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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/018,039	09/04/2013	Geoffrey A. Brown	44551	6414
144982	7590	01/17/2020	EXAMINER	
Hovey Williams LLP 10801 Mastin Blvd., Suite 1000 Overland Park, KS 66210			MCCLAIN-COLEMAN, TYNESHA L.	
			ART UNIT	PAPER NUMBER
			1793	
			NOTIFICATION DATE	DELIVERY MODE
			01/17/2020	ELECTRONIC

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte GEOFFREY A. BROWN and JOSHUA M. SHIPMAN

Appeal 2019-000002
Application 14/018,039
Technology Center 1700

Before MICHAEL P. COLAIANNI, N. WHITNEY WILSON, and
JANE E. INGLESE, *Administrative Patent Judges*.

INGLESE, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant¹ requests our review under 35 U.S.C. § 134(a) of the Examiner's decision to finally reject claims 8–32.² We have jurisdiction over this appeal under 35 U.S.C. § 6(b).

We REVERSE.

¹ We use the word “Appellant” to refer to the “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies Compass Minerals America Inc. as the real party in interest. Appeal Brief filed March 28, 2018 (“Appeal Br.”) at 4.

² Non-Final Office Action entered May 17, 2017 (“Office Act.”) at 1.

CLAIMED SUBJECT MATTER

Appellant claims a free-flowing, solid salt composition, and a method of preventing or inhibiting caking of solid inorganic salt granules. Appeal Br. 6–7. Independent claims 8 and 25 illustrate the subject matter on appeal, and are reproduced below with emphasis added to highlight contested subject matter:

8. A free-flowing, solid salt composition comprising:
an inorganic salt;
an anticaking agent for inhibiting or preventing caking of
inorganic salt granules, said *anticaking agent comprising a coordination complex of iron and a salt anion of an organic acid*, wherein said salt anion is selected from the group consisting of malates, polyacrylates, diphosphonates, and mixtures thereof; and
wherein said solid salt composition is resistant to caking.

25. A method of preventing or inhibiting caking of solid inorganic salt granules, said method comprising:
providing an anticaking agent dispersed or dissolved in a solvent system, said *anticaking agent comprising a coordination complex of iron and a salt anion of an organic acid*, wherein said salt anion is selected from the group consisting of malates, polyacrylates, diphosphonates, and mixtures thereof; and
applying said anticaking agent to said inorganic salt granules to yield a solid salt composition comprising said anti caking agent and a quantity of treated inorganic salt granules, wherein said solid salt composition is resistant to caking.

Appeal Br. 23, 25 (Claims Appendix) (emphasis added).

REJECTIONS

The Examiner maintains the following rejections in the Examiner’s Answer entered July 30, 2018 (“Ans.”):

- I. Claims 8–10, 12–25, and 30–32 under 35 U.S.C. § 103(a) as unpatentable over Koefod³ in view of Thwater;⁴
- II. Claims 26 and 29 under 35 U.S.C. § 103(a) as unpatentable over Koefod in view of Thwater and Liang;⁵ and
- III. Claims 11 and 26–28 under 35 U.S.C. § 103(a) as unpatentable over Koefod in view of Thwater and Lum.⁶

FACTUAL FINDINGS AND ANALYSIS

Upon consideration of the evidence relied upon in this appeal and each of Appellant’s contentions, we reverse the Examiner’s rejections of claims 8–32 under 35 U.S.C. § 103(a), generally for reasons set forth in the Appeal and Reply Briefs, and below.

Independent claim 8 requires the recited solid salt composition to include, in part, an anticaking agent comprising a coordination complex of iron and a salt anion of an organic acid selected from a malate, polyacrylate, diphosphonate, and mixtures thereof. Independent claim 25 requires the recited method of preventing or inhibiting caking of solid inorganic salt granules to comprise, in part, providing an anticaking agent comprising a coordination complex of iron and a salt anion of an organic acid selected from a malate, polyacrylate, diphosphonate, and mixtures thereof.

³ Koefod, WO 2011/044135 A1, published April 14, 2011.

⁴ Thwater, *HEDP*, Shandon Taihe Water Treatment Co., Ltd., <http://web.archive.org/web/20080309093937/http://www.thwater.net/01-HEDP.htm>, 4/29/2015.

⁵ Liang et al., US 2006/0094637 A1, published May 4, 2006.

⁶ Lum, US 3,790,610, issued February 5, 1974.

The Examiner finds that Koefod discloses a solid salt composition comprising an anticaking agent for inhibiting or preventing caking of inorganic salt granules. Office Act. 3 (citing Koefod Abstr., ¶¶ 5, 8, 29). The Examiner finds that Koefod does not disclose that the anticaking agent comprises a coordination complex of iron and a salt anion of an organic acid selected from a malate, polyacrylate, diphosphonate, and mixtures thereof. Office Act. 3. The Examiner finds, however, that Koefod discloses incorporating a corrosion inhibitor additive, such as a phosphonate, into Koefod's solid salt composition. Office Act. 4 (citing Koefod ¶¶ 5, 8, 19, 28, and 30).

The Examiner finds that Thwater discloses a coordination complex of iron and a diphosphonate that is "effective as a corrosion inhibitor" and "is suitable for usage in winter and freezing districts." Office Act. 4 (citing Thwater pg. 1).

In view of this disclosure in Thwater, the Examiner concludes that it would have been obvious to one of ordinary skill in the art at the time of Appellant's invention "to select a coordination complex of iron and diphosphonates [as disclosed in Thwater] in the method of *Koefod* based in its suitability for its intended purpose [as a corrosion inhibitor]." Office Act. 4 (citing Koefod ¶¶ 5, 8, 19, 28, and 30).

On the record before us, however, the Examiner does not establish that the relied-upon disclosures in Koefod and Thwater would have suggested an anticaking agent for a solid salt composition comprising a coordination complex of iron and a salt anion of an organic acid, for reasons express by Appellant (Appeal Br. 16), and discussed below.

Koefod discloses a deicing composition comprising a solid deicing salt, an aqueous solution of a deicing salt, and a corrosion inhibitor additive, such as an organic phosphonate. Koefod ¶¶ 4, 5, 8, 19, and 30.

Thwater discloses that 1-hydroxy ethylidene-1,1-diphosphonic acid (HEDP) is “an organophosphoric acid corrosion [and scale] inhibitor” used in circulating cool water systems, and in oil field and low-pressure boilers in the electrical power and fertilizer fields, the chemical industry, and metallurgy. Thwater pg. 1. Thwater discloses that HEDP “can chelate with Fe, Cu, and Zn ions to form stable chelating compounds . . . , can dissolve the oxidized materials on these metals’ surfaces,” and “can react with metal ions in water system[s] to form hexa-element chelating complex,” and, therefore, “shows excellent scale and corrosion inhibition effects.” *Id.*

As Appellant points out (Appeal Br. 16), Thwater thus discloses that HEDP—when not complexed with a metal ion—functions as a corrosion inhibitor. We find no disclosure in Thwater indicating that HEDP functions as a corrosion inhibitor when complexed with a metal ion. The Examiner does not identify any such disclosure in Thwater, or provide any other evidence, which indicates or would have suggested that metal-complexed HEDP functions to inhibit corrosion.

In fact, Appellant filed a Declaration of inventor Geoffrey Brown with the U.S. Patent and Trademark Office on April 17, 2017, which indicates that one of ordinary skill in the art would have understood that an iron complex of HEDP would not function to prevent corrosion. Brown Dec. ¶ 6. The Brown Declaration explains that Thwater “teaches that un-complexed HEDP can be added to iron surfaces, and the HEDP will then complex with iron ions on the surface to inhibit corrosion. However, already-complexed

HEDP would not have the same effect,” which is why HEDP “promotes that it has low iron content (i.e. 10 ppm max in the liquid formulation).” Brown Dec. ¶ 4.

The Examiner does not sufficiently address these statements in the Brown Declaration. Rather, the Examiner responds to the Declaration by indicating that “Thwater teaches it is known that *HEDP* can be used in corrosion inhibition, can chelate with Fe, and forms a coordination complex with metal ions . . . one of ordinary skill in the art would combine *the complex* with an inorganic salt to form the claimed product since Koefod discloses the incorporation of a corrosion inhibitor additive.” Final Office Action entered May 17, 2017 at 10–11 (emphasis added). These statements by the Examiner do not directly address the argument made in the Brown Declaration, and do not explain why Thwater’s disclosure that HEDP—when not complexed with iron—can be used as a corrosion inhibitor, somehow negates or undermines the Declaration’s indication that one of ordinary skill in the art would have understood that an iron-HEDP complex *would not function as a corrosion inhibitor*. The Examiner, therefore, fails to give sufficient evidentiary weight to the Brown Declaration.

In view of Koefod’s disclosure that suitable corrosion inhibitors for use in Koefod’s deicing composition include organic phosphonates, and Thwater’s disclosure that the organophosphoric acid HEDP functions as a corrosion inhibitor, the Examiner does not provide a reason with rational underpinning that explains why one of ordinary skill in the art would have used an HEDP metal complex—rather than HEDP in un-complexed form—as a corrosion inhibitor in Koefod’s deicing composition. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007) (“[R]ejections on obviousness

grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.”)

Consequently, the Examiner does not establish that the combined disclosures of Koefod and Thwater would have suggested an anticaking agent for a solid salt composition comprising a coordination complex of iron and a salt anion of an organic acid, as required by independent claims 8 and 25. *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992) (“[T]he examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a prima facie case of unpatentability”)

We, accordingly, do not sustain the Examiner’s rejection under 35 U.S.C. § 103(a) of independent claims 8 and 25, and rejections under 35 U.S.C. § 103(a) of claims 9–24 and 26–32, which each depend from either claim 8 or claim 25.

CONCLUSION

Claims	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
8–10, 12–25, 30–32	103(a)	Koefod, Thwater		8–10, 12–25, 30–32
26, 29	103(a)	Koefod, Thwater, Liang		26, 29
11, 26–28	103(a)	Koefod, Thwater, Lum		11, 26–28
Overall Outcome				8–32

REVERSED