

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.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. 28

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JOHN CHENG-PING QIAN
AND JULIA ANN SACARIAS

Appeal No. 2001-2396
Application 09/286,150

ON BRIEF

Before GARRIS, OWENS and DELMENDO, *Administrative Patent Judges*.
OWENS, *Administrative Patent Judge*.

DECISION ON APPEAL

This appeal is from the final rejection of claims 1, 4-12 and 14-20, which are all of the claims remaining in the application. In the answer (page 2), the examiner states that

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THE INVENTION

The appellants claim a method for making 1,1,1,3,3-pentafluoropropene by reacting 2,2-dichloro-1,1,1,3,3,3-hexafluoropropane with hydrogen in the presence of a metal-containing catalyst on a carbon support, and claim a method wherein 1,1,1,3,3-pentafluoropropene is produced by this method and is recovered and reacted with hydrogen in the presence of a metal-containing catalyst on a carbon support to produce 1,1,1,3,3-pentafluoropropane. Claim 1 is illustrative:

1. A method for the production of 1,1,1,3,3-pentafluoropropene which comprises contacting 2,2-dichloro-1,1,1,3,3,3-hexafluoropropane with hydrogen in the presence of a metal-containing catalyst carried by a carbon support, at a temperature in the range of about 300°C to about 800°C, and recovering the 1,1,1,3,3-pentafluoropropene from the resulting reaction product, wherein the metal-containing catalyst carried by a carbon support is selected from the group consisting of a metal, metal halide, metal oxide, metal oxyhalide and combinations thereof, wherein the metal of the catalyst is selected from the group consisting of Fe, Cu, Ni and Cr.

THE REFERENCES

Webster et al. (Webster)	5,057,634	Oct. 15, 1991
Kellner et al. (Kellner)	5,523,501	Jun. 4, 1996

THE REJECTION

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OPINION

We reverse the aforementioned rejection. We need to address only the independent claims, i.e., claims 1, 11 and 16.

Claims 1 and 16

Kellner discloses a method for the catalytic hydrogenolysis of at least one 3-4 carbon acyclic saturated halofluorocarbon or hydrohalofluorocarbon, wherein all non-fluorine halogen substituents are on end carbons, at a temperature of about 300°C or less, using a catalyst comprising, on a low-ash carbon support, palladium and optionally additional group VIII metals such as Pt, Ru, Rh or Ni (col. 1, line 58 - col. 2, line 15).¹ Kellner states that his method provides high selectivity to products having the same number and relative position of fluorine substituents as the starting material (col. 2, line 66 - col. 3, line 2). Kellner's method differs from those in the appellants' claims 1 and 16 in that Kellner's non-fluorine halogens are on end carbons whereas the appellants' chlorine atoms are on the middle carbon, and Kellner's desired product has the same number

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has one fewer fluorine atom than the starting material.

Kellner discloses a comparative example wherein the appellants' starting material, $\text{CF}_3\text{CCl}_2\text{CF}_3$, is reacted with hydrogen at 150°C using a palladium catalyst supported on acid washed carbon to produce a product containing 12.3% of the appellants' product, 2-hydropentafluoropropene (col. 5, lines 48-63). When this example was repeated at a higher hydrogen flow rate, the product contained 19.8% 1,2,2-trihydropentafluoropropane and no more than a small amount of 2-hydropentafluoropropene (col. 5, line 64 - col. 6, line 5). Kellner states (col. 6, lines 6-11): "This experiment illustrates that when using palladium supported on acid washed carbon as catalyst and where the two chlorines of the starting compound are on the internal carbon, an olefin and/or a saturated product containing one less fluorine than the starting compound can be produced in significant amounts."

Webster discloses a method for making hexafluoropropylene by reacting an intermediate, which can be the appellants' $\text{CF}_3\text{CCl}_2\text{CF}_3$

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$\text{CF}_3\text{CCl}_2\text{CF}_3$ with hydrogen contains common hydrogenation catalysts such as Cu, Ni, Cr or combinations thereof, optionally promoted with compounds of Mo, V, W, Ag, Fe, K, Ba or combinations thereof, optionally on a support (col. 10, lines 28-68). Even if this catalyst is suitable for reacting $\text{CF}_3\text{CCl}_2\text{CF}_3$ with hydrogen, Webster's method differs from that in the appellants' claims 1 and 16 in that the disclosed supports do not include carbon, and the product is hexafluoropropylene rather than the appellants' 1,1,1,3,3-pentafluoropropene.

The examiner argues that Webster teaches that his catalyst gives superior results compared to palladium catalyst (answer, pages 4-5). Webster teaches (col. 10, lines 28-38):

While any hydrogenation catalyst could be used, the most active catalysts, such as Pt and Pd, are poor selections because, in addition to the desired products, they lead to the addition of hydrogen across any double bond present or to the substitution of hydrogen for chlorine, thus reducing the yield of desired products and requiring recycle. These effects are not desirable, but do not substantially reduce the overall yield to hexafluoropropylene, because the hydrogen-containing by-products can be recycled to the chlorofluorination step.

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The examiner apparently is of the view that the applied references would have fairly suggested, to one of ordinary skill in the art, supporting Webster's catalyst on carbon and using that catalyst, instead of the carbon-supported Pd in Kellner's comparative example, to make the 2-hydropentafluoropropene in Kellner's comparative example rather than making Webster's hexafluoropropylene. The examiner, however, has not explained how the applied references themselves would have led one of ordinary skill in the art to do so. See *In re Rinehart*, 531 F.2d 1048, 1051, 189 USPQ 143, 147 (CCPA 1976). The record indicates that the motivation relied upon by the examiner for combining the teachings of the applied references so as to arrive at the appellants' claimed method comes from the appellants' disclosure of their invention rather than coming from the applied prior art. Consequently, the record indicates that the examiner relied upon impermissible hindsight in rejecting claims 1 and 16. See *W.L. Gore & Associates v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 USPQ 303, 312-13 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984);

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Claim 11

The appellants' claim 11, like claim 1, requires that the hydrogenation temperature is about 300°C to about 800°C. Claim 11 differs from claim 1 in that claim 11 does not specify the catalytic metals and requires that the recovered 1,1,1,3,3-pentafluoropropene is hydrogenated to produce 1,1,1,3,3-pentafluoropropane.

In Kellner's comparative example, which is the only disclosure relied upon by the examiner for a teaching of producing 1,1,1,3,3-pentafluoropropene, the reaction temperature is 150°C.

The examiner does not address the combination of limitations in the appellants' claim 11. The examiner, therefore, has not carried the burden of establishing a *prima facie* case of obviousness of the method in this claim. Hence, we reverse the rejection of claim 11 and the claims which depend therefrom.

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DECISION

The rejection of claims 1, 4-6, 8-12 and 14-20 under
35 U.S.C. § 103 over Kellner in view of Webster is reversed.

REVERSED

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BRADLEY R. GARRIS)	
Administrative Patent Judge)	
)	
)	
)	BOARD OF PATENT
TERRY J. OWENS)	
Administrative Patent Judge)	APPEALS AND
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ROMULO H. DELMENDO)	
Administrative Patent Judge)	

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