emulsions according to the invention (depending on their water-soluble and/or lipid-soluble character), are, in particular, ionic or nonionic thickeners, softeners, antioxidants, opacifiers, stabilizers, emollients, insect repellants, organic sunscreens which are active in UV-A and/or UV-B, photoprotective inorganic nanopigments and pigments, moisturizers, vitamins, fragrances, preservatives, fillers, sequestering agents, dyes, or any other constituent typically formulated into artificial suntan preparations.

(Ascione, col. 3, ll. 35-47.)

#### *PRINCIPLES OF LAW*

It is well settled that “[t]o anticipate a claim, a prior art reference must disclose every limitation of the claimed invention, either explicitly or inherently.” *In re Schreiber*, 128 F.3d 1473, 1477 (Fed. Cir. 1997).

It is also “well settled that the presence of process limitations in product claims, which product does not otherwise patentably distinguish over the prior art, cannot impart patentability to that product.” *SmithKline Beecham Corp. v. Apotex Corp.*, 439 F.3d 1312, 1318 (Fed. Cir. 2006) (quoting *In re Stephens*, 345 F.2d 1020, 1023 (CCPA 1965)). As stated in *In re Thorpe*, 777 F.2d 695, 697 (Fed. Cir. 1985) (citations omitted):

[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in a product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.

Also, once the Examiner establishes that a product recited in terms of its process of making is prima facie unpatentable due to anticipation, Appellants bear the burden of proving “that the prior art products do not necessarily or inherently possess the characteristics of his claimed product.” *Id.* at 698 (quoting *In re Fitzgerald*, 619 F.2d 67, 70 (CCPA 1980); *In re Best*, 562 F.2d 1252, 1255 (CCPA 1977)).

#### ANALYSIS

We do not agree with Appellants that the Examiner has failed to establish a prima facie case that Ascione anticipates claim 57. As required by claim 57, Ascione discloses a method of tanning skin in which an oil-in-water emulsion that contains dihydroxyacetone is topically applied to the skin (FF 3).

Ascione discloses that its self-tanning oil-in-water emulsions also contain, as emulsifiers, polyoxyethylenated fatty alcohols (FF 5), with polyoxyethylenated cetylstearyl alcohol being used in Example 1 (FF 6). As

the Examiner points out (Ans. 3), and Appellants do not dispute, the emulsifiers used by Ascione are the same as those disclosed in Appellants' Specification (*see* FF 2) as meeting the requirements of "emulsifier[] A" in claim 30.

We therefore agree with the Examiner that the composition applied to the skin in Ascione contains both of the ingredients used in the preparative method of claim 30 -- dihydroxyacetone and an emulsifier A whose lipophilicity is pH-dependent. Moreover, because the composition is an oil-in-water emulsion, Ascione's self-tanning composition has the structural relationship between the oil and aqueous phases that results from the preparative method of claim 30.

Because its emulsion is prepared by phase inversion (FF 6), Ascione provides further evidence that the structure of its oil-in-water emulsion is the same as that of the emulsion produced by claim 30, and used in claim 57. Therefore, because it has the same ingredients and structure required by claim 57, we agree with the Examiner that it was reasonable to conclude that Ascione's composition is the same as that claimed, and therefore anticipates claim 57.

Appellants argue that an emulsion employed in the process of claim 57 "would necessarily comprise a substance which can be traced back to the presence of significantly acidic or basic compound in the materials which are employed for preparing the emulsion" (App. Br. 10; *see also* Reply Br. 2-4). We are not persuaded by this argument.

First, claim 30 does not require the emulsion to have any particular pH. The claim therefore does not inherently or necessarily require the

emulsion used in claim 57 to have any particular concentration or amount of hydrogen ions.

Second, Appellants have not provided persuasive evidence showing that Ascione's compositions differ from those encompassed by claim 57. Given that the composition of Ascione's Example 1 contains fragrance and preservatives (FF 6), and that Ascione discloses its compositions as containing a variety of cosmetic additives (FF 7), it is not clear that the compositions described by Ascione necessarily lack materials that would be traced back to a change in the composition's pH.

Moreover, because Appellants have not pointed to any specific evidence showing any difference between the products described by Ascione and a product encompassed by the claims, Appellants have not met the burden required to rebut the Examiner's prima facie case of anticipation. *See Thorpe*, 777 F.2d at 698.

In sum, because the Examiner has established by a preponderance of the evidence that the emulsion of Ascione has the same ingredients and structure as the emulsion prepared by the process of claim 30, we agree with the Examiner that it was reasonable to conclude that Ascione's self-tanning compositions are encompassed by the compositions recited in claim 57. The fact that Ascione's emulsion was not made by the same process as claimed does not render it any less anticipatory. *See In re Thorpe*, 777 F.2d at 697.

We therefore affirm the Examiner's rejection of claim 57 as anticipated by Ascione. Because it was not argued separately, claim 58 falls with claim 57. 37 C.F.R. § 41.37(c)(1)(vii).

ANTICIPATION -- ALBAN

*ISSUE*

Claims 57 and 58 stand rejected under 35 U.S.C. § 102(b) as anticipated by Alban (Ans. 4). The Examiner cites Alban as disclosing, “for imparting an artificial tan to human skin,” the use of oil-in-water emulsions that contain dihydroxyacetone and emulsifiers that “read on the instant emulsifier A as defined by [Appellants’] specification [at] pages 19-20” (*id.*). Applying reasoning similar to that in the anticipation rejection based on Ascione, the Examiner finds that Alban’s self-tanning process anticipates claim 57 because Alban’s emulsion contains the same ingredients as the emulsion used in claim 57 (*id.*).

As in the rejection over Ascione, Appellants contend that, because it is prepared by the process of claim 30, an emulsion used in the process of claim 57 “would necessarily comprise a substance which can be traced back to the presence of significantly acidic or basic compound in the materials which are employed for preparing the emulsion” (App. Br. 12). Because Alban’s emulsions do not contain any “substance which can be traced back to the presence of significantly acidic or basic compound in the materials which are employed for preparing the emulsion,” Appellants contend, Alban cannot anticipate claim 57 (App. Br. 11-12; *see also* Reply Br. 3-4).

Appellants do not argue claims 57 and 58 separately. We select claim 57 as representative of the rejected claims. 37 C.F.R. § 41.37(c)(1)(vii). The issue with respect to this rejection, then, is whether Appellants have shown that the Examiner erred in finding that Alban meets all of the limitations recited in claim 57.

*FINDINGS OF FACT*

8. In Example IV, Alban discloses an oil-in-water emulsion described as a “High SPF Artificial Tanning Lotion With Glycerin” (Alban, col. 13, l. 7). Alban discloses that “[t]his emulsion has improved stability and is useful for topical application to the skin to provide an artificial tan and to provide protection of the skin from the harmful effects of ultraviolet radiation” (*id.* at col. 13, ll. 43-46).

9. The oil-in-water emulsion disclosed in Alban’s Example IV contains dihydroxyacetone, cetareth-12, and cetareth-20, and sunscreen (Alban, col. 13, ll. 27-35).

10. The composition of Alban’s Example IV contains a number of ingredients in addition to the dihydroxyacetone and cetareth emulsifiers, including disodium EDTA, and fragrance (*id.* at col. 13, ll. 18, 37).

*ANALYSIS*

We do not agree with Appellants that the Examiner has failed to establish a *prima facie* case that Alban anticipates claim 57.

As required by claim 57, Alban discloses a method of tanning skin in which an oil-in-water emulsion that contains dihydroxyacetone is topically applied to the skin (FF 8, 9). Alban also discloses that its self-tanning oil-in-water emulsion contains cetareth-12 and cetareth-20 (FF 9), which, as the Examiner points out (Ans. 4), and Appellants do not dispute, are emulsifiers disclosed in Appellants’ Specification (*see* FF 2) as meeting the requirements of “emulsifier[] A” in claim 30.

We therefore agree with the Examiner that Alban’s composition contains both of the ingredients used in the preparative method of claim 30 -- dihydroxyacetone and an emulsifier A whose lipophilicity is

pH-dependent. Moreover, because the composition is an oil-in-water emulsion, Alban's self-tanning composition has the structural relationship between the oil and aqueous phases that results from the preparative method of claim 30. Therefore, because it has the same ingredients and structure required by claim 57, we agree with the Examiner that it was reasonable to conclude that Alban's composition is the same as that claimed, and therefore anticipates claim 57.

Appellants' arguments do not persuade us that Alban's compositions differ from those encompassed by claim 57. Specifically, given that the composition of Alban's Example IV contains fragrance and disodium EDTA (FF 10), it is not clear that the composition described by Alban necessarily lacks materials that would be traced back to a change in the composition's pH.

Therefore, because it has the ingredients and structure required in the preparative method of claim 30, we agree with the Examiner that it was reasonable to conclude that Alban's self-tanning compositions are encompassed by the compositions recited in claim 57. Because Appellants have not pointed to any specific evidence showing any difference between the products described by Alban and a product encompassed by the claims, Appellants have not met the burden required to rebut the Examiner's prima facie case of anticipation. *See Thorpe*, 777 F.2d at 698.

We therefore affirm the Examiner's rejection of claim 57 as anticipated by Alban. Because it was not argued separately, claim 58 falls with claim 57. 37 C.F.R. § 41.37(c)(1)(vii).

OBVIOUSNESS – ASCIONE AND GERS-BARLAG

*ISSUE*

Claims 30-56 stand rejected under 35 U.S.C. § 103(a) as being obvious in view of Ascione and Gers-Barlag (Ans. 5-8).

The Examiner cites Ascione as disclosing the preparation, by temperature change-induced phase inversion, of oil-in-water emulsions that contain dihydroxyacetone and nonionic emulsifiers which “are polyoxyethylenated and/or polyoxypropylenated fatty alcohols” (Ans. 6). The Examiner concedes that “Ascione does not teach the instant method of phase inversion by varying pH” (*id.*).

To meet that limitation, the Examiner cites Gers-Barlag as disclosing the preparation of oil-in-water emulsions by phase inversions induced by changing either the temperature or the pH of the mixture (*id.* at 7-8). The Examiner states:

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Ascione and Gers-Barlag and utilize the instant process of varying the pH for phase inversion rather than Ascione's process of varying temperature for phase inversion for making the microemulsion. One would have been motivated to do so with the expectation of similar results since Gers-Barlag teaches the varying the pH or varying the temperature provides o/w [(oil-in-water)] microemulsions and Ascione teaches the use of temperature to provide o/w microemulsions. Thus, a skilled artisan would have reasonably expected success in the instant combination since Gers-Barlag teaches that either process provides an o/w microemulsion, i.e. both processes are functionally equivalent in that they both function to cause phase inversion and yield an o/w microemulsion. Furthermore, Ascione teaches the same types of emulsifiers as those taught in Gers-Barlag to help phase inversion; thus one would have expected similar results.

(*Id.* at 8.)

Appellants contend, for a number of reasons, that the Examiner has failed to establish a prima facie case of obviousness based on Ascione and Gers-Barlag (*see* App. Br. 12-17). Appellants do not present separate argument with respect to any of the claims subject to this ground of rejection. We select claim 30 as the representative claim. *See* 37 C.F.R. § 41.37(c)(1)(vii).

The issue with respect to the obviousness rejection, then, is whether the Examiner has established a prima facie case of obviousness of claim 30 based on Ascione and Gers-Barlag.

*FINDINGS OF FACT*

11. As noted above, claim 30 recites a process for preparing a self-tanning oil-in-water emulsion. The process has one step: changing the pH of a mixture in order to effect a phase inversion which results in the self-tanning oil-in-water emulsion. The mixture contains an aqueous phase, an oil phase, dihydroxyacetone and one or more emulsifiers “A” whose lipophilicity is pH-dependent.

12. Ascione discloses a process of preparing a self-tanning composition having dihydroxyacetone and emulsifiers meeting the requirements of emulsifier “A” in claim 30 (*see* FF 2-6, above), the process using a temperature change-induced phase inversion to create an oil-in-water emulsion (*see* FF 6). Ascione discloses:

[I]n a first embodiment of the preparative process according to the invention, the phase inversion of the emulsion is conducted in the presence of DHA (which DHA is preferably present in the initial aqueous phase); in a second embodiment of this process, which is preferred, this DHA is introduced only after

the emulsion has been obtained by phase inversion. It is of course possible to utilize both embodiments concurrently.

(Ascione, col. 4, ll. 24-31.)

13. Ascione does not disclose using a pH change-induced phase inversion to prepare its oil-in-water emulsions.

14. Gers-Barlag discloses the use of oil-in-water emulsions to improve the solubility of UV-filtering compounds useful in sunscreens (*see* Gers-Barlag, col. 2, l. 21, through col. 5, l. 5). Gers-Barlag discloses that UV-filtering compounds suitable for use in its emulsions include 4,4',4''-(1,3,5-triazine-2,4,6-triyltriimino)tris-benzoic acid tris(2-ethylhexyl ester), synonym: 2,4,6-tris[anilino-(p-carbo-2'-ethyl-1'-hexyloxy)]-1,3,5-triazine (*id.* at col. 1, ll. 64-67) and 2-phenylbenzimidazole-5-sulphonic acid and its salts (*id.* at col. 2, ll. 27-28).

15. Gers-Barlag discloses processes in which the relatively insoluble UV filtering compounds are incorporated “into emulsions, in particular O/W emulsions, O/W microemulsions or O/W/O emulsions” (Gers-Barlag, col. 5, ll. 21-23) by a process that includes a phase inversion step performed by “varying at least one parameter chosen from the group consisting of pH, temperature and the concentration or concentrations of at least one of the emulsifiers chosen” (*id.* at col. 5, ll. 58-60).

16. Gers-Barlag discloses that emulsifiers useful in its processes are those whose “lipophilicity either depends on the pH such that the lipophilicity is increased or decreased by raising or lowering the pH, it being unimportant which of the two possible changes in lipophilicity is effected by raising or lowering the pH” (Gers-Barlag, col. 4, ll. 57-61).

17. Example 6 of Gers-Barlag discloses preparing an O/W/O, or oil-in-water-in-oil, emulsion by increasing the pH to 7 with NaOH to induce a phase inversion (Gers-Barlag, col. 20, l. 52, through col. 21, l. 3).

18. Gers-Barlag discloses that “[i]t lies here within the general expertise of the expert and requires no inventive step at all to determine the temperature or pH range in which phase inversion takes place for a given emulsifier or a given emulsifier system in a given aqueous/oily phase system” (Gers-Barlag, col. 18, ll. 46-50).

19. Gers-Barlag discloses:

The cosmetic and dermatological formulations according to the invention can comprise cosmetic auxiliaries such as are usually used in such formulations, for example preservatives, bactericides, perfumes, substances for preventing foaming, dyestuffs, pigments which have a coloring action, thickeners, humidifying and/or humectant substances, fats, oils, waxes or other customary constituents of a cosmetic or dermatological formulation, such as alcohols, polyols, polymers, foam stabilizers, electrolytes, organic solvents or silicone derivatives.

(Gers-Barlag, col. 15, ll. 15-24.)

20. Gers-Barlag also discloses that it is “in general preferred” for its compositions to contain antioxidants (Gers-Barlag, col. 25-28), and that the antioxidants can be any of a number of compounds having widely varying structures and properties (*see id.* at col. 15, l. 29, through col. 16, l. 6).

*PRINCIPLES OF LAW*

In proceedings before the Patent and Trademark Office, the Examiner bears the burden of establishing a *prima facie* case of obviousness based upon the prior art. “[The Examiner] can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references.”

*In re Fritch*, 972 F.2d 1260, 1265 (Fed. Cir. 1992) (citations omitted, bracketed material in original). Thus, as the Supreme Court has pointed out, “a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art.” *KSR Int’l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1741 (2007).

In *KSR*, however, the Supreme Court also indicated that it is obvious to choose from among known equivalent solutions to a problem:

When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense. In that instance the fact that a combination was obvious to try might show that it was obvious under § 103.

*Id.* at 1742.

The Supreme Court further noted that the analysis under 35 U.S.C. § 103 “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.”

*Id.* at 1741. The Court also advised that “[a] person of ordinary skill is . . . a person of ordinary creativity, not an automaton.” *Id.* at 1742.

The Court thus implicitly endorsed the principle that “[e]xpress suggestion to substitute one equivalent for another need not be present to render such substitution obvious.” *In re Fout*, 675 F.2d 297, 301 (CCPA 1982); *see also In re Mayne*, 104 F.3d 1339, 1340 (Fed. Cir. 1997) (“Because the applicants merely substituted one element known in the art for a known equivalent, this court affirms [the rejection for obviousness].”).

#### *ANALYSIS*

We do not agree with Appellants that the Examiner has failed to establish a prima facie case of obviousness of claim 30 based on Ascione and Gers-Barlag. One of ordinary skill in the art using temperature change-induced phase inversions to prepare dihydroxyacetone-containing oil-in-water emulsions according to Ascione (*see* FF 6, 12) would have been advised by Gers-Barlag that oil-in-water emulsions useful in delivering cosmetic agents could be obtained using phase inversions induced by either temperature change or pH change in the presence of emulsifiers whose lipophilicity is pH-dependent (FF 15, 16). Being a person of ordinary creativity and common sense, *see KSR*, 127 S. Ct. at 1742-43, one of ordinary skill would have reasonably inferred from Gers-Barlag that temperature change and pH change were equivalently useful methods of preparing oil-in-water emulsions, and would therefore have been prompted by the disclosed equivalence of the two methods to prepare the oil-in-water emulsions of Ascione using the pH change-induced phase inversion methods disclosed by Gers-Barlag.

Appellants argue that one of ordinary skill in the art would not have been motivated to combine the disclosures of the two references because the dihydroxyacetone in Ascione’s emulsions is a compound that has no

resemblance to the UV-filtering compounds of Gers-Barlag, and because Ascione's dihydroxyacetone is present in the aqueous phase of its emulsions, whereas the UV-filtering compounds of Gers-Barlag is present in the oil phase (App. Br. 13; *see also* Reply Br. 4).

We are not persuaded by this argument. As discussed above, we agree with the Examiner that one of ordinary skill viewing Gers-Barlag would have reasoned that changing pH and changing temperature were equivalent methods of inducing a phase inversion to make oil-in-water emulsions. As also discussed above, "[e]xpress suggestion to substitute one equivalent for another need not be present to render such substitution obvious." *In re Fout*, 675 F.2d at 301.

Moreover, Ascione clearly discloses that the water or oil phase of its emulsions can contain a number of ingredients, including "organic sunscreens which are active in UV-A and/or UV-B" (Ascione, col. 3, ll. 42-43 (FF 7)). Therefore, because both references are directed to preparing oil-in-water emulsions for topical use on the skin in the context of tanning skin, we do not agree that one of ordinary skill practicing Ascione's methods would have considered Gers-Barlag irrelevant.

Appellants argue that one of ordinary skill would not have been motivated to substitute Ascione's temperature change-induced phase inversion methods with the pH change methods of Gers-Barlag because Gers-Barlag focuses on inducing phase inversions by changing temperature, as evidenced by the fact that only one of Gers-Barlag's six examples uses pH change to effect an inversion, and that example yields an O/W/O emulsion, not the oil-in-water emulsions used by Ascione (App. Br. 14). Appellants further urge that, even if Gers-Barlag is considered to teach

equivalent creation of phase inversions using pH and temperature change, that teaching is limited to Gers-Barlag's very specific emulsion system that contains sparing oil-soluble UV-filtering compounds, an emulsion system very different from Ascione's (Reply Br. 5-6).

We are not persuaded by these arguments. It is well settled that, "in a section 103 inquiry, 'the fact that a specific [embodiment] is taught to be preferred is not controlling, since all disclosures of the prior art, including unpreferred embodiments, must be considered.'" *Merck & Co. Inc. v. Biocraft Laboratories Inc.*, 874 F.2d 804, 807 (Fed. Cir. 1989) (quoting *In re Lamberti*, 545 F.2d 747, 750 (CCPA 1976)). Thus, "[a]ll the disclosures in a reference must be evaluated, including nonpreferred embodiments, and a reference is not limited to the disclosure of specific working examples." *In re Mills*, 470 F.2d 649, 651 (CCPA 1972) (citations omitted).

In the instant case, Gers-Barlag clearly discloses that phase inversions useful in making oil-in-water emulsions can be induced by "varying at least one parameter chosen from the group consisting of pH, temperature and the concentration or concentrations of at least one of the emulsifiers chosen" (Gers-Barlag, col. 5, ll. 58-60 (FF 15)). Based on this disclosure, we agree with the Examiner that it was reasonable to consider pH and temperature change equivalent ways of obtaining a phase inversion.

Moreover, Gers-Barlag discloses that its compositions can contain a wide variety of different cosmetically acceptable ingredients (*see* FF 19, 20). Given the widely varying properties of the ingredients disclosed as being suitable in its emulsions, we do not agree with Appellants that one of ordinary skill would have considered Gers-Barlag's emulsion systems to be

so sensitive to changing ingredients as to be unsuitable for making oil-in-water emulsions that contain dihydroxyacetone.

Appellants argue that one of ordinary skill in the art would not have had a reasonable expectation of performing the claimed process because Ascione failed to disclose using a pH change to induce a phase inversion in a dihydroxyacetone-containing mixture, despite the reasonableness in assuming that the inventors of Ascione would have been aware of Gers-Barlag's disclosure that changing the pH was a suitable method of inducing phase inversions (App. Br. 14-15; *see also* Reply Br. 6-8). Appellants urge that the reason Ascione did not contemplate using pH change to induce phase inversion is because of Ascione's apparent concerns for the stability of dihydroxyacetone, as evidenced by the inclusion of dihydroxyacetone in the emulsions after inducing phase inversion, and by Alban's disclosure of the pH sensitivity of dihydroxyacetone (App. Br. 15-16; *see also* Reply Br. 8).

We are not persuaded by these arguments. Establishing non-obviousness from the failure of others to invent the claimed subject matter requires "evidence that, notwithstanding knowledge of the references, the art tried and failed to solve the problem." *In re Wright*, 569 F.2d 1124, 1127 (CCPA 1977); *see also, In re Kahn*, 441 F.3d 977, 990 (Fed. Cir. 2006) ("Absent a showing of . . . the failure of others, the mere passage of time without the claimed invention is not evidence of nonobviousness." (quoting *Iron Grip Barbell Co. v. USA Sports, Inc.*, 392 F.3d 1317, 1325 (Fed. Cir. 2004))).

While Appellants urge that it is reasonable to assume that the inventors of Ascione were aware of the Gers-Barlag disclosure, Appellants have not provided any evidence showing that the inventors of Ascione, or

anyone else, tried, and failed, to make a dihydroxyacetone-containing oil-in-water emulsion by changing the pH of a mixture containing dihydroxyacetone to induce a phase inversion. Argument by counsel cannot take the place of evidence. *In re Cole*, 326 F.2d 769, 773, (CCPA 1964); *In re Geisler*, 116 F.3d 1465, 1471 (Fed. Cir. 1997).

Moreover, we do not agree that the pH sensitivity of dihydroxyacetone would have discouraged one of ordinary skill in the art from using a pH change to induce a phase inversion to yield the emulsions of Ascione. The final pH of the emulsion in Gers-Barlag's Example 6, which uses pH change to create the phase inversion, is 7. While Alban discloses that dihydroxyacetone is pH sensitive (Alban, col. 4, ll. 1-10 (FF 25 *infra*)), Alban nonetheless states that its emulsions "preferably have a pH range from about 2.5 to about 7" (*id.* at col. 4, ll. 18-19 (FF 25 *infra*)). Thus, contrary to Appellants' argument, Gers-Barlag discloses using a pH that is suitable for maintaining dihydroxyacetone-containing emulsions.

In sum, we agree with the Examiner that one of ordinary skill in the art would have considered claim 30 *prima facie* obvious in view of Ascione and Gers-Barlag. Because Appellants have not provided argument or evidence sufficient to rebut the Examiner's *prima facie* case, we affirm the Examiner's rejection of claim 30. Because they were not argued separately, claims 31-56 fall with claim 30. 37 C.F.R. § 41.37(c)(1)(vii).

OBVIOUSNESS -- GERS-BARLAG AND ALBAN  
*ISSUE*

Claims 30-58 stand rejected under 35 U.S.C. § 103(a) as being obvious in view of Gers-Barlag and Alban (Ans. 9-12). The Examiner cites Gers-Barlag as disclosing oil-in-water emulsions that contain UV-filtering

compounds that are sparingly soluble in oil, the emulsions being prepared by inducing a phase inversion by changing the pH of a mixture containing emulsifiers whose lipophilicity is pH-dependent (*id.* at 9).

The Examiner concedes that “Gers-Barlag does not teach the instant water-soluble compound dihydroxyac[et]one (DHA) or a method of tanning the skin” (*id.* at 11). To meet those limitations the Examiner cites Alban as teaching that, although “a tan is highly desirable since [it] denotes youth and health . . . , consumers apply sun protection agents while foregoing a tan” because of the deleterious effects of UV radiation (*id.*). Thus, the Examiner finds, “Alban teaches it would be highly desirable to provide a dihydroxyacetone containing emulsion for delivering both an artificial tan and also for providing protection from ultraviolet radiation” (*id.*).

The Examiner states:

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Gers-Barlag and Alban and utilize DHA in the composition of Gers-Barlag. One would have been motivated to do so since Gers-Barlag teaches a sunscreen formulation and Alban teaches the advantage of providing a composition that provides both sun protection and tanning at the same time by using a sunscreen and DHA, wherein the consumer need not give up a tanned look or sun protection. Therefore, a skilled artisan would have been motivated to add DHA to Gers-Barlag's composition to simultaneously provide[] tanning and sun protecting benefits for the advantages taught by Alban, i.e. a multi-beneficial composition.

(*Id.* at 11-12.)

Appellants contend, for a number of reasons, that the Examiner has failed to establish a *prima facie* case of obviousness based on Gers-Barlag and Alban (*see* App. Br. 18-23). Appellants do not present separate

argument with respect to any of the claims subject to this ground of rejection. We select claim 30 as the representative claim. *See* 37 C.F.R. § 41.37(c)(1)(vii).

The issue with respect to the obviousness rejection, then, is whether the Examiner has established a *prima facie* case of obviousness of claim 30 based on Gers-Barlag and Alban.

*FINDINGS OF FACT*

21. Gers-Barlag does not disclose dihydroxyacetone in its emulsions.

22. Alban discloses that, in view of the desirability of a sun-tanned appearance, and the importance of protecting against UV-induced skin damage, “it would be highly desirable to provide a dihydroxyacetone containing emulsion for delivering both an artificial tan and also for providing protection from ultraviolet radiation (Alban, col. 2, ll. 40-42).

23. (Reiterating FF 8 for convenience.) In Example IV, Alban discloses an oil-in-water emulsion described as a “High SPF Artificial Tanning Lotion With Glycerin” (Alban, col. 13, l. 7). Alban discloses that “[t]his emulsion has improved stability and is useful for topical application to the skin to provide an artificial tan and to provide protection of the skin from the harmful effects of ultraviolet radiation” (*id.* at col. 13, ll. 43-46).

24. (Reiterating FF 9 for convenience.) The oil-in-water emulsion disclosed in Alban’s Example IV contains dihydroxyacetone, cetareth-12, and cetareth-20, and sunscreen (Alban, col. 13, ll. 27-35).

25. Alban discloses:

An essential component of the water phase of the compositions of the present invention is an alkyl hydroxyalkylcellulose or derivative thereof. These materials are nonionic, water-soluble cellulose-based materials containing both a hydrophobic alkyl

group and a shorter chain, hydrophilic hydroxylalkyl group. Without being limited by theory, it is believed that the hydrophobic alkyl chain provides a viscosity and rheological effect through intramolecular and intermolecular associations. Also, it is believed that the hydrophobic alkyl group can interact with other components of the formulation.

(Alban, col. 4, l. 62, through col. 5, l. 5.) Alban discloses that “[t]he alkyl hydroxyalkylcellulose . . . is present from about 0.1% to about 5%, more preferably from about 0.1% to about 1%, and most preferably from about 0.4% to about 0.6%” (*id.* at col. 5, ll. 24-27).

26. Alban discloses:

The pH of a formulation is an important factor in determining the stability of the dihydroxyacetone. For example, it is well known that dihydroxyacetone rapidly degrades at extremes of alkaline pH. Suppliers of dihydroxyacetone suggest a preferred formulation pH range of between 4 and 6, and recommend the use of a buffer system to stabilize the pH value at about 5. . . . However, the compositions of the instant invention preferably do not contain a buffer, because it has been determined that unbuffered formulations demonstrate improved chemical and physical stability compared to buffered formulations. The compositions of the instant invention preferably have a pH range from about 2.5 to about 7, more preferably from about 2.5 to about 6, even more preferably from about 3.5 to about 5, and most preferably from about 4 to about 4.75.

(Alban, col. 4, ll. 3-21 (citation omitted).)

27. Alban discloses that, in its dihydroxyacetone-containing emulsions, “[a] very highly preferred optional component . . . is a sunscreensing agent” (Alban, col. 6, ll. 44-45). Alban discloses that 2-phenyl-benzimidazole-5-sulfonic acid is one of a number of sunscreensing agents suitable in its emulsions (*id.* at col. 7, ll. 3-4).

*ANALYSIS*

We do not agree with Appellants that the Examiner has failed to establish a prima facie case of obviousness of claim 30 based on Gers-Barlag and Alban. One of ordinary skill in the art using Gers-Barlag's pH change-induced phase inversions to prepare oil-in-water emulsions that contain UV-filtering compounds (FF 15, 16) would have been advised by Alban of the desirability of including dihydroxyacetone in such compositions in order to impart self-tanning properties to the emulsion (*see* FF 22-24). Being a person of ordinary creativity and common sense, *see KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1742-43 (2007), one of ordinary skill would have reasonably inferred that including Alban's dihydroxyacetone in the mixture to be phase-inverted would confer self-tanning properties to the final emulsion. We therefore agree with the Examiner that a person of ordinary skill in the art would have been prompted to include dihydroxyacetone in the pH-induced phase-inverted mixture of Gers-Barlag, in order to obtain a composition having the desirable combination of sunscreens and self-tanning properties.

Appellants argue that one of ordinary skill in the art would not have been motivated to combine the disclosures of the two references because Alban's emulsions are prepared conventionally, with no mention of using phase inversion, and because the dihydroxyacetone in Alban's emulsions, which is present in the aqueous phase of its emulsions, has no resemblance to the UV-filtering compounds of Gers-Barlag, which are present in the oil phase (App. Br. 18-19; *see also* Reply Br. 9). Appellants further argue that the emulsion systems used in the references are sufficiently different to have dissuaded their combination because, unlike the emulsions of Gers-Barlag,

Alban teaches that an alkyl hydroxyalkylcellulose, or derivative, is an essential component of its emulsions (App. Br. 19; *see also* Reply Br. 9). Appellants further urge that one of ordinary skill in the art would not have had a reasonable expectation of success in combining the references' teachings, in view of Alban's disclosure of the criticality of an alkyl hydroxyalkylcellulose in its emulsion (App. Br. 22-23; Reply Br. 11-12).

We are not persuaded by these arguments. As discussed above, Gers-Barlag discloses that its compositions can contain a wide variety of different cosmetically acceptable ingredients (*see* FF 19, 20). As also discussed above, given the widely varying properties of the ingredients disclosed as being suitable in its emulsions, we do not agree with Appellants that one of ordinary skill would have considered Gers-Barlag's emulsion systems to be so sensitive to additional ingredients as to be unsuitable for making oil-in-water emulsions that contain dihydroxyacetone. We therefore agree with the Examiner that one of ordinary skill in the art would have been prompted to include dihydroxyacetone in the mixtures of Gers-Barlag, with a reasonable expectation that so doing would yield an oil-in-water emulsion having both self-tanning and UV-protecting properties.

Moreover, Alban discloses that sunscreens suitable for combination with dihydroxyacetone include 2-phenyl-2-benzimidazole-5-sulfonic acid (FF 27), one of the two preferred sunscreen agents in Gers-Barlag's emulsions (FF 14). Given Alban's disclosure of the desirability of combining dihydroxyacetone and 2-phenyl-2-benzimidazole-5-sulfonic acid, we agree with the Examiner that one of ordinary skill in the art practicing Gers-Barlag's methods would have been prompted to include

dihydroxyacetone in the 2-phenyl-2-benzimidazole-5-sulfonic acid-containing emulsions of Gers-Barlag.

Appellants argue that one of ordinary skill would not have been motivated to use the pH change method of Gers-Barlag to induce the phase inversion because Gers-Barlag focuses on inducing phase inversions by changing temperature, as evidenced by the fact that only one of Gers-Barlag's six examples uses pH change to effect an inversion, and that example yields an O/W/O emulsion, not the oil-in-water emulsions used by Ascione (App. Br. 20). Appellants further argue that the pH sensitivity of dihydroxyacetone would have dissuaded one of ordinary skill in the art from using pH change to induce the phase inversion, particularly given Ascione's use of only temperature change to induce phase inversion in dihydroxyacetone-containing mixtures (*id.* at 21-22), and given the risk of localized pH extremes during addition of (Reply Br. 11).

We are not persuaded by these arguments. As Appellants point out, the final pH of the emulsion in Gers-Barlag's Example 6, which uses pH change to create the phase inversion, is 7. While Alban discloses that dihydroxyacetone is pH sensitive (FF 25), Alban nonetheless states that its emulsions "preferably have a pH range from about 2.5 to about 7" (Alban, col. 4, ll. 18-19 (FF 25)). Thus, as pointed out above, Gers-Barlag discloses using a pH that is suitable for maintaining dihydroxyacetone-containing emulsions. We therefore do not agree that the pH sensitivity of dihydroxyacetone would have discouraged one of ordinary skill in the art from including it in a mixture with a UV-filtering compound and an emulsifier whose lipophilicity is pH-dependent, and effecting a pH change to induce a phase inversion to yield an oil-in-water emulsion.

In sum, we agree with the Examiner that one of ordinary skill in the art would have considered claim 30 prima facie obvious in view of Gers-Barlag and Alban. Because Appellants have not provided argument or evidence sufficient to rebut the Examiner's prima facie case, we affirm the Examiner's rejection of claim 30. Because they were not argued separately, claims 31-58 fall with claim 30. 37 C.F.R. § 41.37(c)(1)(vii).

#### SUMMARY

We affirm the Examiner's rejection of claims 57 and 58 under 35 U.S.C. § 102(b) as anticipated by Ascione.

We affirm the Examiner's rejection of claims 57 and 58 under 35 U.S.C. § 102(b) as anticipated by Alban.

We affirm the Examiner's rejection of claims 30-56 under 35 U.S.C. § 103(a) as being obvious in view of Ascione and Gers-Barlag.

We affirm the Examiner's rejection of claims 30-58 under 35 U.S.C. § 103(a) as being obvious in view of Gers-Barlag and Alban.

#### AFFIRMED

cdc

GREENBLUM & BERNSTEIN, P.L.C.  
1950 ROLAND CLARKE PLACE  
RESTON VA 20191