Paper No. 29

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte FUMIE SATO, KATSUAKI MIYAJI
and TAKEHIRO AMANO

Appeal No. 1997-0158
Application No. 08/026,681

HEARD: February 22, 2000

Before GARRIS, PAK, and WALTZ, Administrative Patent Judges.

PAK, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on an appeal from the examiner's final rejection of claims 1 and 17 through 23. Claims 3 through 7 and 14 through 16, the remaining claims in this application, stand withdrawn from consideration by the examiner as being drawn to nonelected inventions.

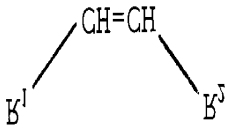
According to appellants (Brief, page 4), the appealed claims are grouped as follows:

Group I - Claims 1, 18, 20 and 22; and

Group II - Claims 17, 19, 21 and 23.

However, appellants have not supplied any substantive arguments for the separate patentability of claims 17, 19, 21 and 23 in accordance with 37 CFR § 1.192(c)(7)and(c)(8)(iv) (1995). See Brief in its entirety. Therefore, we decide this appeal as to the ground of rejection on the basis of claim 1 alone, which is reproduced below:

1. A method for preparing a ciso-lefin of the following general formula



(S) (2):

wherein R_1 and R_2 are independently selected from the group consisting of an ester group, substituted silyl group, carboxyl group, cyano group, aliphatic hydrocarbon group having 1 to 20 carbon atoms unsubstituted or substituted with at least one hydroxy group, and phenyl group unsubstituted or substituted with at least one hydroxy group, said method comprising the step of reducing an alkyne of the following general formula (1):

wherein R_1 and R_2 are defined above,

under effective reduction conditions with formic acid in an amount of about 1 to 1000 mol % in the presence of a palladium catalyst in an amount of about 0.1 to 100 mol %.

As evidence of obviousness, the examiner relies on the following prior art:

Nozaki	4,177,220	Dec. 4, 1979
Gryaznov et al. (Gryaznov)	4,388,479	Jun. 14, 1983

Claims 1 and 17 through 23 stand rejected under 35 U.S.C. § 103 as unpatentable over Gryaznov in view of Nozaki.

We affirm.

Appellants do not dispute that Gryaznov describes the hydrogenation of the claimed alkyne with hydrogen in the presence of a catalyst

$$R_1\text{-}C\equiv C\text{-}R_2 \qquad (1)$$

containing palladium to a cis-olefin covered by the claimed formula. See Brief in its entirety, together with Gryaznov, column 5, examples 1-3. Appellants, however, argue that it would not have been obvious to employ formic acid in lieu of or in addition to hydrogen employed in the process of Gryaznov. See Brief in its entirety.

The dispositive issue is, therefore, whether it would have been obvious to use formic acid in the hydrogenation process of Gryaznov. We answer this question in the affirmative.

As is apparent from page 6 of the Brief, appellants were aware of the examiner's finding that "formic acid is known to be a source of hydrogen." Appellants, however, have not disputed this finding. In fact, at pages 1 and 2 of the specification, appellants acknowledge that formic acid, like hydrogen, is known to be used for providing a reducing (hydrogen) atmosphere in reaction processes. Note also that the examiner refers to column 3, lines 6-11, of Nozaki, which states that:

> The formic acid is utilized as a source of hydrogen for the process. It is present in the reaction mixture as an acid or as a salt of a

> base. When the salt is used, it is thought that dissociation of the formic acid-base salt provides a suitable amount of formic acid necessary to provide the required hydrogen.

Given the above facts, we agree with the examiner that there is a sufficient suggestion to employ formic acid as a source of hydrogen in the hydrogenation process of Gryaznov. One of ordinary skill in the art would have had a reasonable expectation that formic acid (hydrogen providing means), like hydrogen, would successfully provide a reducing (hydrogen) atmosphere useful for forming the hydrogenated cis-olefin described in Gryaznov. ***See In re Vaeck***, 947 F.2d 488, 493, 20 USPQ2d 1438, 1442 (Fed. Cir. 1991); ***In re O'Farrell***, 853 F.2d 894, 902, 7 USPQ2d 1673, 1680 (Fed. Cir. 1988).

Appellants appear to argue that Nozaki is nonanalogous art and thus, cannot be properly combined with Gryaznov. The test of whether a reference is from an analogous art is first, whether it is within the field of the inventor's endeavor, and second, if it is not, whether it is reasonably pertinent to the particular problem with which the inventor was involved. ***See In re Wood***, 599 F.2d 1032, 1036, 202 USPQ 171, 174 (CCPA 1979). In the present case, we find Nozaki to be within the

field of the inventors' endeavor since the hydrocoupling process described in Nozaki also involves hydrogenation as in appellants' and Gryaznov's processes. See Nozuki, column 6, lines 50-55. Even if Nozaki is not deemed to be within the field of the inventors' endeavor, we find that Nozaki is at least directed toward the problem of providing, inter alia, a reducing atmosphere (hydrogen atmosphere) which is required in both appellants' and Gryaznov's processes. We find that because Nozaki deals with providing a reducing (hydrogen) reaction atmosphere, it would have logically commended itself to the inventors' attention. ***See In re Clay***, 966 F.2d 656, 659, 23 USPQ2d 1058, 1061 (Fed. Cir. 1992). Accordingly, we conclude that Nozaki can be properly combined with Gryaznov for the reasons indicated ***supra***.

In any event, we note that appellants have not specifically challenged the examiner's finding that "formic acid is known to be a source of hydrogen" as indicated ***supra***. Thus, even without Nozaki, the use of formic acid in the hydrogenation process of Gryaznov would have been obvious to one of ordinary skill in the art as indicated ***supra***.

Appellants appear to argue that the production of a cis-olefin with a selectivity of more than 99% as shown in examples 1, 5 and 6 is not taught or suggested by the applied prior art. This argument is without any merit since the claims do not require such selectivity.[1] ***In re Self***, 671 F.2d 1344, 1350, 213 USPQ 1, 7 (CCPA 1982). Nor do the claims recite reaction conditions, catalysts and/or specific reactants, which are useful for obtaining such selectivity. ***Id.***

To the extent that appellants may have relied on this improvement as an unexpected result, we are convinced that appellants have not carried their burden of proof. ***In re Klosak***, 455 F.2d 1077, 1080, 173 USPQ 14, 16 (CCPA 1972)(the burden of proving unexpected results rests on the party who asserts them); ***In re Heyna***, 360 F.2d 222, 228, 149 USPQ 692,

[1] Should appellants recite such a selectivity limitation in their claims, the examiner must determine whether the claimed subject matter is commensurate in the scope with an enabling disclosure in the specification within the meaning of 35 U.S.C.
§ 112, first paragraph. The examiner must determine whether more than 99% selectivity can be achieved for desired cis-olefin products with the reactants, catalysts and conditions covered by the claims, without undue experimentation.

697 (CCPA 1966)(it is incumbent on appellants to submit clear and convincing evidence that the claimed subject matter in fact exhibits an unexpected results). Specifically, appellants have not demonstrated that the showing in appellants' examples is reasonably commensurate in scope with the degree of protection sought by the appealed claims. ***See In re Kulling***, 897 F.2d 1147, 1149, 14 USPQ2d 1056, 1058 (Fed. Cir. 1990); ***In re Grasselli***, 713 F.2d 731, 743, 218 USPQ 769, 778 (Fed. Cir. 1983). While the showing is limited to utilizing a few specific reactants, a specific palladium complex catalyst and a specific reaction condition, the appealed claims are not so limited. On this record, appellants have proffered no explanation, much less evidence, to support a conclusion that the demonstrated improvement in selectivity evidenced in the showing can be reasonably extrapolated to the claimed hydrogenation reactions employing a myriad of reactants, palladium catalysts and reaction conditions materially different from those utilized in appellants' showing.

In addition, it cannot be ascertained from appellants' examples the origin of the improved selectivity due to the number of unconstrained variables. ***In re Dunn***, 349 F.2d 433, 439, 146 USPQ 479, 483 (CCPA 1965) ("[t]he cause and effect sought to be proven is lost here in the welter of unfixed variables"). It is impossible to determine whether the improved selectivity is due to the catalyst, reaction conditions and/or reactants employed, or due to formic acid as alleged.

Thus, having considered all of the evidence of record, we determine that the evidence of obviousness, on balance, outweighs the evidence of nonobviousness proffered by appellants. Hence, we agree with the examiner that the claimed subject matter as a whole would have been obvious to one of ordinary skill in the art. Accordingly, we affirm the examiner's decision rejecting all of the appealed claims under 35 U.S.C. § 103.

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

AFFIRMED

BRADLEY R. GARRIS Administrative Patent Judge	)
CHUNG K. PAK Administrative Patent Judge	) BOARD OF PATENT APPEALS AND INTERFERENCES
THOMAS A. WALTZ Administrative Patent Judge	)

CKP:lp

Appeal No. 1997-0158
Application No. 08/026,581

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Appeal No. 1997-0158
Application No. 08/026,581

APJ PAK

APJ WALTZ

APJ GARRIS

DECISION: AFFIRMED
Send Reference(s): Yes No
or Translation (s)
Panel Change: Yes No
Index Sheet-2901 Rejection(s):
Prepared: February 4, 2002

Draft Final

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OB/HD GAU

PALM / ACTS 2 / BOOK
DISK (FOIA) / REPORT