

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte EDWARD C. BAXTER, JR., GILBERT VALDEZ,
CHRISTOPHER LOBUE, TIMOTHY LOWRY and ARMEN
ABAZAJIAN

Appeal 2008-2498
Application 10/962,920
Technology Center 1700

Decided: November 5, 2008

Before and LINDA M. GAUDETTE, PETER F. KRATZ,
CHUNG K. PAK *Administrative Patent Judges.*

GAUDETTE, *Administrative Patent Judge.*

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1-7, 10-21, and 24-34. (App. Br. 2, ¶ III.) Claims 8 and 9 are also pending and are objected to as being dependent on a rejected base claim. (Final Office Action, mailed May 24, 2006, p. 3.) We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

STATEMENT OF THE CASE

The invention is said to relate “to a novel liquid phase process for the polymerization of olefins using a modified BF_3 catalyst which is stabilized with a complexing agent.” (Spec. 1, Field of the Invention.) Claim 1 is illustrative of the invention and is reproduced below:

1. A single-stage liquid phase polymerization process for preparing a polyolefin product having preselected properties, said process comprising:

providing a liquid feedstock comprising at least one olefinic component;

providing a catalyst composition comprising a complex of BF_3 and a complexing agent therefor, said complexing agent comprising a glycol or an aliphatic alcohol having a primary hydroxyl group and no hydrogen on a beta carbon, said complex being stable at temperatures needed to produce said polyolefin product;

introducing said feedstock and said catalyst composition into a residual reaction mixture in a loop reaction zone;

recirculating the residual reaction mixture with the feedstock and the catalyst composition therein in said zone at a recirculation rate sufficient to cause intimate intermixing of the residual reaction mixture, the feedstock and the catalyst composition to thereby present a recirculating, intimately intermixed reaction admixture of the residual reaction mixture, the feedstock and the catalyst composition in said reaction zone;

maintaining the recirculating intimately intermixed reaction admixture in its intimately intermixed condition and removing heat of reaction from the reaction admixture at a rate calculated to provide a substantially constant reaction temperature in the reaction admixture while the reaction admixture is recirculating in said reaction zone, said constant reaction temperature being at a level appropriate for causing olefinic components introduced in said feedstock to undergo polymerization to form said polyolefin product in the presence of said catalyst composition;

withdrawing a product stream comprising polyolefin product and catalyst composition from said reaction zone; and

controlling the introduction of said feedstock into said reaction zone and the withdrawal of said product stream from the reaction zone such

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that the residence time of olefinic components undergoing polymerization in the reaction zone is appropriate for production of said polyolefin product.

The Examiner relies on the following prior art references to show unpatentability:

Rath	5,556,932	Sep. 17, 1996
Kao	5,977,251	Nov. 2, 1999
Rath	5,286,823	Feb. 15, 1994

Appellants request review of the following grounds of rejection (App. Br. 2, ¶ III):

1. claims 1, 3-7, 10-13, 15-18, 20, 26-32, and 34 under 35 U.S.C. § 103(a) as unpatentable over Rath '932;
2. claims 2, 14, 24, and 25 under 35 U.S.C. § 103(a) as unpatentable over Rath '932 in view of Kao; and
3. claims 19, 21, and 33 under 35 U.S.C. § 103(a) as unpatentable over Rath '932 in view of Rath '823.

Appellants confine their arguments to independent claim 1, the sole independent claim on appeal, and Rath '932. Appellants contend that the Examiner failed to establish a prima facie case of obviousness as to independent claim 1. More specifically, Appellants maintain that the Examiner failed to properly establish motivation to select a complexing agent as claimed from “among the multiplicity of potential prospects proposed as potentially suitable complexing agents by Rath [’932].” (App. Br. 5.) The Examiner disagrees, arguing that Rath '932 discloses a preference for a limited number of alcohols, including methanol which meets the limitation of Appellants’ claimed complexing agent. (Ans. 7.)

ISSUE

Based on the contentions of the Examiner and Appellants, the issue presented in this Appeal is: have Appellants shown that the Examiner reversibly erred in determining that it would have been obvious to one of ordinary skill in the art at the time of the invention to have selected a complex of boron trifluoride and methanol for use as the catalyst in the Rath '932 polymerization process to thereby achieve Appellants' invention as claimed in claim 1? We answer this question in the negative.

FINDINGS OF FACT

Rath '932 discloses a polymerization process for preparing isobutene/diene copolymers. (Title.) Rath '932 states that "polymerization [is] effected with boron trifluoride in the presence of an alcohol and the presence or absence of hydrogen fluoride." (Col. 2, ll. 61-63.) Rath '932 specifies that "[i]n the boron trifluoride/alcohol catalysts to be used according to the invention the boron trifluoride is present not as discrete boron trifluoride molecules but as a boron trifluoride/alcohol complex." (Col. 3, ll. 1-4.) According to Rath '932,

The alcohols which may be employed in the catalyst system used according to the invention are primary and secondary C₁- C₁₅ alcohols, for example methanol, ethanol, n-propanol, isopropanol, n-butanol, 2-butanol, isobutanol and primary and secondary pentanols, hexanols, heptanols, octanols, nonanols, decanols, undecanols, dodecanols, tridecanols, tetradecanols and pentadecanols. The use of higher alcohols is also possible but, particularly because of their higher price, generally results in no additional economic advantages.

(Col. 3, l. 62-col. 4, l. 4.)

PRINCIPLES OF LAW

“[A] reasonable expectation of success, not absolute predictability” supports a conclusion of obviousness. *In re Longi*, 759 F.2d 887, 897 (Fed. Cir. 1985). Therefore, an obviousness rejection predicated on selection of one or more components from numerous possible choices may be appropriate if the prior art provides direction as to which of many possible choices is likely to be successful. *See PharmaStem Therapeutics, Inc. v. ViaCell, Inc.*, 491 F.3d 1342, 1364 (Fed Cir. 2007); *In re O'Farrell*, 853 F.2d 894, 903 (Fed.Cir.1988) (An invention is “obvious to try” “where the prior art [gives] either no indication of which parameters [are] critical or no direction as to which of many possible choices is likely to be successful.”); *In re Arkley*, 455 F.2d 586, 587-88 (CCPA 1972) (noting that “picking and choosing may be entirely proper in the making of a 103, obviousness rejection, where the applicant must be afforded an opportunity to rebut with objective evidence any inference of obviousness which may arise from the similarity of the subject matter which he claims to the prior art”). Moreover, the fact that a reference “discloses a multitude of effective combinations does not render any particular formulation less obvious.” *Merck & Co., Inc. v. Biocraft Labs*, 874 F.2d 804, 808 (Fed. Cir. 1989) (*citing In re Corkill*, 771 F.2d 1496, 1500 (Fed.Cir.1985) (obviousness rejection of claims affirmed in light of prior art teaching that “hydrated zeolites will work” in detergent formulations, even though “the inventors selected the zeolites of the claims from among ‘thousands’ of compounds”)); *see also, In re Susi*, 440 F.2d 442, 445 (CCPA 1971) (obviousness rejection affirmed where the disclosure of the prior art was “huge, but it undeniably include[d] at least

some of the compounds recited in appellant's generic claims and [was] of a class of chemicals to be used for the same purpose as appellant's additives").

ANALYSIS

As noted by the Examiner, Appellants "do [] not dispute the fact that methanol is a primary alcohol and that it has no hydrogen on a beta carbon (because it lacks a beta carbon), and that is [sic, it] adequately satisfies the structural features recited in the instant claims." (Ans. 7 (noting that claim 7 recites the use of methanol as the complexant).) Rather, Appellants' traversal of the Examiner's obviousness rejection is limited to their contention that it would not have been obvious to have selected methanol from among the alcohols identified in Rath '932 for use in the catalyst complexing agent.

We are not persuaded by Appellants' argument. Rather, we find the Examiner's obviousness determination is consistent with the relevant case law. In particular, the Examiner provided a reasonable basis to conclude that one of ordinary skill in the art at the time of the invention would have been motivated to select $\text{BF}_3 \cdot \text{CH}_3\text{OH}$ as the complexing agent in the Rath '932 process given Rath's stated preference for a limited number of alcohols and specific recitation of methanol as a suitable alcohol (*see Findings of Fact, supra*). (*See Ans. 3-4 and 6-7.*) Appellants have not presented persuasive evidence to establish the contrary.¹

¹ As noted by the Examiner (Ans. 7), Appellants' general statements regarding the nonobviousness of the invention (*see, e.g.*, Reply Br. 2) do not constitute the type of persuasive arguments or evidence required to overcome a *prima facie* case of obviousness. *See In re De Blauwe*, 736 F.2d 699, 705 (Fed. Cir. 1984) ("It is well settled that unexpected results must be established by factual evidence. Mere argument or conclusory statements in

Therefore, we adopt the facts and reasons relied on by the Examiner in sustaining the rejection of claims 1, 3-7, 10-13, 15-18, 20, 26-32, and 34 under 35 U.S.C. § 103(a) as unpatentable over Rath '932. Appellants do not present any additional arguments with respect to the remaining two grounds of rejection, but rely solely on the arguments presented in connection with the first ground of rejection. (App. Br. 5-6; Ans. 7, last paragraph; Reply Br. 2.) Accordingly, we likewise sustain the rejection of claims 2, 14, 24, and 25 under 35 U.S.C. § 103(a) as unpatentable over Rath '932 in view of Kao and the rejection of claims 19, 21, and 33 under 35 U.S.C. § 103(a) as unpatentable over Rath '932 in view of Rath '823 for the reasons stated in the Examiner's Answer (*see* Ans. 5-6.)

CONCLUSION OF LAW

On the record before us, Appellants have not shown reversible error in the Examiner's determination that it would have been obvious to one of ordinary skill in the art at the time of the invention to have selected a complex of boron trifluoride and methanol for use as the catalyst in the Rath '932 polymerization process to thereby achieve Appellants' invention as claimed in claim 1.

DECISION

The decision of the Examiner rejecting claims 1-7, 10-21, and 24-34 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

the specification does not suffice."); *In re Klosak*, 455 F.2d 1077, 1080 (CCPA 1972) (burden of analyzing and explaining data to support an argument of unexpected results rests on party asserting it).

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AFFIRMED

tc

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