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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte JAMES J. REAP

Appeal 2015-004110
Application 12/525,878
Technology Center 1600

Before JEFFREY N. FREDMAN, RICHARD J. SMITH, and
DAVID COTTA, *Administrative Patent Judges*.

FREDMAN, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal¹ under 35 U.S.C. § 134 involving a single liquid-phase herbicide composition. The Examiner rejected the claims as obvious. We have jurisdiction under 35 U.S.C. § 6(b). We affirm.

Statement of the Case

Background

“Sulfonylurea herbicides like other agricultural chemicals can be formulated as concentrates in a variety of different forms . . . [but] [c]ompared to solid formulations, liquid formulations of sulfonylureas are more prone to certain problems” (Spec. 1:13–20). “New stabilized liquid formulations of sulfonylurea herbicides providing consistently good

¹ Appellant identifies the Real Party in Interest as the E. I. du Pont de Nemours and Company (*see* Br. 2).

herbicidal activity when diluted with water and sprayed on undesired vegetation have now been discovered” (Spec. 1:25–27).

The Claims

Claims 1–17 are on appeal. Claim 1 is representative and reads as follows:

1. A single liquid-phase herbicide composition comprising by weight
 - (a) from 0.1 to 30% of one or more sulfonylurea herbicides;
 - (b) from 0 to 40% of one or more biologically active agents other than sulfonylurea herbicides;
 - (c) from 0 to 30% of one or more herbicide safeners;
 - (d) from 10 to 99.9% of one or more polyalkoxylated triglycerides wherein no more than 50% by weight of the fatty acid-derived moieties in the polyalkoxylated triglycerides are derived from hydroxy fatty acids;
 - (e) from 0 to 89.9% of one or more fatty acid esters of C₁–C₄ alkanols; and
 - (f) from 0 to 70% of one or more additional formulating ingredients.

The Issues

- A. The Examiner rejected claims 1–9, 12–14, 16, and 17 under 35 U.S.C. § 103(a) as obvious over Sixl² and Kober³ (Final Act. 3–7).
- B. The Examiner rejected claims 10, 11, and 15 under 35 U.S.C. § 103(a) as obvious over Sixl, Kober, and Meyer⁴ (Final Act. 7–9).

² Sixl, F., US 6,479,432 B1, issued Nov. 12, 2002 (“Sixl”).

³ Kober et al., GB 2 309 904 A, published Aug. 13, 1997 (“Kober”).

⁴ Meyer, W., US 5,163,996, issued Nov. 17, 1992 (“Meyer”).

A. 35 U.S.C. § 103(a) over Sixl and Kober

The Examiner finds that Sixl teaches a formulation comprising elements (a), (b), (c), (e), and (f), but “Sixl does not teach the polyalkoxylated triglyceride” required by element (d) (Final Act 4–5).

The Examiner finds that Kober teaches “a formulation-auxiliaries mixture, which when used with crop protection compositions can lower the application rate of the crop protection and/or widens the spectrum of action of the crop protection active compounds” (Final Act. 5). The Examiner finds that Kober teaches

a dicarboxylic acid ester of the formula (I); and **(ii)** a product (II) obtainable by the reaction of an oil based on a triglyceride of carboxylic acids having 2 to 30 carbon atoms and ethylene oxide and/or propylene oxide in the presence of a base, wherein the suitable oils can be vegetable oils, i.e. soybean oil, rapeseed oil, or mixtures thereof.

(Id).

The Examiner finds inclusion of Kober’s reaction product into Sixl’s composition obvious because “it can lower the application rate of the composition and widens the herbicidal spectrum of action of said crop protection active compounds” (Final Act. 7).

The issue with respect to this rejection is: Does the evidence of record support the Examiner’s conclusion that Sixl and Kober render claims and 14 obvious?

Findings of Fact

1. Sixl teaches “suspensions which comprise at least one solid, specifically from the group of the herbicidal sulfonylureas, dispersed in the

organic phase, and surfactants, and other active compounds dissolved in the organic phase” (Sixl 1:6–10).

2. Sixl teaches herbicides including nicosulfuron and rimsulfuron (Sixl 5:10–13) in amounts “from 0.1 to 20% by weight” (Sixl 6:33).

3. Sixl teaches “formulations according to the invention preferably comprise safeners in amounts of from 0.1 to 40% by weight” (Sixl 10:32–33).

4. Sixl teaches solvents including “rapeseed oil fatty acid (C₁-C₆)-alkyl esters, preferably rapeseed oil fatty acid methyl ester (=‘rapeseed oil methyl ester’) and rapeseed oil fatty acid ethyl ester (=‘rapeseed oil ethyl ester’)” (Sixl 12:45–48).

5. Sixl teaches the “solvent content is, for example, in the range . . . from 40 to 80% by weight, based on the weight of the formulation” (Sixl 12:51–54).

6. Sixl teaches “[s]uitable emulsifiers . . . in combination with one another, in particular surfactants” (Sixl 12:55–58) including “surfactants from the group of the ethoxylated sorbitan esters” (Sixl 13:35–36).

7. Sixl teaches “[s]uitable thickeners from the class of the mineral thickeners are pure silica . . . magnesium phyllosilicates, such as bentonites or hectorites” (Sixl 14:51–56).

8. The Specification teaches “[i]n one method, glycerol fatty acid esters (e.g., vegetable oils) are polyethoxylated in a process typically involving heating with a catalytic amount of an alkali metal hydroxide or alkoxide, optionally a catalytic amount of an alcohol (e.g., glycerol), and an amount of ethylene oxide depending upon the extent of ethoxylation desired” (Spec. 27:33–36).

9. The Specification teaches that “[a]n ethoxylation process minimizing residual unmodified triglycerides involves heating glycerol fatty acid esters (i.e. triglycerides) with ethylene oxide in the presence of a calcined or hydrophobicized (e.g., fatty-acid-modified) hydrotalcite heterogeneous catalyst as described in U.S. Patent 5,292,910” (Spec. 28:22–26).

10. The Specification teaches “[e]thoxylation using a calcined or hydrophobicized hydrotalcite heterogeneous catalyst also minimizes formation of alkoxyated (e.g., ethoxylated) fatty acid impurities” (Spec 28:28–30).

11. Kober teaches “formulation auxiliaries for crop protection compositions, to crop protection compositions which are conditioned in two parts and contain such auxiliaries, to the use of the auxiliaries for their production” (Kober 1:3–7).

12. Kober teaches the “mixture component II is obtainable by the reaction of an oil/fat based on a triglyceride of carboxylic acids having 2 to 30 carbon atoms and ethylene oxide and/or propylene oxide in the presence of a base. Fatty acid alkoxyates are primarily formed” (Kober 4:5–9).

13. Kober teaches: “Per mol of the triglyceride on which the oil is based, from 1 to 100 . . . and in particular from 15 to 30, mol of ethylene oxide and/or propylene oxide are employed” (Kober 4:15–35).

14. Kober teaches:

Suitable bases are especially inorganic bases such as the alkali metal or alkaline earth metal hydroxides, e.g. sodium hydroxide, potassium hydroxide or calcium hydroxide. Instead of the direct use of hydroxides, it is possible to use carbonates

or hydrotalcites, which, if appropriate, were hydrophobized with aliphatic or aromatic carboxylic acids.

(Kober 4:36–42).

15. Kober teaches “[p]er mol of triglyceride, from 0.1 to 5, and in particular from 0.1 to 2, % by weight of base, based on the weight of the triglyceride, are generally added to the reaction mixture” (Kober 5:6–8).

16. Kober teaches the “reaction is generally carried out at elevated pressure . . . and especially from 100 to 150°C” (Kober 5:11–13).

17. Kober teaches:

Preferably, the present invention uses naturally occurring oils and fats which contain triglycerides as the main constituent. They can be crude, denatured or refined. Suitable natural oils and fats are: vegetable oils such as olive oil, safflower oil, soybean oil, groundnut oil, cotton oil, corn oil, rape oil, castor oil, sunflower oil, coffee oil, linseed oil, coconut fat and mixtures thereof.

(Kober 4:15–23).

18. Kober teaches the “present invention seeks to provide formulation auxiliaries by means of which the application rates of crop protection compositions comprising crop protection active compounds and formulation auxiliaries can be lowered and/or the spectrum of action of the crop protection active compounds can be widened” (Kober 2:1–6).

19. Kober teaches the “mixture according to the invention also increases the rate and intensity with which the herbicidal crop protection active compounds are absorbed. Furthermore, the resistance to rain, i.e. the danger of the herbicidal crop protection active compound being washed off by rain shortly after treatment, is improved” (Kober 15:26–30).

Principles of Law

“The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007). “If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability.” *Id.* at 417.

Analysis

We adopt the Examiner’s findings of fact and reasoning regarding the scope and content of the prior art (Final Act. 3–7; FF 1–19) and agree that the claims are obvious over Sixl and Kober. We address Appellant’s arguments below.

Claim 1

Appellant contends “that the only component II species identified with enough particularity to be fairly classifiable as having been suggested by Kober in such manner that it would have come to the attention of the artisan is a fatty acid alkoxyate” (Br. 13). Appellant contends that

Kober very specifically states that, as the product of its alkoxylation reaction, “[f]atty acid alkoxyates are primarily formed.” This is not inconsistent with the literature, as represented by Behler, in the sense that this type of reaction can give a variety of products, but a fatty acid alkoxyate, as a distinct reaction product, is entirely different from, and should not be mistaken for, a polyalkoxylated triglyceride.

(Br. 14). Appellant contends that “[e]ven with respect to the few alkoxyated triglycerides that might be produced as an incidental result of the Kober reaction, Kober further fails to teach or provide direction to ensure

that they would be the low hydroxy type of triglycerides required by Appellant's claims" (Br. 15).

The Examiner responds that:

Kober teaches several embodiments for forming the reaction product (II) obtained from the reaction of a **triglyceride of carboxylic acids** having 2 to 30 carbon atoms and **ethylene oxide and/or propylene oxide**. For instance, in one embodiment, Kober suggested the suitable base can be inorganic hydroxides. Alternatively, Kober suggested that carbonates or hydrotalcites which [are] hydrophobized with aliphatic or aromatic carboxylic acids, alcohols having 4 to 22 carbon atoms or the ethoxylates of alcohols of this type [can] also [be] the suitable bases for making the reaction product (II)

(Ans. 11–12).

We find the Examiner has the better position. Kober teaches a process for obtaining the mixture component II substantially identical to the process used in Appellant's Specification (FF 8–16). In particular, the Specification teaches "heating glycerol fatty acid esters (i.e. triglycerides with ethylene oxide in the presence of a . . . hydrophobic (e.g. fatty-acid-modified) hydrotalcite heterogeneous catalyst" (FF 9). Kober teaches that the mixture component II may be formed from a reaction of triglycerides and ethylene oxide (FF 12) where "instead of the direct use of hydroxides, it is possible to use . . . hydrotalcites, which, if appropriate, were hydrophobized" (FF 14).

Thus, Kober suggests an alternative embodiment that uses hydrophobized hydrotalcite as the base (FF 14), and Kober teaches the use of elevated temperatures as well (FF 16). As taught by Appellant's Specification, we find that using a hydrotalcite base in the synthesis will

“minimize[] formation of alkoxyated (e.g., ethoxylated) fatty acid impurities” (FF 10; *see* Ans. 13). Therefore, even if one embodiment of Kober’s process for obtaining mixture component II primarily forms a mixture of fatty acid alkoxyates that are not necessarily within the scope of claim 1 (FF 12), Kober also teaches another embodiment using a hydrophobicized hydrotalcite catalyst (FF 14) that the Specification demonstrates will form polyalkoxyated triglycerides within the scope of claim 1 (FF 10).

We recognize, but find unpersuasive, Appellant’s contention that “Example 1 fails to provide useful guidance to the artisan desiring to make Appellant’s composition [because] Kober used only 1 mole of ethylene oxide to react with 1 mole of castor oil. A 1/1 molar ratio of those reactants does not suggest to the artisan that polyalkoxylation will be obtained from use of a Kober reaction” (Br. 16). We also recognize, but find unpersuasive, Appellant’s argument that “fatty acid alkoxyate is entirely different from a polyalkoxyated triglyceride as required for present component (d), and is not even remotely suggestive of a PLHF A triglyceride, which Kober Example 1 actually teaches away from in view of its reliance on castor oil” (*Id.*).

These arguments are limited to Example 1 and fail to address the broader teaching of Kober to use other vegetable oils containing triglycerides (FF 17) as well as Kober’s teaching that a molar ratio of 15 to 30 mol ethylene oxide per mol of triglyceride is most preferred (FF 13). The arguments also fail to recognize Kober’s direct suggestion to use hydrophobicized hydrotalcite catalysts (FF 14) that the Specification teaches will form polyalkoxyated triglycerides within the scope of claim 1 (FF 10).

Disclosed examples, such as example 1 of Kober, and even preferred embodiments do not constitute a teaching away from a broader disclosure or non-preferred embodiments. *In re Susi*, 440 F.2d 442, 446 n.3 (CCPA 1971).

Here, nothing in Kober discourages or discredits a mixture component II formed using triglyceride sources other than castor oil, ethylene oxide ratios 15 to 30 mol per mol of triglyceride, and hydrophobicized hydrotalcite catalysts as expressly taught by Kober (FF 13, 14, 17).

Appellant contends the “artisan would likewise have no motivation to, and would be discouraged from, selecting a Kober component II for inclusion into a Sixl composition because Kober maintains the component II in its auxiliary mixture as a separate component until the time of application of the active to weeds” (Br. 16; *cf.* Br. 18 “Correspondingly, the Examiner has cited no apparent reason why the artisan would include the Kober component II in a Sixl composition when Sixl has clearly chosen its components in view of a need to achieve active stability”).

We find these arguments unpersuasive because Sixl teaches inclusion of auxiliary components including surfactants into the herbicide composition (FF 4–7) and Kober teaches that inclusion of the formulation auxiliaries comprising mixture component II allows lower application rates, provides a wider spectrum of action (FF 18), “increases the rate and intensity with which the herbicidal crop protection active compounds are absorbed,” and provides rain resistance (FF 19). These are specific benefits taught by Kober that would provide reason to the ordinary artisan to include mixture component II into the herbicidal composition of Sixl.

With regard to the argument that the components should be kept separate, while Kober prefers that “delivery of the mixture and of the herbicidal crop protection active compound to the consumer preferably takes place in separate packages” (Kober 12:41–43), Kober clearly recognizes a nonpreferred delivery of a “‘built-in’ product” combining both components (Kober 12:44). *See In re Susi*, 440 F.2d at 446 n.3. Moreover, as the Examiner points out “Kober also provides the guidance that the crop protection composition can be processed first mixing the above components (I) and (II) with other components” (Ans. 15; “the parts of the combipack are first mixed and the herbicidal composition thus obtained is then diluted with water to the desired concentration” (Kober 13:26–28)). Claim 1, drawn to a composition, does not require any duration for product storage. Consequently, the mixture prior to dilution with water would itself satisfy the requirements of claim 1.

Appellant contends:

It is thus sheer speculation for the Examiner to propose that the artisan would be attracted to a PLHF A triglyceride for inclusion in a Sixl composition since Kober encourages the artisan to focus only on fatty acid alkoxylates and avoids having to deal with any impact that storage might have on active stability by keeping its auxiliary mixture separate from the active until the spray liquor is formed.

(Br. 17–18).

We find this argument unpersuasive because claim 1 includes no stability or storage requirements. *See In re Self*, 671 F.2d 1344, 1348 (CCPA 1982) (“[A]ppellant’s arguments fail from the outset because . . . they are not based on limitations appearing in the claims.”). Therefore, even

if the mixture of Sixl and Kober were combined immediately prior to dilution for use, that obvious mixture reasonably renders claim 1 obvious.

Claim 14

Appellant contends “[c]laim 14 requires that the composition contain no more than 5% of unmodified triglycerides and no more than 5% of alkoxyated fatty acids by weight” and that “minimizing the amount of unmodified triglycerides and the amount of alkoxyated fatty acids allows maximizing the content of other liquid phase components that confer other beneficial effects and properties on the composition” (Br. 18, 20). “In addition, Appellant refers to processes that are capable of providing a PLHF A triglyceride characterized by a content of unmodified triglycerides and alkoxyated fatty acids as described in Claim 14” (Br. 20; with footnote 71 citing the Spec. at page 28, lines 22–36).

We find this argument unpersuasive for the reasons already given above. In particular, the portion of the Specification identified as teaching a process of synthesizing polyalkoxyated triglycerides with the properties required by claim 14 utilizes the same hydrophobicized hydrotalcite catalysts of Kober (FF 14) as well as other reagents taught by Kober (FF 9, 13, 15–17). Thus, as the Examiner notes “if the prior art teaches the identical chemical structure (the reaction product II taught [b]y Kober ’904), the properties applicant discloses and/or claims are necessarily present” (Ans. 16; citing *In re Spada*, 911 F.2d 705, 708 (Fed. Cir. 1990) (“when the PTO shows sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not”)).

Conclusion of Law

The evidence of record supports the Examiner's conclusion that Sixl and Kober render claims and 14 obvious.

B. 35 U.S.C. § 103(a) over Sixl, Kober, and Meyer

Appellant contends "Meyer provides no disclosure relating specifically to the usefulness of lignosulfonates in non-aqueous or low-water liquid suspension concentrate compositions such as taught by Sixl" (Br. 22). Appellant contends that "both suspension concentrate compositions of Meyer are incompatible with the teaching of Sixl. Meyer is therefore not reasonably combined with Sixl alone, or in further combination with Kober, to remedy the deficiency of disclosure of the Sixl liquid composition in regards to lignosulfonate" (Br. 23).

We do not find this argument persuasive because Meyer teaches "suitable surface-active compounds are non-ionic, cationic and/or anionic surfactants having good emulsifying, dispersing and wetting properties" (Meyer 9:48–51) including lignosulfonic acid salts (*see* Meyer 9:67 to 10:4). Meyer's teaching to use surfactants, in combination with Sixl's teaching to use "surfactants which are soluble in the solvent in question" (Sixl 12:56–57) and Kober's teaching that "mixtures according to the invention can moreover additionally contain further customary additives such as surfactants" (Kober 10:14–15) reasonably supports the Examiner's position that "the secondary reference Meyer is relied upon to that the use of conventional adjuvants, i.e. metal lignosulfonate salts (e.g. sodium and calcium lignosulfonates) in a sulfonylurea composition is desirable" (Ans. 17).

Appellants provide no evidence that the surfactants of Meyer would not function as in the suspensions of Sixl, instead relying solely upon

attorney argument, while Meyer teaches that the composition may be incorporated into emulsifiable concentrates and directly sprayable or dilutable solutions (Meyer 9:5–6). However, “attorney argument [is] not the kind of factual evidence that is required to rebut a prima facie case of obviousness.” *In re Geisler*, 116 F.3d 1465, 1470 (Fed. Cir. 1997).

SUMMARY

In summary, we affirm the rejection of claims 1 and 14 under 35 U.S.C. § 103(a) as obvious over Sixl and Kober. Claims 2–9, 12, 13, 16 and 17 fall with claims 1 and 14.

We affirm the rejection of claims 10, 11, and 15 under 35 U.S.C. § 103(a) as obvious over Sixl, Kober, and Meyer.

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

AFFIRMED