The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 30

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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Ex parte ARTHUR W. CHESTER,
KE LIU,
and
ROBERT A. WARE

_____

Appeal No. 2002-2057
Application No. 09/351,147

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HEARD: Mar. 20, 2003

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Before WARREN, WALTZ, and DELMENDO, Administrative Patent Judges.

DELMENDO, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134 (2002) from the examiner's final rejection of claims 1 through 10 (final Office action mailed Oct. 22, 2001, paper 18), which are all the claims pending in the above-identified application.

The subject matter on appeal relates to a process for converting a C_4+ naphtha hydrocarbon feed to a product including

light olefins and aromatics. Further details of this appealed subject matter are recited in representative claim 1, the sole independent claim on appeal, reproduced below:

> 1. A process for converting a C_4+ naphtha hydrocarbon feed to a product which includes light olefins and aromatics, comprising:
>
> contacting said feed with a catalyst comprising ZSM-5, ZSM-11 or combinations thereof treated with a phosphorous compound, and a substantially inert matrix material, wherein said catalyst contains less than 20 wt% of active matrix material and has an initial silica/alumina molar ratio less than about 70, said contacting being effected under conditions to produce a product containing light olefins and aromatics.

The examiner relies on the following prior art references as evidence of unpatentability:

Drake et al. (Drake)	5,898,089	Apr. 27, 1999 (filed Aug. 28, 1997)
Nemet-Mavrodin (EP '736)(published EP appln.)	EP 0 323 736 A2	Jul. 12, 1989

Claims 1, 2, 5, 7, and 10 on appeal stand rejected under 35 U.S.C. § 102(b) as anticipated by EP '736. (Answer, page 3.) In addition, claims 3, 4, and 6 on appeal stand rejected under 35 U.S.C. § 103(a) as unpatentable over EP '736. (Id. at pages 3-4.) Further, claims 8 and 9 on appeal stand rejected under 35 U.S.C. § 103(a) as unpatentable over EP '736 in view of Drake. (Id. at pages 4-5.)

We reverse these rejections for the reasons well stated in the appeal brief filed Mar. 25, 2002 (paper 22) and reply brief filed Jul. 24, 2002 (paper 24), but add the following comments for emphasis only.

I. Rejection under 35 U.S.C. § 102: EP '736

"To anticipate a claim, a prior art reference must disclose every limitation of the claimed invention, either explicitly or inherently." In re Schreiber, 128 F.3d 1473, 1477, 44 USPQ2d 1429, 1431 (Fed. Cir. 1997); accord Glaxo Inc. v. Novopharm Ltd., 52 F.3d 1043, 1047, 34 USPQ2d 1565, 1567 (Fed. Cir. 1995).

In addition, the prior art reference must disclose the limitations of the claimed invention "without any need for picking, choosing, and combining various disclosures not directly related to each other by the teachings of the cited reference." In re Arkley, 455 F.2d 586, 587, 172 USPQ 524, 526 (CCPA 1972); cf. In re Schaumann, 572 F.2d 312, 315, 316, 197 USPQ 5, 8, 9 (CCPA 1978)(holding that "the disclosure of a chemical genus...constitute[s] a description of a specific compound" within the meaning of §102 where the specific compound falls within a genus of a "very limited number of compounds.").

As argued in the appellants' principal brief (page 4), "the reference's teaching that phosphorus oxide-free zeolites can be used does not necessarily imply that phosphorus oxide-containing

zeolites are used." While the reference does teach that the zeolites "may optionally include various elements ion exchanged, impregnated or otherwise deposited thereon..." (page 3, lines 42-46), this is the extent of the disclosure. In our view, this disclosure is not sufficiently specific to have placed the claimed invention in possession of one of ordinary skill in the art.

For these reasons and those set forth in the appellants' briefs, we cannot uphold the examiner's rejection on this ground.

II. Rejection under 35 U.S.C. § 103(a): EP '736

With respect to claims 3, 4, and 6, the examiner argues that the zeolite in EP '736 "may be treated with a phosphorus compound." (Answer, page 4.) We cannot agree. As we discussed above, EP '736 does not identify the "various elements ion exchanged, impregnated or otherwise deposited" on the zeolite. Instead, the reference merely teaches that the "zeolites can be free of oxides [e.g., oxides of phosphorus] incorporated into the zeolites by an impregnation treatment." (Page 3, lines 46-50.)

Because the examiner has not identified any evidence to remedy the basic deficiency of EP '736 relative to the appealed subject matter, we hold that the examiner has not made out a

prima facie case of obviousness within the meaning of 35 U.S.C. § 103(a). In re Piasecki, 745 F.2d 1468, 1471-72, 223 USPQ 785, 787-88 (Fed. Cir. 1984).

III. Rejection under 35 U.S.C. § 103: EP '736 in view of Drake

As to claims 8 and 9, the examiner's basic position is that "[i]t would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the EP process by including steam with the feed in the amount claimed as suggested by Drake because effective conversion to olefins and aromatics would be expected." (Answer, page 5.) We cannot agree.

To properly reject claims under 35 U.S.C. § 103 as prima facie obvious in view of a combination of prior art references, an examiner must consider, inter alia, two factors: (1) whether the prior art would have suggested to one of ordinary skill in the art to make the claimed composition or carry out the claimed process; and (2) whether the prior art would also have revealed that, in so making or carrying out, the person of ordinary skill would have had a reasonable expectation of success. In re Vaeck, 947 F.2d 488, 493, 20 USPQ2d 1438, 1442 (Fed. Cir. 1991) (citing In re Dow Chemical Co., 837 F.2d 469, 473, 5 USPQ2d 1529, 1531 (Fed. Cir. 1988)). Both the suggestion and

reasonable expectation of success must be founded in the prior art, not in applicants' disclosure. Id.

Here, the examiner has not identified the requisite specific motivation, suggestion, or teaching that would have led one of ordinary skill in the art to combine the two references in the manner as proposed by the examiner. In re Dembiczak, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999)("T]he best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references."); In re Rouffet, 149 F.3d 1350, 1359, 47 USPQ2d 1453, 1459 (Fed. Cir. 1998)("T]he Board must explain the reasons one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious."); In re Warner, 397 F.2d 1011, 1016, 154 USPQ 173, 177 (CCPA 1967)("W]here the invention sought to be patented resides in a combination of old elements, the proper inquiry is whether bringing them together was obvious and not, whether one of ordinary skill, having the invention before him, would find it obvious through hindsight to construct the invention from elements of the prior art.").

Accordingly, we cannot affirm this rejection.

IV. Other Issues

Prior to an allowance of this application, the examiner and the appellants should reconsider a possible rejection under 35 U.S.C. § 103 of all the appealed claims as unpatentable over Drake in view of EP '736 and any other prior art.

Drake describes a process of converting hydrocarbon (e.g., naphthas), which may be diluted with steam, to a C_6-C_8 aromatic hydrocarbon and an olefin using a zeolite catalyst composition. (Column 1, lines 8-13; column 8, line 66 to column 9, line 20; column 9, lines 43-47.) According to Drake, the catalyst composition comprises a zeolite (e.g., ZSM-5), a clay, and a promoter (e.g., a phosphorus-containing compound), wherein the weight ratio of clay to zeolite may be from about 1:20 to about 20:1. (Column 2, lines 44-65; column 3, line 45 to column 6, line 13.)

Although Drake does not disclose the initial Si/Al molar ratio of the catalyst, the reference teaches that "[a]ny commercially available zeolite which can catalyze the conversion of a hydrocarbon to an aromatic compound and an olefin can be employed..." (Column 5, lines 65-67.) EP '736 teaches such a catalyst. (Example 1.)

The examiner and the appellants should fully explore whether it would have been prima facie obvious for one of

ordinary skill in the art to use the ZSM-5 of EP '736 in Drake, thus arriving at a process encompassed by at least appealed claim 1. If a prima facie case of obviousness exists, the examiner should reevaluate all of the appellants' relied upon arguments and evidence to determine whether the prima facie case has been adequately rebutted.

At oral hearing, the appellants' counsel referred to the experimental data summarized on pages 18 and 19 as evidence of nonobviousness. The examiner should determine whether this evidence is sufficient to overcome any prima facie case. For example, we note that appealed claim 1 reads on a wide variety of zeolites, phosphorus-containing compounds, and substantially inert matrix materials in virtually any relative amounts. By contrast, the relied upon evidence does not appear to be commensurate in scope with the degree of patent protection desired.[1] Also, the relied upon evidence does not appear to show

[1] See, e.g., In re Kulling, 897 F.2d 1147, 1149, 14 USPQ2d 1056, 1058 (Fed. Cir. 1990)("'[O]bjective evidence of nonobviousness must be commensurate in scope with the claims.'")(quoting In re Lindner, 457 F.2d 506, 508, 173 USPQ 356, 358 (CCPA 1972)); In re Dill, 604 F.2d 1356, 1361, 202 USPQ 805, 808 (CCPA 1979)("The evidence presented to rebut a prima facie case of obviousness must be commensurate in scope with the claims to which it pertains.").

an unexpected criticality for the claimed range of Si/Al molar ratios at the upper limit, i.e. at "about 70."[2]

Summary

In summary, our disposition of this appeal is as follows:

the rejection under 35 U.S.C. § 102(b) of appealed claims 1, 2, 5, 7, and 10 as anticipated by EP '736 is reversed;

the rejection under 35 U.S.C. § 103(a) of appealed claims 3, 4, and 6 as unpatentable over EP '736 is reversed; and

the rejection under 35 U.S.C. § 103(a) of appealed claims 8 and 9 as unpatentable over EP '736 in view of Drake is reversed. We have also outlined certain issues for further consideration by the examiner and the appellants.

[2] In this regard, it is well settled that "[w]hen an applicant seeks to overcome a prima facie case of obviousness by showing improved performance in a range that is within or overlaps with a range disclosed in the prior art, the applicant must 'show that the [claimed] range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range.'" In re Geisler, 116 F.3d 1465, 1469, 43 USPQ2d 1362, 1365 (Fed. Cir. 1997)(quoting In re Woodruff, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990)).

The decision of the examiner is reversed.

REVERSED

Charles F. Warren Administrative Patent Judge	)	
Thomas A. Waltz Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
Romulo H. Delmendo Administrative Patent Judge	)	

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