

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.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. 31

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MAX BRAUN, KERSTIN EICHHOLZ and WERNER RUDOLPH

Appeal No. 2002-0440
Application 09/113,547

HEARD: JANUARY 8, 2003

Before WARREN, OWENS and POTEATE, *Administrative Patent Judges*.
OWENS, *Administrative Patent Judge*.

DECISION ON APPEAL

This appeal is from the final rejection of claims 1 and 3-9, which are all of the claims remaining in the application.

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THE INVENTION

The appellants' claimed invention is directed toward a method for making a methyl or ethyl ester of trifluoroacetic acid or chlorodifluoroacetic acid. Claim 1 is illustrative:

1. A method for preparing a methyl or ethyl ester of trifluoroacetic acid or chlorodifluoroacetic acid, comprising:

reacting an acid chloride of trifluoroacetic acid or chlorodifluoroacetic acid with a stoichiometric excess of methyl or ethyl alcohol in the presence of an onium salt of the acid as catalyst, wherein the molar ratio of alcohol to acid chloride is selected such that two phases can form;

allowing an upper phase and a lower phase to form, one phase being an ester phase which contains the ester in a purity, achievable without a distillation stage, of at least 95% by weight; and

separating said ester phase.

THE REFERENCES

Feist et al. (Feist)	5,405,991	Apr. 11, 1995
Braun et al. (Braun)	5,532,411	Jul. 2, 1996

THE REJECTION

Claims 1 and 3-9 stand rejected under 35 U.S.C. § 103 as being unpatentable over Braun in view of Feist.

OPINION

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Braun discloses a method for preparing a carboxylic acid ester by reacting a carboxylic anhydride with $M^{n+}(Hal^-)_n$, where M^{n+} can be an onium cation and Hal^- is chloride, bromide or iodide, to produce a carboxylic acid halide (which can be the appellants' acid chloride) and a carboxylate salt (which can be the appellants' onium salt), and reacting this product with an alcohol to form the ester (col. 1, lines 64-65; col. 2, lines 7-15; col. 3, lines 57-60). The molar ratio of alcohol to carboxylic acid halide advantageously is between 0.9:1 and 5:1 (col. 5, lines 19-21). The onium salt can be present in a catalytic amount (col. 5, lines 28-29). Braun teaches that the method is particularly well suited for preparing esters of trifluoroacetic acid or chlorodifluoroacetic acid using an alcohol which can be methanol or ethanol (col. 5, lines 8-13).

Braun does not disclose selecting the molar ratio of alcohol to acid chloride such that two phases can form, one of which is an ester phase, and separating the phases.¹ For a suggestion to do so the examiner relies upon Feist.

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Feist discloses a method for making a carboxylic ester by reacting a carboxylic acid bromide or (preferably) a carboxylic acid chloride with an alcohol in the presence of a catalytic salt which preferably is an onium salt (col. 2, lines 29-63; col. 3, lines 62-63; col. 4, lines 10-11). "Advantageously, the molar ratio of alcohol to carboxylic acid halide is between 0.9:1 and 1.1:1, or if the alcohol also serves as a solvent, up to 5:1" (col. 3, lines 51-54). Like Braun's method, Feist's method is particularly well suited for preparing esters of trifluoroacetic acid or chlorodifluoroacetic acid using an alcohol which can be methanol or ethanol (col. 3, lines 42-46). In Feist's example 9, a clear yellow solution containing methyl chlorodifluoroacetate is produced by reacting 1.0 mole methanol with 1.0 mole chlorodifluoroacetyl chloride. In Feist's example 10, ethyl chlorodifluoroacetate is produced by reacting 1.0 mole ethanol with 1.0 mole chlorodifluoroacetyl chloride. "After addition of 0.5 mole of the acid chloride, a strong turbidity (phase formation) was observed in the reaction solution, which upon

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the course of the reaction the formation of two phases was noted" (col. 6, lines 15-16). "The upper phase contained over 96% of the desired propyl chlorodifluoroacetate in addition to pyridinium salts. The lower phase contained the catalyst salt as its principal component in addition to traces of the product" (col. 6, lines 19-23). The phases were separated (col. 6, line 24).

The examiner argues that because phase formation occurred in Feist's example 10 at a 2:1 mole ratio of alcohol to acid chloride during the preparation of ethyl chlorodifluoroacetate, one of ordinary skill in the art reasonably would have expected phase formation to take place at that excess alcohol ratio in Feist's example 9 during the preparation of methyl chlorodifluoroacetate (answer, page 5).

Feist adds chlorodifluoroacetyl chloride dropwise to an alcohol/pyridinium chlorodifluoroacetate mixture in each of examples 9, 10 and 11. In example 9, wherein the alcohol is methanol, no phase formation is reported. In example 10, wherein

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alcohol. In example 11, wherein the alcohol is n-propanol, Feist reports formation of two phases during the course of the n-propanol/chlorodifluoroacetyl chloride reaction, and Feist separates the phases. Thus, as the carbon number of the alcohol goes from 1 to 3, the examples go from 1) no reported phase formation to 2) "strong turbidity (phase formation)" to 3) formation of two phases followed by separation of the phases.

For a *prima facie* case of obviousness to be established, the teachings from the prior art itself must appear to have suggested the claimed subject matter to one of ordinary skill in the art. See *In re Rinehart*, 531 F.2d 1048, 1051, 189 USPQ 143, 147 (CCPA 1976).

The examiner has not provided evidence or technical reasoning which shows that Feist's disclosure that "strong turbidity (phase formation)" occurs at a 2:1 ratio of ethanol to chlorodifluoroacetyl chloride in example 10, and Feist's lack of a similar disclosure in example 9, wherein the alcohol is methanol, would have led one of ordinary skill in the art to

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Also, the examiner has not provided evidence or technical reasoning which shows that Feist's disclosure that there is phase formation and separation of the phases in example 11 prior to distillation, wherein the alcohol is n-propanol, but that there is only "strong turbidity (phase formation)" in example 10, wherein the alcohol is ethanol and the entire reaction product is distilled, would have indicated to one of ordinary skill in the art that the strong turbidity in example 10 is sufficient phase formation for such a person to separate the phases before distillation rather than distilling the entire reaction product as did Feist. Likewise, the examiner has not established that the teaching of forming "strong turbidity (phase formation)" in Feist's example 10 would have led one of ordinary skill in the art to separate, as argued by the examiner (answer, pages 4-5 and 7), the phases in Braun's example 11 (which is the same as Feist's example 1) wherein the alcohol is 2,2,2-trifluoroethanol.

For the above reasons we conclude that the examiner has not carried the burden of establishing a *prima facie* case of

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DECISION

The rejection of claims 1 and 3-9 under 35 U.S.C. § 103 over Braun in view of Feist is reversed.

REVERSED

CHARLES F. WARREN)	
Administrative Patent Judge)	
)	
)	
)	BOARD OF PATENT
TERRY J. OWENS)	
Administrative Patent Judge)	APPEALS AND
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)	INTERFERENCES
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LINDA R. POTEATE)	
Administrative Patent Judge)	

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