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DECISION
of 10 February 2004

Case Number: T 0036/01 - 3.3.1

Application Number: 95102506.3

Publication Number: 0670312

IPC: C07D 215/38

Language of the proceedings: EN

Title of invention:

Color developing agent, processing composition and color image-forming method

Applicant:

Fuji Photo Film Co., Ltd.

Opponent:

-

Headword:

Color developing agent/FUJI PHOTO FILM

Relevant legal provisions:

EPC Art. 56

Keyword:

"Main, first, second and third auxiliary requests: inventive step (no) - obvious solution"

Decisions cited:

-

Catchword:

-



Case Number: T 0036/01 - 3.3.1

D E C I S I O N
of the Technical Board of Appeal 3.3.1
of 10 February 2004

Appellant: Fuji Photo Film Co., Ltd.
210 Nakanuma
Minamiashigara-shi
Kanagawa-ken (JP)

Representative: Hansen, Bernd, Dr. Dipl.-Chem.
Hoffmann Eitle,
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted 3 August 2000
refusing European application No. 95102506.3
pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: A. J. Nuss
Members: P. F. Ranguis
R. T. Menapace

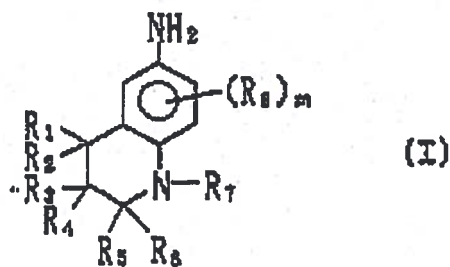
Summary of Facts and Submissions

- I. This appeal lies from the decision of the Examining Division to refuse the European application No. 95 102 506.3 (Publication No. 0 670 312) pursuant to Article 97(1) EPC on the ground that the subject-matter of the then four pending requests lacked clarity (Article 84 EPC) and did not involve an inventive step (Article 56 EPC).
- II. Several documents were cited in the examining proceedings including:
- (1) EP-A- 0 069 585
 - (3) US-A- 2 387 751
 - (4) DATABASE WPI Week 9213, Derwent Publications Ltd., London, GB; AN 92-101 782
 - (5) Journal of the American Chemical Society, vol. 73, 1951, pp 3100-3125.
- III. In its decision, the Examining Division held, in particular, that in view of Example No. 207E of document (1) which disclosed 6-amino-1-hydroxyethyl-2,2,4-trimethyl-tetrahydroquinoline as developing agent, the technical problem to be solved was to provide improved color developing agents. However, the subject-matter of each request embraced alternatives which did not credibly solve the underlying technical problem and, therefore, did not comply with the requirements of Article 56 EPC.

IV. With the statement of grounds of appeal, the Appellant filed four fresh requests as main request and first to third auxiliary request and abandoned the requests filed before the Examining Division.

Claim 1 of the main request before the Board read as follows:

"1. A method for forming a color image which comprises the step of developing an image-wise exposed silver halide color photographic photosensitive material with a developing solution containing a 6-aminotetrahydroquinoline color developing agent represented by the following formula (I):



wherein R₁, R₂, R₃, R₄, R₅, R₆ and R₈ may be the same or different and each represent a hydrogen atom or a substituent selected from:

fluorine and chlorine atoms;
methyl, ethyl, propyl, isopropyl, t-butyl,
2-hydroxyethyl, 3-hydroxypropyl, benzyl,
2-methanesulfonamidoethyl, 3-methanesulfonamidopropyl,
2-methanesulfonylethyl, 2-methoxyethyl, cyclopentyl,
2-acetamidoethyl, hydroxymethyl, 2-carboxyethyl,
2-carbamoylethyl, 3-carbamoylpropyl,
2,3-dihydroxypropyl, 3,4-dihydroxybutyl,
methanesulfonamidomethyl, n-hexyl, 2-hydroxypropyl,
4-hydroxybutyl, 2-carbamoylaminoethyl,
3-carbamoylaminopropyl, 4-carbamoylaminobutyl,

4-carbamoylbutyl, 2-carbamoyl-1-methylethyl,
carbamoylaminomethyl, 4-nitrobutyl,
naphthyl, p-methoxyphenyl,
2-furyl, 2-thienyl, 2-pyrimidinyl, 2-benzotriazolyl,
imidazolyl, pyrazolyl,
cyano, nitro, hydroxyl, carboxyl, sulfo,
methoxy, ethoxy, 2-methoxyethoxy,
2-methanesulfonylethoxy,
phenoxy, p-methoxyphenoxy,
m-(3-hydroxypropionamido)phenoxy, acetamido,
2-methoxypropionamido, p-nitrobenzoylamido,
dimethylamino, diethylamino, 2-hydroxyethylamino,
anilino, m-nitroanilino, N-methylanilino, ureido,
methylureido, N,N-diethylureido,
2-methanesulfonamidoethylureido, dimethylsulfamoylamino,
methylsulfamoylamino, 2-methoxyethylsulfamoylamino,
methylthio, ethylthio, 2-phenoxyethylthio, phenylthio,
2-carboxyphenylthio, 4-cyanophenylthio,
methoxycarbonylamino, ethoxycarbonylamino,
3-methanesulfonylpropoxycarbonylamino,
methanesulfonamido, p-toluenesulfonamido,
2-methoxyethanesulfonamido, carbamoyl,
N,N-dimethylcarbamoyl, N-ethylcarbamoyl, sulfamoyl,
dimethylsulfamoyl, ethylsulfamoyl, methanesulfonyl,
ethanesulfonyl, 2-chloroethanesulfonyl, methoxycarbonyl,
ethoxycarbonyl, t-butoxycarbonyl,
1-phenyl-tetrazolyl-5-oxy, 2-tetrahydroxypyraniloxy,
2-pyridyloxy, phenylazo, 2-hydroxy-4-propanoylphenylazo,
4-sulfophenylazo, acetoxy, benzoyloxy,
4-hydroxybutanoyloxy, N,N-dimethylcarbamoyloxy,
N-methylcarbamoyloxy, N-phenylcarbamoyloxy,
trimethylsilyl, isopropyl-diethylsilyl,
t-butyl-dimethylsilyl, trimethylsilyloxy,
triethylsilyloxy, diisopropylethylsilyloxy,

phenoxy-carbonylamino, 4-cyanophenoxy-carbonylamino, 2,6-dimethoxyphenoxy-carbonylamino, N-succinimido, N-phthalimido, 2-benzothiazolylthio, 2-pyridylthio, methanesulfinyl, benzenesulfinyl, ethanesulfinyl, methoxyphosphonyl, ethoxyphosphonyl, phenoxyphosphonyl, phenoxy-carbonyl, 2-methylphenoxy-carbonyl, 4-acetamidophenoxy-carbonyl, acetyl, benzoyl and 4-chlorobenzoyl groups;

Whereby in at least one of the groups R_1 and R_2 , R_3 and R_4 , and R_5 and R_6 , both residues are substituents selected from the above;

R_7 represents methyl, ethyl, propyl, isopropyl, t-butyl, 2-hydroxyethyl, 3-hydroxypropyl, benzyl, 2-methanesulfonamidoethyl, 3-methanesulfonamidopropyl, 2-methanesulfonylethyl, 2-methoxyethyl, cyclopentyl, 2-acetamidoethyl, hydroxymethyl, 2-carboxyethyl, 2-carbamoylethyl, 3-carbamoylpropyl, 2,3-dihydroxypropyl, 3,4-dihydroxybutyl, methanesulfonamidomethyl, n-hexyl, 2-hydroxypropyl, 4-hydroxybutyl, 2-carbamoylaminoethyl, 3-carbamoylaminopropyl, 4-carbamoylaminobutyl, 4-carbamoylbutyl, 2-carbamoyl-1-methylethyl, carbamoylaminomethyl, 4-nitrobutyl, naphthyl, p-methoxyphenyl, 2-furyl, 2-thienyl, 2-pyrimidinyl, 2-benzotriazolyl, imidazolyl or pyrazolyl group;

R_8 is a substituent selected from those given above for R_1 to R_6 ; and

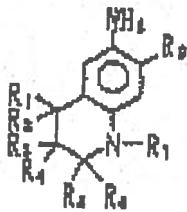
m represents an integer of 0 to 3,

with the exception of

6-amino-1-hydroxyethyl-2,2,4-trimethyl-tetrahydroquinoline".

Claim 1 of the first auxiliary request before the Board read as follows:

"1. A method for forming a color image which comprises the step of developing an image-wise exposed silver halide color photographic photosensitive material with a developing solution containing a 6-aminotetrahydroquinoline color developing agent represented by the following formula :



wherein $R_1, R_2, R_3, R_4, R_5, R_6$ may be the same or different and each represent a hydrogen atom or a substituent selected from:
fluorine and chlorine atoms;
methyl, ethyl, propyl, isopropyl, t-butyl,
2-hydroxyethyl, 3-hydroxypropyl, benzyl,
2-methanesulfonamidoethyl, 3-methanesulfonamidopropyl,
2-methanesulfonylethyl, 2-methoxyethyl, cyclopentyl,
2-acetamidoethyl, hydroxymethyl, 2-carboxyethyl,
2-carbamoylethyl, 3-carbamoylpropyl,
2,3-dihydroxypropyl, 3,4-dihydroxybutyl,
methanesulfonamidomethyl, n-hexyl, 2-hydroxypropyl,
4-hydroxybutyl, 2-carbamoylaminoethyl,
3-carbamoylaminoethyl, 4-carbamoylaminoethyl,
4-carbamoylbutyl, 2-carbamoyl-1-methylethyl,
carbamoylaminoethyl, 4-nitrobutyl,
naphthyl, p-methoxyphenyl,
2-furyl, 2-thienyl, 2-pyrimidinyl, 2-benzotriazolyl,

imidazolyl, pyrazolyl,
cyano, nitro, hydroxyl, carboxyl, sulfo,
methoxy, ethoxy, 2-methoxyethoxy,
2-methanesulfonylethoxy,
phenoxy, p-methoxyphenoxy,
m-(3-hydroxypropionamido)phenoxy, acetamido,
2-methoxypropionamido, p-nitrobenzoylamido,
dimethylamino, diethylamino, 2-hydroxyethylamino,
anilino, m-nitroanilino, N-methylanilino, ureido,
methylureido, N,N-diethylureido,
2-methanesulfonamidoethylureido,
dimethylsulfamoylamino, methylsulfamoylamino,
2-methoxyethylsulfamoylamino, methylthio, ethylthio,
2-phenoxyethylthio, phenylthio, 2-carboxyphenylthio,
4-cyanophenylthio, methoxycarbonylamino,
ethoxycarbonylamino,
3-methanesulfonylpropoxycarbonylamino,
methanesulfonamido, p-toluenesulfonamido,
2-methoxyethanesulfonamido, carbamoyl,
N,N-dimethylcarbamoyl, N-ethylcarbamoyl, sulfamoyl,
dimethylsulfamoyl, ethylsulfamoyl, methanesulfonyl,
ethanesulfonyl, 2-chloroethanesulfonyl,
methoxycarbonyl, ethoxycarbonyl, t-butoxycarbonyl,
1-phenyl-tetrazolyl-5-oxy, 2-tetrahydroxypyraniloxy,
2-pyridyloxy, phenylazo,
2-hydroxy-4-propanoylphenylazo, 4-sulfophenylazo,
acetoxyl, benzoyloxy, 4-hydroxybutanoyloxy,
N,N-dimethylcarbamoyloxy, N-methylcarbamoyloxy,
N-phenylcarbamoyloxy, trimethylsilyl,
isopropyl-diethylsilyl, t-butyl-dimethylsilyl,
trimethylsilyloxy, triethylsilyloxy,
diisopropylethylsilyloxy, phenoxy-carbonylamino,
4-cyanophenoxy-carbonylamino,
2,6-dimethoxyphenoxy-carbonylamino, N-succinimido,

N-phtalimido, 2-benzothiazolylthio, 2-pyridylthio, methanesulfinyl, benzenesulfinyl, ethanesulfinyl, methoxyphosphonyl, ethoxyphosphonyl, phenoxyphosphonyl, phenoxy-carbonyl, 2-methylphenoxy-carbonyl, 4-acetamidophenoxy-carbonyl, acetyl, benzoyl and 4-chlorobenzoyl groups;

Whereby in at least one of the groups R₁ and R₂, R₃ and R₄, and R₅ and R₆, both residues are substituents selected from the above;

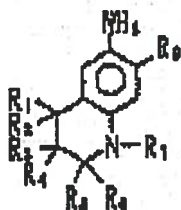
R₇ represents methyl, ethyl, propyl, isopropyl, t-butyl, 3-hydroxypropyl, benzyl, 2-methanesulfonamidoethyl, 3-methanesulfonamidopropyl, 2-methanesulfonylethyl, 2-methoxyethyl, cyclopentyl, 2-acetamidoethyl, hydroxymethyl, 2-carboxyethyl, 2-carbamoylethyl, 3-carbamoylpropyl, 2,3-dihydroxypropyl, 3,4-dihydroxybutyl, methanesulfonamidomethyl, n-hexyl, 2-hydroxypropyl, 4-hydroxybutyl, 2-carbamoylaminoethyl, 3-carbamoylaminopropyl, 4-carbamoylaminobutyl, 4-carbamoylbutyl, 2-carbamoyl-1-methylethyl, carbamoylaminomethyl, 4-nitrobutyl, naphthyl, p-methoxyphenyl, 2-furyl, 2-thienyl, 2-pyrimidinyl, 2-benzotriazolyl, imidazolyl or pyrazolyl group;

R₈ is a substituent selected from a hydrogen atom, methyl, ethyl, propyl, isopropyl, t-butyl, 2-hydroxyethyl, 3-hydroxypropyl, benzyl, 2-methanesulfonamidoethyl, 3-methanesulfonamidopropyl, 2-methanesulfonylethyl, 2-methoxyethyl, cyclopentyl, 2-acetamidoethyl, hydroxymethyl, 2-carboxyethyl, 2-carbamoylethyl, 3-carbamoylpropyl, 2,3-dihydroxypropyl, 3,4-dihydroxybutyl, methanesulfonamidomethyl, n-hexyl, 2-hydroxypropyl, 4-hydroxybutyl, 2-carbamoylaminoethyl, 3-carbamoylaminopropyl, 4-carbamoylaminobutyl,

4-carbamoylbutyl, 2-carbamoyl-1-methylethyl, carbamoylaminomethyl, 4-nitrobutyl, methoxy, ethoxy, 2-methoxyethoxy or 2-methanesulfonylethoxygroup".

Claim 1 of the second auxiliary request before the Board read as follows:

"1. A method for forming a color image which comprises the step of developing an image-wise exposed silver halide color photographic photosensitive material with a developing solution containing a 6-aminotetrahydroquinoline color developing agent represented by the following formula :



wherein R₁, R₂, R₃, R₄, R₅, R₆ and R₉ may be the same or different and each represent a hydrogen atom or a substituent selected from:

methyl, ethyl, propyl, isopropyl, t-butyl, 2-hydroxyethyl, 3-hydroxypropyl, hydroxymethyl, n-hexyl, 2-hydroxypropyl, 4-hydroxybutyl,

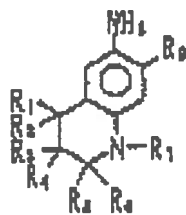
whereby in at least one of the groups R₁ and R₂, R₃ and R₄, and R₅ and R₆, both residues are substituents selected from the above;

R₇ represents methyl, ethyl, propyl, isopropyl, t-butyl, 2-hydroxyethyl, 3-hydroxypropyl, 2-methanesulfonamidoethyl, 3-methanesulfonamidopropyl,

2-methanesulfonylethyl, 2-methoxyethyl, cyclopentyl,
2-acetamidoethyl, hydroxymethyl, 2-carbamoylethyl,
3-carbamoylpropyl, 2,3-dihydroxypropyl,
3,4-dihydroxybutyl, methanesulfonamidomethyl, n-hexyl,
2-hydroxypropyl, 4-hydroxybutyl, 2-carbamoylaminoethyl,
3-carbamoylaminopropyl, 4-carbamoylaminobutyl,
4-carbamoylbutyl, 2-carbamoyl-1-methylethyl,
carbamoylaminomethyl group,
with the exception of
6-amino-1-hydroxyethyl-2,2,4-trimethyl-tetrahydroquinol
ine".

Claim 1 of the third auxiliary request before the Board
read as follows:

"1. A method for forming a color image which comprises
the step of developing an image-wise exposed silver
halide color photographic photosensitive material with
a developing solution containing a 6-
aminotetrahydroquinoline color developing agent
represented by the following formula :



wherein R₁, R₂, R₃, R₄, R₅, R₆ and R₉ may be the same or
different and each represent a hydrogen atom or a
substituent selected from:

methyl, ethyl, propyl, isopropyl, t-butyl,
2-hydroxyethyl, 3-hydroxypropyl, hydroxymethyl,
n-hexyl, 2-hydroxypropyl, 4-hydroxybutyl,

whereby in at least one of the groups R_1 and R_2 , R_3 and R_4 , and R_5 and R_6 , both residues are substituents selected from the above;
 R_7 represents methyl, ethyl, propyl, isopropyl, t-butyl, 3-hydroxypropyl, 2-methanesulfonamidoethyl, 3-methanesulfonamidopropyl, 2-methanesulfonylethyl, 2-methoxyethyl, cyclopentyl, 2-acetamidoethyl, hydroxymethyl, 2-carbamoylethyl, 3-carbamoylpropyl, 2,3-dihydroxypropyl, 3,4-dihydroxybutyl, methanesulfonamidomethyl, n-hexyl, 2-hydroxypropyl, 4-hydroxybutyl, 2-carbamoylaminoethyl, 3-carbamoylaminopropyl, 4-carbamoylaminobutyl, 4-carbamoylbutyl, 2-carbamoyl-1-methylethyl, carbamoylaminoethyl group".

The Appellant, furthermore, argued that the Examining Division's focus on Example 207E of document (1) was based on consideration with the benefit of hindsight, which ignored the whole teaching of document (1). The preferred compounds of document (1) were not similar to the claimed compounds and the fact that document (1) did not recommend the compound of Example 207A as starting point for further developments also became evident in view of the results obtained with this compound (cf. Table, page 7 of the statement of grounds of appeal). Furthermore, document (1) required that the developing agent cross-oxidises with the sulfonamidodiphenylamine. In addition, document (3) taught against the compounds contemplated upon in the present invention.

- V. In a communication accompanying the summons to oral proceedings which took place on 10 February 2004, the Board pointed out that document (1) might be the

closest state of the art for defining the technical problem to be solved. The prior art acknowledged in the examining proceedings and in the application (cf. pages 121-122) might also be taken into account for assessing the obviousness of the claimed solution with respect to the technical problem.

VI. In response, the Appellant submitted with a letter received on 12 January 2004 a technical report comparing the activity of the compounds according to the invention to the compound incidentally disclosed in document (1).

The arguments of the Appellant submitted at the oral proceedings may be summarised as follows:

The claimed invention related to a developing agent for color photographs suitable for rapid processing as explained in the description. By contrast, document (1) related to a different reaction wherein the developing agent cross-oxidised with the color-forming para-sulfonamidodiphenylamine to form sulfonimides dyes. Document (1) could not be, therefore, seen as the closest state of the art.

If, nevertheless, the Board maintained its provisional opinion (cf. point V above), the comparison of the results obtained in the technical report with the results of the experiments disclosed in the application as filed showed that the claimed compounds exhibited more stable performance regarding the required low fog density and the rapid processing time than the 6-amino-1-hydroxyethyl-2,2,4-trimethyl-tetrahydroquinoline compound in the operative range 40°C-50°C.

Furthermore, document (4) was to be considered the closest state of the art since it disclosed a color developing composition used for rapid processing. It was, in particular, true for the first to third auxiliary requests which did not contain the disclaimer related to the 6-amino-1-hydroxyethyl-2,2,4-trimethyl-tetrahydroquinoline compound. In view of the teaching of document (4), taken in combination with the teachings of documents (3) and (5), the person skilled in the art would have been deterred from envisaging 2, or 3, or 4, di-substituted tetrahydroquinoline compounds as developing agents, which rendered the claimed method inventive. In addition, the comparative tests disclosed in the application as filed demonstrated the improved properties of the claimed method in comparison with the methods involving the developing agents of document (4).

The Appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the main request or one of the three auxiliary requests, all filed on 12 December 2000.

At the end of the oral proceedings the decision of the Board was announced.

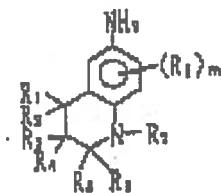
Reasons for the Decision

1. The appeal is admissible.

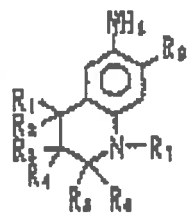
2. Having regard to the Board's findings indicated below concerning the inventive step of the subject-matter of each request, the Board sees no need to deal with the formal requirements of the EPC.

3. *Article 56 EPC - Inventive step*

3.1 The claimed invention as reflected by Claim 1 of each request before the Board relates to a method for forming a color image which comprises the step of developing an image-wise exposed silver halide color photographic photosensitive material with a developing solution containing a 6-aminotetrahydroquinoline color developing agent represented by the following formulas:



(cf. point V above, main request) or



(cf. point V above, first, second and third auxiliary request).

Claim 1 of each request have in common that R₁, R₂, R₃, R₄, R₅, R₆ and R₈ or R₉ may be the same or different and each represent a hydrogen atom or a substituent selected from:

methyl, ethyl, propyl, isopropyl, t-butyl,
2-hydroxyethyl, 3-hydroxypropyl, hydroxymethyl,
n-hexyl, 2-hydroxypropyl, 4-hydroxybutyl,

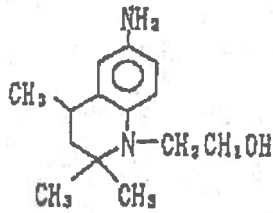
whereby in at least one of the groups R₁ and R₂, R₃ and R₄, and R₅ and R₆, both residues are substituents selected from the above;

R₇ represents methyl, ethyl, propyl, isopropyl, t-butyl, 3-hydroxypropyl, 2-methanesulfonamidoethyl, 3-methanesulfonamidopropyl, 2-methanesulfonylethyl, 2-methoxyethyl, cyclopentyl, 2-acetamidoethyl, hydroxymethyl, 2-carbamoylethyl, 3-carbamoylpropyl, 2,3-dihydroxypropyl, 3,4-dihydroxybutyl, methanesulfonamidomethyl, n-hexyl, 2-hydroxypropyl, 4-hydroxybutyl, 2-carbamoylaminoethyl, 3-carbamoylaminopropyl, 4-carbamoylaminobutyl, 4-carbamoylbutyl, 2-carbamoyl-1-methylethyl, carbamoylaminomethyl group".

3.2 In order to determine the technical problem to be solved by the claimed invention, it is necessary to establish the closest state of the art. This "closest state of the art" is normally a prior art document disclosing subject-matter aiming at the same objective as the claimed invention and having the most relevant technical features in common.

3.2.1 Document (1) in its Example 207E discloses a method for developing an imagewise exposed photographic composition containing silver bromide and a color-forming para-sulfonamidodiphenylamine dye precursor in a processing solution using as developing agent 6-

amino-1-hydroxyethyl-2,2,4-trimethyl-
tetrahydroquinoline of formula:



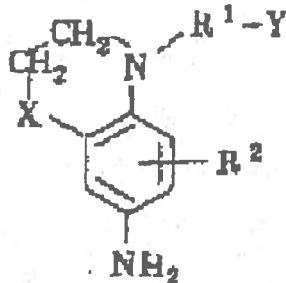
3.2.2 The Appellant argued that the method disclosed in Example 207E did not aim at the same objective as the claimed method of each request since the developing agents disclosed in document (1) acted as cross-oxidizers with the sulfoamidodiphenylamine (cf. page 25, line 5 to page 26, line 19). By contrast, the objective of the present invention was to provide a method for forming a color image which made it possible to rapidly process an image-wise exposed silver halide color photographic photosensitive material (cf. page 2, lines 19 to 22). To express this in other terms, the invention related to a developing agent for color photographs suitable for rapid processing (cf. page 1, lines 12 to 13).

However, this argumentation ignores the fact that in the present situation the objective to be taken into account to determine the closest state of the art cannot be one of the objectives mentioned in the description but only that which emerges from the technical features of the method for forming a color image as claimed. In that context, the Board observes that there are no features in the claims of all the requests from which it could be derived that the claimed method aimed at a different objective than the

method disclosed in Example 207E of document (1) (cf. point IV above).

- 3.2.3 Furthermore, contrary to the Appellant's submissions, it does not matter for the determination of the closest state of the art that the person skilled in the art would have disregarded the developing agent disclosed in Example 207E due to its less good properties in comparison with some other developing agents tested in that document. What matters for determining the closest state of the art is, after the assessment of the identity of the objective, the similarity of the structural features of the compound, in a case where this is the sole difference between the claimed invention and the prior art.
- 3.2.4 In conclusion, regarding the method disclosed in Example 207A of document (1), the Board holds that this method aims at the same objective as the claimed invention for each of the requests. The sole difference between the 6-amino-1-hydroxyethyl-2,2,4-trimethyl-tetrahydroquinoline disclosed therein and the compounds involved in the claimed method is that the substituent R_7 is as defined in each of the Claims 1 (cf. point IV or 3.1 above). It is, in particular, observed that the sole difference between the 6-amino-1-hydroxyethyl-2,2,4-trimethyl-tetrahydroquinoline according to Example 207E of document (1) and the 6-amino-1-(3-hydroxypropyl)-2,2,4-trimethyl-tetrahydroquinoline within the definition of Claim 1 of each request is the presence of a methylene group (-CH₂-), i.e. hydroxyethyl versus hydroxypropyl.

3.2.5 Document (4) discloses a color developing composition for rapid processing containing an hydroxylamine compound and a pyridino-pyrazolo-aniline developer of formula:



wherein R₁ is alkylene; R₂ is H, halogen, alkyl, alkoxy, amido, ureido, or alkoxy-carbonylamino; X is a single bond or methylene; Y is H, OH, sulphonamido, carbamoyl, sulphamoyl, ureido, sulphamolyamino, amino, or alkoxy.

This document aims at the same objective as the claimed invention in that it also relates to a composition to be used in a color developing process and the pyridino-aniline developers disclosed therein (X is methylene) differ from those defined in Claim 1 of each request in that the carbon atoms in the 2, 3, or 4-position are unsubstituted, whereas in the claimed invention in at least one of the groups R₁ and R₂, R₃ and R₄, and R₅ and R₆, both residues are substituents (cf. point IV or 3.1 above).

3.2.6 Contrary to the Appellant's view, document (1) is closer to the claimed invention than document (4) since 6-amino-1-hydroxyethyl-2,2,4-trimethyl-tetrahydroquinoline only necessitates the insertion of a methylene group in the substituent at the 1-position, i.e. 3-hydroxypropyl instead of hydroxyethyl (cf. point 3.2.4), whereas the pyridino-aniline compounds of document (4) necessitate the replacement of two

hydrogen atoms by two methyl groups (cf. point 3.2.5 above). The known compound 6-amino-1-hydroxyethyl-2,2,4-trimethyl-tetrahydroquinoline requires the least structural modifications for arriving at the claimed invention.

It is concluded that for each request before the Board, document (1) has the most relevant technical features in common with the claimed invention and, therefore, qualifies as the closest state of the art. This is in line with the established jurisprudence.

3.3 In view of this closest state of the art, the technical problem to be solved is to be determined.

3.3.1 The Appellant relying upon the comparative experiments submitted with the letter of 12 January 2004 (cf. point VI above) argued that the method for forming a color image using a developing solution containing the compounds according to the invention showed improved properties in comparison with the same method involving 6-amino-1-hydroxyethyl-2,2,4-trimethyl-tetrahydroquinoline as developing agent as disclosed in document (1).

3.3.2 From the review of the data present therein, it transpires that the method using the compound of the prior art, i.e. 6-amino-1-hydroxyethyl-2,2,4-trimethyl-tetrahydroquinoline necessitates 2 minutes and 10 seconds to obtain the density of yellow image of 1.8 or higher, whereas the fog density is 0.22. In comparison, the methods using the compounds of the invention enable the intended density of the yellow image to be obtained within 1 minute 20 and 1 minute 50, whereas the fog

density is lower, between 0.08 and 0.21 depending on the compounds used.

3.3.3 However, the Board observes that the application as filed also contains comparative experiments regarding a method for forming a color image using a developing solution containing the same compounds, namely 6-amino-1-hydroxyethyl-2,2,4-trimethyl-tetrahydroquinoline and the compounds according to the invention. Contrary to the experiments submitted with the letter of 12 January 2004 (cf. points 3.3.2 above), those results reveal that the method using 6-amino-1-hydroxyethyl-2,2,4-trimethyl-tetrahydroquinoline yields a process time for attaining the intended density of the yellow image (2 minutes 30) and a low fog density (0.01) as good as the results obtained with the compounds according to the invention, namely a process time ranging from 2 minutes to 2 minutes 30 and a fog density ranging from 0.01 to 0.15.

The differences in the results stem from the fact that the temperature of the color developing solutions is 40°C in the case of the experiments disclosed in the application, whereas the temperature of the color developing solutions is 45°C in the case of the experiments submitted with a letter dated 12 January 2004. This explains, in particular, the increase in the process time for attaining the intended density of the yellow image in the method disclosed in the application.

3.3.4 However, both methods are within the scope of Claims 1 of each request. Indeed, the description as originally filed indicates that the processing temperature for the color developer is preferably 35°C or above, more

preferably 40 to 45°C (cf. page 41, lines 4 to 5). Even if an improvement could be acknowledged for the method using a developing solution at 45°C, this cannot be the case for the method carried out at 40°C.

Nor can the Board accept the Appellant's argument that, in contrast with the compound of Example 207E of document (1), the compounds defined in Claim 1 of each request showed improved properties in the operative range 40°C-50°C. First, no temperature range is recited in Claim 1 of each request. Furthermore, had this been the case, that would not have necessarily implied that an improved performance was to be maintained over the said range. This would have been, moreover, at variance with the description which relates to "the processing temperature" (cf. page 41, line 4) and to the experiments disclosed therein which all involve a single temperature of development, i.e. 40°C (cf. page 116, line 10 and page 119, lines 5 to 12).

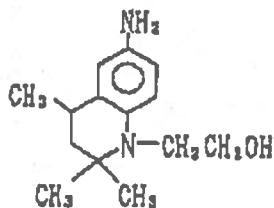
In conclusion, when carrying out the claimed method at 40°C, the said method does not reveal any improved effect over the closest state of the art. Since the improvement is not obtained over the whole range covered by the method claim, the technical problem to be solved cannot be seen in the provision of an improved method for forming a color image.

- 3.3.5 The technical problem to be solved can only be seen in the provision of a method for forming a color image with a developing solution containing a further color developing agent.

3.4 In view of the content of the application as filed, in particular the examples, the technical problem is credibly solved within the whole area of Claim 1 of each request.

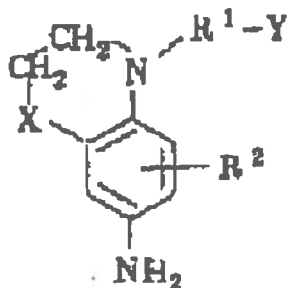
3.5 It remains to be decided whether or not it would have been obvious for the person skilled in the art to solve the above defined technical problem in the claimed way.

3.5.1 Starting from document (1) disclosing a method for forming a color image which comprises the step of developing an image-wise exposed silver halide color photographic photosensitive material with a developing solution containing the 6-amino-1-hydroxyethyl-2,2,4-trimethyl-tetrahydroquinoline of formula:



The person skilled in the art, looking for a method for forming a color image with a developing solution containing a further color developing agent, would have considered other documents relating to methods having the same object, namely documents (4), (3) and (5).

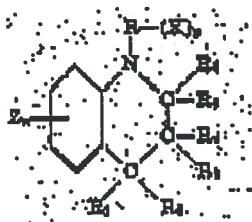
3.5.2 By reference to document (4) which discloses pyridino-pyrazolo-aniline developers of formula:



wherein *inter alia* R₁ is alkylene; R₂ is H; X is a methylene; Y is OH (cf. point 3.2.5 above), he would have noted that this formula encompassed the compound wherein R₁ is ethylenyl (-CH₂-CH₂-) and, by comparison with the 6-amino-1-hydroxyethyl-2,2,4-trimethyl-tetrahydroquinoline disclosed in document (1), would have concluded that the developing properties of both compounds were preserved whether they are 2,2,4-trimethyl substituted or not.

3.5.3 The Appellant however argued that documents (3) and (5) warned against the use of 2, 3 or 4-substituted tetrahydroquinolines.

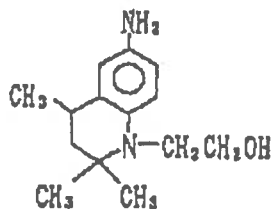
Contrary to the Appellant's submissions, document (3) does not teach against the use of 2, 3 or 4-substituted tetrahydroquinolines. Indeed, document (3) discloses photographic developers of formula



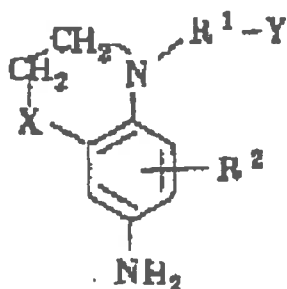
wherein R₁, R₂, R₃, R₄, R₅ and R₆ may be *inter alia* hydrogen or alkyle (cf. column 1, lines 32 to 37). It only warns against compounds having more than three R₁'s substituent other than hydrogen (cf. column 1, lines 53 to 57). In the Board's judgment, this document rather confirms that the trifold methyl-substitution in 2,2,4-position preserves the developing properties of the tetrahydroquinoline compounds vis-à-vis the unsubstituted tetrahydroquinoline compounds.

In the same manner, if it is true that document (5) shows that planar arrangements like compounds 52, 53, 54 (respectively, 5-amino-1-(β-methylsulfonamidoethyl)-2,3-dihydroindole, 6-amino-1-ethyl-1,2,3,4-tetrahydroquinoline, 6-amino-1-(β-methylsulfonamidoethyl)-1,2,3,4-tetrahydroquinoline), improve the electrochemical potential compared with the 4-amino-2-methyl-N-diethylaniline (compound 9), this does not deter the person skilled in the art to envisage substitutions on the pyridino ring, apart from the fact that this document does not teach that there is a direct link between the electrochemical potential and the processing time.

3.5.4 Therefore, from the information contained in documents (1) and (4), the person skilled in the art would have noted that the 6-amino-1-hydroxyethyl-2,2,4-trimethyl-tetrahydroquinoline of formula:



had the same developing properties as the 6-amino-1-(hydroxyalkylene)-tetrahydroquinoline compounds disclosed in document (4)



wherein R_1 is alkylene; R_2 is H; X is a methylene; Y is OH, in particular when R_1 is ethylenyl. In order to solve the technical problem defined above (cf. point 3.4), he would, therefore, have had good reasons to apply the teaching of document (4) to the 6-amino-1-hydroxyethyl-2,2,4-trimethyl-tetrahydroquinoline disclosed in document (1). He would have expected, therefore, that varying the N-substituent of document (1), i.e. hydroxyethyl, in the same manner as disclosed in document (4), namely replacing the hydroxyethyl by other substituents corresponding to substituents $-R_1-Y$ disclosed in document (4), would lead to compounds having color developing properties not different from that known from document (1).

In particular, he would, without inventive ingenuity, have envisaged replacing:

- the hydroxyethyl substituent by another hydroxyalkyl (since in document (4) R_1 is alkylene and Y may be OH) such as 3-hydroxypropyl, 2-hydroxypropyl, 4-hydroxybutyl, hydroxymethyl,
- the hydroxyethyl substituent by a carbamoylalkyl (since in document (4) R_1 is alkylene and Y may be carbamoyl) such as 2-carbamoylethyl, 3-carbamoylpropyl, 4-carbamoylbutyl, 2-carbamoyl-1-methylethyl),
- the hydroxyethyl substituent by a carbamoylaminoalkyl, i.e. ureidoalkyl (since in document (4) R_1 is alkylene and Y may be ureido) such as 2-carbamoylaminoethyl, 3-carbamoylaminoethyl, 4-carbamoylaminoethyl, carbamoylaminoethyl,
- the hydroxyethyl substituent by an alkoxyalkyl (since in document (4) R_1 is alkylene and Y may be alkoxy) such as 2-methoxyethyl.

All the compounds thus envisaged without necessitating any inventive ingenuity are within Claim 1 of each request. The person skilled in the art would have arrived, therefore, in an obvious manner at a method for forming a color image which comprises the step of developing a color photographic photosensitive material with a developing solution, containing 6-amino-1-hydroxyethyl-2,2,4-trimethyl-tetrahydroquinoline compounds falling within the claimed subject-matter of each request.


3.6 For these reasons the subject-matter of Claim 1 of the main request along with the first, second or third auxiliary requests does not involve an inventive step. Since the Board can only decide on requests as a whole, all the requests must be refused.

Order

The appeal is dismissed.

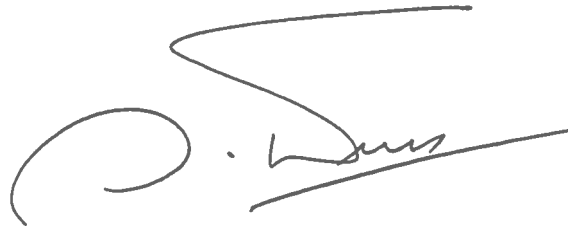
The appeal is dismissed.

The Registrar:



N. Maslin

The Chairman:



A. Nuss

