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BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte SERGIO VITOMIR[1]

Appeal 2018-006920
Application 14/422,665
Technology Center 1700

Before BRADLEY R. GARRIS, ROMULO H. DELMENDO, and CHRISTOPHER C. KENNEDY, *Administrative Patent Judges*.

KENNEDY, *Administrative Patent Judge*.

DECISION ON APPEAL

This case is an appeal under 35 U.S.C. § 134(a) from the Examiner's decision rejecting claims 1, 3–8, and 15–20. We have jurisdiction under 35 U.S.C. § 6(b). We AFFIRM-IN-PART.

BACKGROUND

The subject matter on appeal relates to methods of treating concrete. *E.g.*, Spec. ¶ 2; Claim 1. Claim 1 is reproduced below from page 19 (Claims Appendix) of the Appeal Brief:

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[1] The Appellant is the Applicant, Protocol Environmental Solutions Inc., which is also identified as the real party in interest. *See* App. Br. 2.

1. A method of treating concrete to remove water insoluble calcium sulfate salts from the concrete, comprising:

contacting a surface of the concrete with a composition, wherein the concrete includes the water insoluble calcium sulfate salts;

wherein the composition comprises an alkali hydroxide base and at least one of gluconic acid and a salt of gluconic acid at a weight ratio of the least one of gluconic acid and a salt of gluconic acid to the alkali hydroxide base of at least 5:1;

wherein the step of contacting is performed for a time sufficient to (a) convert the water insoluble calcium sulfate salts into water soluble calcium gluconate to a depth of at least 3 mm, and (b) neutralize residual acidity in the concrete to a depth of at least 3 mm; and

wherein (a) the at least one of gluconic acid and the salt of gluconic acid and (b) the alkali hydroxide base are present in a total amount of at least 30 wt% of the composition.

REJECTIONS ON APPEAL

The claims stand rejected under 35 U.S.C. § 103(a) as follows:

1. Claims 1, 3, 4, 6, 7, 15, and 17–20 over Kinnaird (US 2006/0040843 A1, published Feb. 23, 2006) and Pardal (US 9,028,610 B2, issued May 12, 2015 and claiming priority to an application dated Aug. 2, 2011);

2. Claim 5 over Kinnaird, Pardal, and Wilson (US 2005/0202989 A1, published Sept. 15, 2005);

3. Claims 8 and 16 as unpatentable over Kinnaird, Pardal, and Hoopes (US 5,422,141, issued June 6, 1995);

4. Claims 1, 3–7, 15, and 17–20 over Wilson, Kinnaird, and Pardal;

5. Claims 8 and 16 over Wilson, Kinnaird, Pardal, and Hoopes.

ANALYSIS

After review of the cited evidence in the appeal record and the opposing positions of the Appellant and the Examiner, we determine that the Appellant has not identified reversible error in Rejections 1 and 3. Accordingly, we affirm those rejections for reasons set forth below, in the Non-Final Action dated Sept. 22, 2017 ("Office Act."), and in the Examiner's Answer. *See generally* Office Act. 2–11; Ans. 3–13. However, for reasons set forth below, we reverse as to Rejections 2, 4, and 5.

Rejection 1

The Appellant argues the claims as a group. We select claim 1 as representative, and the remaining claims subject to Rejection 1 will stand or fall with claim 1. *See* 37 C.F.R. § 41.37(c)(1)(iv).

The Examiner finds that Kinnaird teaches a method of cleaning concrete that involves contacting the concrete with a composition comprising an alkaline salt such as lithium hydroxide and a chelating agent such as gluconic acid, and then "waiting for an efficacious amount of time then rinsing the concrete, such as 4 hours." Ans. 3 (internal citations omitted). The Examiner finds that the alkaline salt may be present at preferably about 1–10 wt% and that the chelating agent may be present at about 0.1–30 wt%. *Id.* The Examiner finds that "the above concentration ranges overlap the [claimed] ranges of gluconic acid:alkali hydroxide base>5:1 . . . and the total concentration of gluconic acid + alkali hydroxide base at least 30 wt%." *Id.*

The Examiner finds that "Kinnaird fails to teach that the concrete road structure may comprise calcium sulfate." *Id.* The Examiner finds that "Pardal teaches that most known concrete comprises Portland cement, which

comprises Portland clinker and calcium sulfate." *Id.* The Examiner finds that Pardal teaches that the calcium sulfate in the cement accelerates hardening. *Id.*

The Examiner determines:

> [I]t would have been obvious to one of ordinary skill in the art at the time the invention was made, in routine experimentations, to use the concrete comprising the hydraulic binder taught by Pardal in the road or bridge concrete structures in the invention of Kinnaird because Pardal teaches that this would advantageously accelerate hardening.

Id. at 4.

As to the claim limitations concerning contact time sufficient for achieving certain results, in the Office Action, the Examiner finds that "since Kinnaird teaches to wait for an efficacious amount of time, the time is a result-effective variable, and it is obvious for one of skill in the art to wait for a time that is sufficient for such result to be accomplished during routine experimentations." Office Act. 4–5. In the Answer, the Examiner further explains that the Appellant's Specification teaches a four hour contact time, and that, "[i]n this case, the cleaning composition taught by Kinnaird is the same as Appellant's, the concrete taught by Kinnaird modified by Pardal is the same as Appellant's, and the soaking time, i.e. 4 hours, is within the range taught by Appellant's; therefore, the cleaning method taught by Kinnaird modified by Pardal must produce the results recited by Claim 1 above in routine experimentations, whether intentionally or unintentionally." Ans. 11.

In view of those findings, the Examiner concludes that the subject matter of claim 1 would have been obvious to a person of ordinary skill in the art. *Id.* at 3–4.

The Appellant argues that Kinnaird's disclosures concerning lithium hydroxide and gluconic acid are too broad and that, because Kinnaird does not recognize the same problem addressed by the Appellant ("sulfuric acid attacks and deposits of calcium sulfate," App. Br. 8–9), Kinnaird would not have led to the claimed gluconic acid:alkali hydroxide ratio of 5:1. App. Br. 8–15. The Appellant also argues that Kinnaird fails to disclose the contact time limitation, that Kinnaird's working examples have more alkali hydroxide than gluconic acid and therefore teach away from the claimed invention, that the Examiner fails to resolve the level of ordinary skill in the art, and that the Examiner fails to establish both a reason to combine the references and a reasonable expectation of success. *Id.*

Those arguments are not persuasive of reversible error. Kinnaird discloses concrete-cleaning compositions that comprise alkaline salts and chelating agents. *See* Kinnaird ¶¶ 42, 65–66. Kinnaird teaches that preferred alkaline salts are lithium hydroxide, lithium oxide, and lithium carbonate. *Id.* ¶ 42. Kinnaird teaches that the preferred range of such salts in the cleaning composition is "about 1 to about 10 percent of the total formulation." *Id.* Thus, Kinnaird teaches only three preferred salts and a preferred amount of 1–10 wt%.

As to chelating agents, Kinnaird provides a list of approximately twenty examples, one of which is gluconic acid. *Id.* ¶ 66. Kinnaird teaches that the chelating agent is typically present "in an amount from about 0.1 percent by weight to about 30 percent by weight." *Id.* ¶ 65.

Kinnaird teaches "applying an efficacious amount of said cleaning composition to the dirty concrete surface . . . and after waiting an efficacious amount of time," rinsing and/or vacuuming the surface. *Id.* ¶ 69. In one

example, Kinnaird discloses four hours of contact time before rinsing. *Id.* ¶ 76.

In view of those disclosures, Kinnaird teaches or suggests that the ratio of chelating agent to alkaline salt can be as high as 30:1 (i.e., 30 wt% chelating agent and 1 wt% alkaline salt), which is well with the scope of the "at least 5:1" ratio recited by claim 1. *See* App. Br. 10 (agreeing that "some combinations of concentration in those concentration ranges of alkali hydroxide base and chelating reagent may be at least 5:1"). Thus, Kinnaird teaches or suggests concentrations and ratios that fall within the scope of claim 1. "[E]ven a slight overlap in range establishes a *prima facie* case of obviousness." *In re Peterson*, 315 F.3d 1325, 1329 (Fed. Cir. 2003).

Although we recognize that, in disclosing preferred amounts of chelating agents and alkaline salts, Kinnaird teaches or suggests the suitability of a wide range of chelating agent to alkaline salt ratios, some of which do not fall within the scope of claim 1, "[t]hat the [prior art] discloses a multitude of effective combinations does not render any particular formulation less obvious." *Merck & Co. v. Biocraft Labs., Inc.*, 874 F.2d 804, 807 (Fed. Cir. 1989). Even assuming that Kinnaird's cleaning compositions are not designed to address precisely the same problem of concrete cleaning that the Appellant asserts that it identified, Kinnaird's disclosed amounts and resulting ratios fall within the scope of claim 1 and establish a prima facie case of obviousness. *See Peterson*, 315 F.3d at 1329; *see also KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 419 (2007) ("In determining whether the subject matter of a patent claim is obvious, neither the particular motivation nor the avowed purpose of the patentee controls. What matters is the objective reach of the claim."); *cf. also In re Kahn*, 441

F.3d 977, 989 (Fed. Cir. 2006) ("[T]he skilled artisan need not be motivated to combine [a prior art reference] for the same reason contemplated by [the inventor]"); *In re Beattie*, 974 F.2d 1309, 1312 (Fed. Cir. 1992) ("As long as some motivation or suggestion to combine the references is provided by the prior art taken as a whole, the law does not require that the references be combined for the reasons contemplated by the inventor.").

In the Appeal Brief, the Appellant does not argue that criticality or unexpected results support a conclusion of nonobviousness in this case. Although the Appellant does make a conclusory assertion of unexpected results in the Reply Brief, *see* Reply Br. 5, that argument is untimely because it was not presented in the Appeal Brief, and the Appellant has not attempted to show good cause for presenting it for the first time in the Reply Brief, *see* 37 C.F.R. § 41.41(b)(2). We decline to consider it.

As to the Appellant's argument concerning Kinnaird's working examples, *see* App. Br. 8, "a reference is not limited to the disclosure of specific working examples," *In re Mills*, 470 F.2d 649, 651 (CCPA 1972), and, as set forth above, Kinnaird teaches or suggests ratios that fall within the scope of the claim even if Kinnaird's specific working examples do not fall within the scope of the claim.

As to the contact time limitation, the Appellant does not dispute the Examiner's finding that Kinnaird teaches a contact time of four hours, which is a preferred contact time disclosed by the Appellant's Specification. *See* Spec. ¶ 24. The Appellant does not address or otherwise show error in the Examiner's determination that, because Kinnaird teaches or suggests concrete-cleaning compositions that fall within the scope of claim 1, and because Kinnaird teaches contact times that the Specification discloses as

preferred, a person of ordinary skill in the art using the method taught or suggested by Kinnaird would have expected to achieve the results recited by claim 1, i.e., "convert the water insoluble calcium sulfate salts into water soluble calcium gluconate to a depth of at least 3 mm" and "neutralize residual acidity in the concrete to a depth of at least 3 mm." *See* Ans. 11.

As to the Appellant's argument concerning the Examiner's failure to expressly identify the level of ordinary skill in the art, App. Br. 11, the Appellant fails to identify a need for specific evidence on that issue and has not made any showing that a finding regarding the level of ordinary skill would impact the conclusion in this case. We are not apprised of error based on the Appellant's argument because "the absence of specific findings on the level of skill in the art does not give rise to reversible error where the prior art itself reflects an appropriate level and a need for testimony is not shown." *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (internal quotation marks omitted). Here, we consider the cited prior art as reflective of the level of ordinary skill in the art. *See id.*; *see also In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995); *In re Chaganti*, 554 F. App'x 917, 922 (Fed. Cir. 2014).

As to the Appellant's argument concerning motivation to combine, we understand the Examiner's reliance on Pardal principally to concern Pardal's disclosure that "[m]ost known concretes comprise Portland cement. Portland cement mainly comprises Portland clinker and calcium sulphate." Pardal at 1:49–51; *see also* Ans. 3–4 (finding that Kinnaird does not "teach that the concrete road structure may comprise calcium sulfate" and immediately following that finding with a finding that "Pardal teaches that most known concrete comprises . . . calcium sulfate"). The Appellant does

address or otherwise dispute Pardal's disclosure that most known concretes comprise calcium sulfate.[2] Given that Kinnaird broadly discloses the use of its composition for cleaning concrete, and Kinnaird does not exclude concretes that comprise calcium sulfate, we discern no error in the Examiner's determination that a person of ordinary skill in the art would have been motivated to use Kinnaird's concrete cleaning compositions on any known concrete including concrete that includes calcium sulfate, particularly given that there is no dispute on this record that most concretes comprise calcium sulfate.

As to the Appellant's argument concerning reasonable expectation of success, it is repetitive of arguments discussed and found unpersuasive above. Namely, the Appellant repeats the argument about the breadth of Kinnaird's disclosure and the argument that Kinnaird is not specifically concerned with the same concrete cleaning problem identified by the Appellant. *See* App. Br. 15. A reasonable expectation of success is found in Kinnaird itself. As set forth above, Kinnaird renders obvious concrete-cleaning compositions that possess the ingredients and weight ratio of claim 1, and Kinnaird provides no indication that such a composition would not function successfully on concretes that include calcium sulfate salts. Kinnaird teaches contact times that are consistent with those disclosed by the Specification (i.e., four hours). On this record, we are not persuaded that a person of ordinary skill in the art would have lacked a reasonable

[2] Claim 1 recites "calcium sulfate salts" rather than "calcium sulfate." The Examiner appears to assume that concrete that includes calcium sulfate would necessarily include calcium sulfate salts. The Appellant does not raise any issues concerning a distinction between calcium sulfate and calcium sulfate salts.

expectation of success in achieving the subject matter of claim 1 in view of Kinnaird and Pardal.

We affirm the Examiner's rejection of claim 1.

Rejection 2

Claim 5 depends from claim 1 and increases the required amount of gluconic acid/salt of gluconic acid and alkali hydroxide from 30 wt% (claim 1) to 60 wt% (claim 5).

The Examiner finds that Wilson is "directed to a method of treating a concrete surface," Ans. 5, using a composition comprising an alkali such as sodium hydroxide and gluconic acid, and that Wilson teaches the alkali concentration may be 0.1–35 wt% and the gluconic acid concentration may be 0.2–60 wt%. The Examiner determines:

> Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, in routine experimentations, to use a composition having a total concentration of lithium hydroxide and gluconic acid at about 60 wt.% because Kinnaird teaches that the concentration of the alkali salt need to be 0.1–99 wt.% depending on the nature and concentration of the soil on the surface of the concrete and the exact amount of the chelating agent is determined by the exact requirements of the formulation and substrate to be cleaned, and Wilson teaches that a composition for treating a concrete surface may comprise alkali, such as NaOH, at 0.1–35 wt.% and gluconic acid at 0.2–60 wt.%.

Ans. 5.

The Appellant argues that "there is no motivation . . . to add high concentration of chelating reagents (including gluconic acid)," and that "Wilson fails to contemplate any solutions" to the concrete-cleaning problems with which the inventors were concerned. App. Br. 16.

We agree with the Appellant that the record does not adequately support the Examiner's rejection of claim 5. The Examiner cites only Wilson's abstract and ¶ 12 in support of the Examiner's finding that "Wilson teaches a method of using a cleaning composition to treat concrete." *See* Ans. 11. We do not discern a disclosure in either location of the use of a cleaning composition to treat concrete; rather, it appears that Wilson discloses the use of a cleaning composition "to treat *equipment*" that is used in the concrete industry. *E.g.*, Wilson at Abstract, ¶ 12 (emphasis added). The Examiner has not adequately explained why a person of ordinary skill in the art would have been motivated to use the amounts and ratios of Wilson's equipment-treating compositions in the context of Kinnaird's method of cleaning concrete. Accordingly, we must reverse the Examiner's rejection of claim 5.

Rejection 3

Claims 8 and 16 recite an additional step requiring application of "a protecting composition or a primer."

The Examiner finds that Kinnaird "is silent about any process after the rinsing," but that Hoopes, which is "also directed to a method of treating a concrete structure . . . teaches that after the treatment the concrete surface is to be coated with a sealer." The Examiner determines that it would have been obvious "to coat the surface of the concrete in the invention of Kinnaird with a sealer after rinsing because Kinnaird is silent about any process after the rinsing and Hoopes teaches that to perform such step after surface treatment." Ans. 5.

The Appellant argues that "Hoopes is concerned with inhibiting corrosion of metal reinforcements in concrete due to attacks by chloride

deicing salts," and that "Hoopes fails to realize the problem identified in the current application and also fails to provide solutions as claimed." App. Br. 16–17.

That argument is not persuasive. The Examiner relies on Hoopes for the general disclosure that "[a] penetrating sealer" can be applied to concrete after curing "for further protection." Hoopes at 6:62–65. That Hoopes is principally concerned with inhibiting corrosion of rebar in concrete rather than the specific problem with which the inventors were concerned does not suggest error in the Examiner's finding that a person of ordinary skill in the art would have been motivated to add a sealer to Kinnaird's concrete to add protection to the concrete after cleaning it. We are not persuaded of reversible error in the Examiner's rejection. *In re Jung*, 637 F.3d 1356, 1365 (Fed. Cir. 2011) ("[I]t has long been the Board's practice to require an applicant to identify the alleged error in the examiner's rejections . . . .").

Rejections 4 and 5

Rejections 4 and 5 are premised on the Examiner's finding that "Wilson teaches a method of using a cleaning composition to treat concrete." Ans. 6. As set forth above in our discussion of Rejection 2, the Examiner's finding is not supported by the cited portions of the record, and the Examiner has not adequately explained why a person of ordinary skill in the art would have been motivated to use the amounts and ratios of Wilson's equipment-treating compositions in the context of concrete cleaning. Accordingly, we reverse as to Rejections 4 and 5.

CONCLUSION

In summary:

Claims Rejected	Basis	Affirmed	Reversed
1, 3–8, 15–20	§ 103(a)	1, 3, 4, 6–8, 15–20	5
Overall Outcome		1, 3, 4, 6–8, 15–20	5

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-IN-PART