

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte Kent E. Mitchell; Max P. McDaniel; M. Bruce Welch;
Elizabeth A. Benham; Grover W. Cone

Appeal No. 97-0360
Application No. 08/395,125

HEARD
August 15, 2000

Before Garris, Owens, and Lieberman, Administrative Patent Judges.

Lieberman, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 2 through 4, 7 through 8, 12 through 17 and 29 through 39, which are all of the claims pending in this application.

BACKGROUND

The invention is directed to a process for the polymerization of olefin with a

catalyst and cocatalyst, wherein a titanium tetrachloride treated catalyst is further treated with an organometallic reducing agent and washed with a hydrocarbon liquid to remove hydrocarbon soluble material.

THE CLAIMS

Claims 29 is illustrative of appellants' invention and is reproduced below.

29. An improved process for the polymerization of olefins under particle-form polymerization conditions comprising contacting at least one olefin with a catalyst and a cocatalyst in a liquid diluent under particle-form polymerization conditions wherein said catalyst is a solid particulate catalyst prepared by
- (1) reacting a titanium alkoxide and a magnesium dihalide in a suitable liquid to form a solution;
 - (2) then reacting that solution with a precipitating agent selected from organoaluminum compounds of the formula $R_n AlZ_{3-n}$, wherein R is a hydrocarbyl group having 1 to 8 carbon atoms, Z is a halogen, hydrogen, or hydrocarbyl group having 1 to 8 carbons, and n is a number in the range of 1 to 3 to form a precipitate;
 - (3) contacting the solid precipitate with titanium tetrachloride, before or after an optional prepolymerization step to result in titanium tetrachloride treated solid;
 - (4) contacting the titanium tetrachloride treated solid with an organometallic reducing agent to produce a reducing agent treated solid;
 - (5) washing the resulting reducing agent treated solid with a hydrocarbon wash liquid to remove hydrocarbon soluble material from the reducing agent treated solid; and
 - (6) separating the washed solid from the hydrocarbon wash liquid so as to yield said solid particulate catalyst, said solid particulate catalyst having less material soluble in the hydrocarbon used as the wash liquid than did the solid of step (4).

THE REFERENCES OF RECORD

As evidence of obviousness, the examiner relies upon the following references.

Lee	4,562,168	Dec. 31, 1985
Arzoumanidis et al. (Arzoumanidis)	4,422,956	Dec. 27, 1983
Wristers	4,330,433	May 18, 1982
Capshew et al. (Capshew)	4,325,837	Apr. 20, 1982

THE REJECTIONS

Claims 2 through 4, 7 through 8, 12 through 17 and 29 through 39 stand rejected under 35 U.S.C. § 103 as being unpatentable over Capshew in view of Arzoumanidis, Wristers and Lee.

OPINION

We have carefully considered all of the arguments advanced by appellant and the examiner and agree with appellants that the aforementioned rejection under 35

U.S.C.

§ 103 is not well founded. Accordingly, we do not sustain this rejection.

The Rejection under 35 U.S.C. § 103

“[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,” whether on the grounds of anticipation or obviousness. ***In re Oetiker***, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). On the record before us, the examiner relies upon a combination of four references to reject the claimed subject matter and establish a ***prima facie*** case of obviousness.

Although we are satisfied that the references of record either alone or in combination disclose steps (1) through (5) of the claimed subject matter, we determine that step (6), “separating the washed solid from the hydrocarbon wash liquid so as to yield solid particulate catalyst” is neither disclosed nor suggested by the references of record.

It is the examiner’s position that the washing and separating steps are disclosed by Capshew in Examples V and VI at column 20, lines 50-52, and column 21, lines 34-35. See Answer, page 4. However, Example V introduces a washing step in the absence of treatment with titanium tetrachloride and prior to reduction with triethyl aluminum reducing agent. Example VI similarly discloses a washing step after treatment with titanium tetrachloride but prior to any treatment or contact with triethyl aluminum reducing agent.

In each example, in the Capshew reference, when a polymerization catalyst is added to the reactor together with the triethyl aluminum cocatalyst and isobutane diluent,

step (5) of the claimed subject matter may in fact occur *in situ* since the aluminum cocatalyst may be identical to the reducing agent of the claimed subject matter. See Examples IV, VII, VIII, 16 and 17. The diluent, however, remains in the closed reactor system. Accordingly, on the record before us, there is no evidence that the reducing agent treated solid is separated from the hydrocarbon wash liquid as required by the claimed subject matter.

As for the disclosure of Lee at column 5, lines 65 to column 6, line 27, the washing steps disclosed therein teach no more than the washing steps used throughout the Capshew reference. Capshew discloses that, "[f]ollowing the treatment of solids with the halide ion exchanging source the surplus halide ion exchanging source is removed by washing with a dry (essential absence of water) liquid such as a hydrocarbon of the type previously disclosed, n-hexane" A similar step is taught *supra* in Capshew.

Based upon the above considerations, the examiner has not established a *prima facie* case of obviousness and the examiner's rejection of the claimed subject matter as unpatentable over Capshew in view of Arzoumanidis, Wristers and Lee is not sustained. In view of the above analysis, we have determined that the examiner's legal conclusion of obviousness is not supported by the facts. "Where the legal conclusion [of obviousness] is not supported by the facts it cannot stand." *In re Warner*, 379 F.2d 1011, 1017, 154 USPQ 173, 178 (CCPA 1967).

Since no *prima facie* case of obviousness has been established, we need not address the experimental results relied upon by appellants. See Brief, page 8. *In re Piasecki*, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984); *In re Rinehart*, 531 F.2d 1048, 1052, 189 USPQ 143, 147 (CCPA 1976).

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