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D E C I S I O N
of 12 April 2005

Case Number: T 0978/03 - 3.3.06

Application Number: 92115512.3

Publication Number: 0532003

IPC: G03C 7/42

Language of the proceedings: EN

Title of invention:

Bleach-fixing solution for silver halide color photographic
light-sensitive material

Patentee:

KONICA MINOLTA HOLDINGS, INC.

Opponent:

Fuji Photo Film Co., Ltd.

Headword:

EDDS/KONICA

Relevant legal provisions:

EPC Art. 56, 113(1)

EPC R. 67

Keyword:

"Inventive step (no)"

"Substantial procedural violation (no)"

"Reimbursement of the appeal fee (no)"

Decisions cited:

-

Catchword:

-



Case Number: T 0978/03 - 3.3.06

D E C I S I O N
of the Technical Board of Appeal 3.3.06
of 12 April 2005

Appellant: KONICA MINOLTA HOLDINGS, INC.
(Proprietor of the patent)

Representative: Henkel, Feiler & Hänzel
Möhlstr. 37
D-81675 München (DE)

Respondent(s): Fuji Photo Film Co., Ltd.
(Opponent)

Representative: Dr. Klara Goldbach
Grünecker, Kinkeldey
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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 26 June 2003
revoking European patent No. 0532003 pursuant
to Article 102(1) EPC.

Composition of the Board:

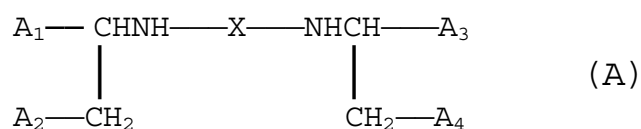
Chairman: P. Krasa
Members: G. Raths
A. Pignatelli

Summary of Facts and Submissions

I. This appeal is from the decision of the Opposition Division to revoke European patent No. 0 532 003 relating to a bleach-fixing solution for silver halide colour photographic light-sensitive material.

II. Claim 1 of the patent as granted read:

"1. A bleach-fixing solution for silver halide colour photographic light-sensitive material comprising a ferric complex salt of a compound represented by the following formula A:



wherein A_1 , A_2 , A_3 and A_4 are independently a $-\text{CH}_2\text{OH}$ group, a $-\text{PO}_3\text{M}_2$ group or a $-\text{COOM}$ group, which may be the same or different; M is hydrogen or a cation; and X is a substituted or unsubstituted alkylene group having 2 to 6 carbon atoms or a $-(\text{B}_1\text{O})_n-\text{B}_2-$ group, in which n is an integer of 1 to 8, B_1 and B_2 are independently a substituted or unsubstituted alkylene group having 1 to 5 carbon atoms, which may be the same or different."

III. An opposition based on the grounds of Article 100(a) and (b) EPC (lack of novelty, lack of inventive step and lack of sufficiency of disclosure; Articles 52(1), 54(1), (2), 56 and 83 EPC) was filed.

IV. The Opponent (hereinafter the respondent) submitted, *inter alia*, the following documents

(2) English translation (pages 9 and 10) of relevant parts of the Japanese book entitled "Shaskin Kogaku no kiso" (Base of the Photographic Engineering), published on 30 September 1982, pages 356 to 357;

(8) US-A-5 009 985 and

(9) US-A-4 704 233.

V. At the oral proceedings before the Opposition Division which took place on 8 November 2000, the Opposition Division decided to give the proprietor (hereinafter the appellant) the opportunity to react on the respondent's experimental report filed on 6 October 2000. The test report of the appellant then showed the opposite to the results of the respondent. The respondent filed again a test report on 12 July 2001. In the annex to the summons to attend oral proceedings on 7 May 2003 the Opposition Division suggested to discuss inventive step as far as bleach-fixing solutions were concerned wherein the fixing agent was other than thiosulfate. The respondent explained the correctness of its experiments in its letter dated 3 January 2003, the appellant in its letter dated 7 January 2003.

At stake were the sources of ethylenediaminodisuccinic acid (EDDS); EDDS was available in different stereoisomeric forms e.g. pure left handedness isomer ([S,S]-EDDS) or in a racemic mixture (a 50:50 mixture

of both enantiomers (mirror image forms) i.e. right and left handedness [R,R] and [S,S] EDDS) as well as in form of isomer mixtures ([R,R], [S,S] and [R,S]).

As a possible cause of divergent results the kind of EDDS stereoisomer used had always been on the table; only at the oral proceedings before the Opposition Division on 7 May 2003, the appellant pointed to the use of the specific stereoisomer of EDDS, namely [S,S]-EDDS, used by the proprietor rather than the racemic mixture of EDDS (i.e. [S,S]-EDDS and [R,R]-EDDS) used by the respondent.

In its decision the Opposition Division (which in the annex to the summons to attend oral proceedings on 7 May 2003 had given the proprietor an opportunity to comment on the experimental data submitted by the respondent), held that the invention was disclosed in a manner sufficiently clear and complete for it to be carried out by a skilled person and was also novel, but did not involve an inventive step in view of documents (2), (8) and (9).

As far as thiosulfate as a fixing agent was concerned the technical problem underlying the patent in suit in the light of document (2) was defined as the provision of another ferric complex salt as an alternative to the ferric complex salt of ethylenediaminetetraacetic acid (EDTA) disclosed by document (2) in order to manufacture bleach-fixing solutions having improved desilvering property, storage stability, biodegradability and reduction in staining.

As far as fixing agents other than thiosulfate were concerned, no storage stability problem existed.

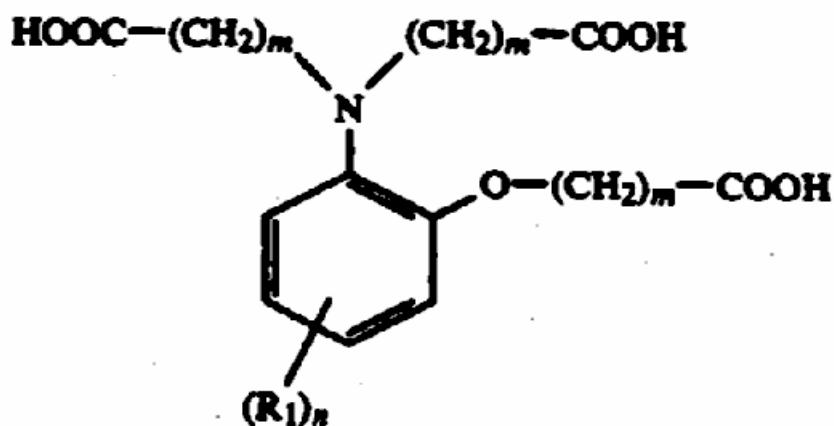
Poor biodegradability of the ferric salts of EDTA was already known from document (8) (column 1, lines 5 to 21), which related to bleaching baths for the processing of photographic elements, particularly colour photographic elements, containing iron complexes.

Document (9) taught to replace EDTA by EDDS which had a better biodegradability than EDTA.

Whether thiosulfates were used or fixing agents other than thiosulfates, the subject-matter of Claim 1 did not involve an inventive step.

- VI. An appeal was filed against this decision by the appellant.
- VII. Oral proceedings before the Board were held on 12 April 2005.
- VIII. Orally and in the written proceedings the appellant submitted in essence the following arguments:

Since document (8) was in the field of photography and solved the problem of biodegradability of EDTA by suggesting the use of iron (III) complexes of the polycarboxylic acids of the following formula



wherein R₁ denoted a substituent,
m denoted 1 or 2 and
n denoted 0, 1 or 2,
a skilled person would have used compounds fulfilling
the requirements of said formula and would not have
turned to EDDS which was suggested in the contested
patent. Because EDDS was disclosed by document (9)
which was in the field of detergents, this document
should be disregarded because the field of detergents
had nothing in common with that of photography.

Therefore, the skilled person in the field of the
contested patent who was a chemist having experience in
the field of photographic materials would not have
consulted document (9) in the field of laundry
detergent compositions to solve the existing technical
problem.

The fact that a racemic mixture of EDDS was used by the
respondent for conducting comparative results was only
disclosed at the oral proceedings before the Opposition
Division. Taken by surprise at such a late stage of the
proceedings, the appellant would not have got an
opportunity to comment on the possible influence of the

stereoisomerism of EDDS on the experimental results. Basing the Opposition Division's ruling on such stereochemical differences would, therefore contravene Article 113(1) EPC. It would follow that the appeal fee had to be reimbursed because of a substantial procedural violation committed by the Opposition Division.

In support of its arguments the appellant filed under cover of the letter dated 6 November 2003 document

(X) "Declaration by Mr Kuwae" dated 24 October 2003.

Table I of document (X) displayed chelate compounds (EDTA, PDTA (i.e. 1,3-propylene diaminotetraacetic acid), DTPA (i.e. diethylenetriaminepentaacetic acid), EDDS), fixing agents (thiosulfate, thiocyanate, thioether and thiourea), the amount of remaining silver and the stain formation in the edge portion of colour paper.

- IX. The respondent contested the arguments of the appellant.
- X. The appellant requested that the decision under appeal be set aside and the patent be maintained as granted, further that the appeal fee be reimbursed.

The respondent requested that the appeal be dismissed.

Reasons for the Decision

- 1. *Inventive step*

1.1 Novelty not having been contested, the only issue to be decided is whether the subject-matter of the claims was obvious to a person skilled in the art or whether it would involve an inventive step in accordance with Article 56 EPC.

1.2 The patent in suit relates to a processing liquid for a silver halide colour photographic light-sensitive material, more specifically to a bleach-fixer (page 2, lines 5 and 6).

1.3 Since the problem of storage stability did not exist when fixing agents other than thiosulfate were involved the discussion is limited to the case where the bleach fixer contains thiosulfate as a fixing agent.

1.3.1 One object of the invention was to provide a processing liquid with a bleach-fixing power for a silver halide colour photographic light-sensitive material which is improved in desilvering property, storage stability and biodegradability and hardly causes the edge portion of colour paper to be stained (page 2, lines 51 to 53).

1.3.2 It results from the patent in suit that at the date of filing the application it was known that the desilvering property, the storage stability, biodegradability and staining depend on the ingredients of the processing liquid for a silver halide colour photographic light-sensitive material. The influence of the ingredients on the four properties is as follows:

1. Desilvering property

Bleaching is normally conducted to remove silver of images from light-sensitive material. A bleaching

solution or bleach-fixer that contains a metal complex salt of an aminopolycarboxylic acid, such as a ferric complex salt of EDTA and a ferric complex salt of PDTA is widely used (page 2, lines 10 to 13).

2. Storage stability

In a bleach fixer, a bleaching agent serves as an oxidant and a fixing agent, normally thiosulfate ions, as a reducing agent. The decomposition of thiosulfate ions causes the bleach-fixer to have poor storage stability (page 2, lines 27 and 28).

To prevent the phenomenon of decomposition of thiosulfate ions, sulfite ions are generally added to a bleach-fixer as a preservative. Meanwhile, a ferric complex salt of EDTA changes from a divalent state to a trivalent state extremely rapidly and keeps on decomposing sulfite ions.

To solve this problem, it was known to use a ferric salt of DTPA (page 2, lines 22 to 31).

Better storage stability than that of a bleach fixer containing a ferric complex salt of EDTA could be obtained by a bleach-fixer containing a ferric salt of DTPA.

3. Biodegradability

A ferric complex salt of ethylenetriaminetetraacetic acid (ETTA) and a ferric complex salt of diethylenepentaacetic acid (DPTA) were known to have poor biodegradability (page 2, lines 36 and 37).

4. Staining

The use of a ferric complex salt of DTPA in the processing of colour paper caused a so-called "edge penetration" phenomenon, in which the edge portion of colour paper is stained (page 2, lines 33 to 35).

1.3.3 Therefore, there was a strong demand for a bleach-fixer which is improved in desilvering property, storage stability and biodegradability and free from the "edge penetration" problem (page 2, lines 39 and 40).

1.3.4 Bleach fixing solutions comprising a ferric complex salt of EDTA and thiosulfate ions were disclosed by document (2) which addressed also the problem of bleach stain and storage stability.

1. With respect to staining, document (2) taught that a bleaching solution should have some characteristic properties:

"The bleaching solution must oxidize the developed silver bleaching solution ... and must not cause any bleach stain due to the solution." (page 9, lines 21, 22, 30 and 31).

The oxidizing agent of the bleaching solution should be an iron aminocarboxylate such as EDTA-iron(III)-chelate.

Polycarboxylic acid salts were mentioned as agents for inhibiting bleach stain (page 10, lines 14, 15, 26 and 28).

2. A bleaching solution should also have the property of never leaving any oxidizing atmosphere on the processed image-forming films. Such an atmosphere would affect the storage durability of the dye image (page 10, lines 1 to 3).
- 1.3.5 Document (2) as also accepted by the parties, is highly relevant for evaluating the inventive step of the claimed subject-matter since bleaching was an issue in both the patent in suit and document (2) which also addressed the problem of stain bleach and storage stability. The Board, therefore, takes document (2) as the starting point for evaluating inventive step.
- 1.3.6 The claimed subject-matter differs from the bleach-fixing solution of document (2) comprising EDTA as a chelating agent and thiosulfate ions as a fixing agent in that according to the patent in suit a chelating agent having the formula (A) as defined in Claim 1 is used, the fixing agents having not been specified in Claim 1.
- 1.3.7 In the light of document (2) the technical problem to be solved underlying the patent in suit can be seen in the improvement of the desilvering property, the storage stability, biodegradability and in the reduction of staining of the edge portion of colour paper.

The question is whether this technical problem has been solved.

1. The patent in suit (page 19, lines 26 to 28) states:

"From tables 3 and 4, it can be understood that the use of a ferric complex salt of an organic acid according to the invention led to a decreased amount of remaining silver, a decreased amount of stains formed in the edge portion and improved stability of the bleach fixer."

As the bleach fixing solution according to the comparative examples referred to in table 3 contained a ferric complex salt of EDTA and thiosulfate (experiments 1-1 to 1-6 of the patent in suit), these solutions fulfil the requirements of document (2) and therefore, may, in this case, be taken as embodiments of the bleach-fixing solution according to document (2) and serve as comparison examples representing this prior art.

2. The results obtained according to example 3 of the patent in suit revealed that ferric complex salts of the chelating agents according to the contested patent were rated "extremely improved" in biodegradability, while those of EDTA, DTPA and HEDTA (i.e. N-hydroxyethylethylenediaminetriacetic acid) were rated "poor" in biodegradability (page 36, lines 39 to 42). This was not disputed by the respondent.

Therefore, in respect of bleach-fixing solutions comprising thiosulfate ions, the Board is satisfied that actually the desilvering property, the storage stability, biodegradability and the property of reducing staining were improved over the properties obtainable by embodiments representing the prior art according to document (2). The technical problem as

defined under paragraph 1 (of point 1.3.7) was therefore credibly solved.

1.3.8 The question which remains to be decided is whether replacing EDTA by EDDS involves an inventive step or not.

1.3.9 According to the patent in suit the bleach fixing solution for a silver halide colour photographic light sensitive material should comprise a ferric complex of a salt of a compound defined in Claim 1 by the formula A (see point II above):

The most prominent example of such a compound was ethylenediamino-N,N'-disuccinic acid (EDDS). It has to be assessed whether there was a hint in the prior art to use a compound fulfilling the requirements of formula (A) for solving the existing technical problem as defined in point 1.3.7.

1.3.10 The appellant argued that the skilled person is a chemist familiar with the field of photographic materials who never would turn to document (9) which is in the field of detergents and would only rely on document (8) which is in the field of photography.

Document (8) suggested to replace EDTA and PDTA both being not readily biodegradable by iron(III) complexes of polycarboxylic acids having a specific formula shown under point VIII.

According to the appellant the skilled person in the field of photography would not even contact a skilled person in a field different from photography when he

encounters an environmental problem. Therefore, the relevant skilled person would never pay attention to document (9) disclosing that the chelants providing the best stain removal, e.g. DTPA, tended to be totally non-biodegradable (column 1, lines 41 to 44). The use of EDTA, DTPA and TTHEA (i.e. triethylenetetraminehexaacetic acid) should be replaced by that of EDDS having great biodegradability properties (column 1, lines 54 to 61 and column 3, lines 11 to 14).

1.3.11 The Board cannot accept these arguments for the following reasons:

Especially because some countries were trying to impose restrictions on the use of a ferric complex salt of EDTA and a ferric complex salt of DTPA (see patent in suit, page 2, lines 37 and 38), said problem was addressed on an international level in all the fields where EDTA was used.

Therefore, there was a strong incentive to replace ferric complex salts of EDTA by environmentally friendly compounds. Environmental problems resulting from particular chemicals are not confined to a specific technical area but arise in all technical fields where these compounds are used. Therefore the said strong incentive extended to all technical fields concerned.

The chemist in the field of photography would therefore turn to a chemist being an expert in the field of environmental protection, would learn about EDDS and check whether the use of EDDS would be appropriate in

the field of photography or whether there could be any reservation against its use in the field of photography.

1.3.12 Since EDDS is a polycarboxylic acid (as is EDTA), has the same molecular weight (as EDTA) and four carboxylic groups (as EDTA), the chemist in the field of photography knew that the risk of getting problems relating to interferences with other chemical components used in developing photographs would either not exist or be low. At least, it was obvious to try EDDS as a replacement agent for EDTA to solve the existing technical problem.

1.3.13 Hence, in the case of bleach-fixing solutions comprising thiosulfate, replacing EDTA by EDDS did not involve an inventive step.

1.4 The subject-matter of Claim 1 comprising thiosulfate as fixing agents does not meet the requirements of Article 56 EPC.

2. *Article 113(1) EPC*

2.1 The Opposition Division had explained in the minutes of the oral proceedings held on 7 May 2003 that the discrepancy between experimental results obtained on the one hand by the appellant and on the other hand by the respondent was due to the availability of different stereoisomers of EDDS. Left handed EDDS ([S,S]-EDS) was used by the appellant, a racemic mixture ([S,S]-, [R,R]) of EDDS by the respondent.

The appellant filed new experimental data which were displayed in table I of document (X). The experiments comprised bleach-fixing solutions containing different forms of EDDS: a pure isomer of EDDS ([S,S]-EDDS), a racemic mixture of EDDS ([S,S]-EDDS, [R,R]-EDDS) and an isomer mixture of EDDS ([S,S]-EDDS, [R,R]-EDDS, [R,S]-EDDS, 25:25:50); a comparison in performance (desilvering property and staining) between the different forms of EDDS and EDTA, DTPA and PDTA as chelating agents and different fixing agents was made.

The appellant argued that it had not been given an opportunity to properly refute the allegation of the Opposition Division (namely, different sources of EDDS would lead to different results) which was - according to the appellant - not correct and, therefore, there would have been a violation of Article 113(1) EPC.

2.2 The Board does not accept the arguments of the appellant.

First of all, the appellant (then proprietor) had been given an opportunity by the Opposition Division to comment on the issue of the sources of EDDS; in the Opposition Division's annex to the summons to attend oral proceedings, it was stated:

"3. At the present stage,...the Opposition Division would first like to ask the parties to give a reasoned explanation why the experimental tests at our disposal (Enclosures 3-6 and declaration of 09/03/01), especially the tests which have been carried out under the same experimental conditions

(declaration of 09.03.01 and Enclosure 4), do not lead to the same findings."

The appellant was, therefore, explicitly requested to explore the causes leading to the differences. The attention of the appellant was specifically drawn to this enigmatic aspect of the test reports. Therefore, the appellant was given explicitly an opportunity to present its comments.

Secondly, as the appellant as well as the respondent were both experts familiar with the sources of EDDS, the very disclosure of any stereoisomeric form of EDDS - which is part of the scientific knowledge of the skilled person - can not be seen as a surprising information, all the more as the appellant, when obtaining the results of the test report (submitted under cover of its letter dated 26 March 2001) differing from those of the respondent, had already at that stage an opportunity to explore - on its own - the causes leading to the differences, by the way, with undue burden.

It follows that the appellant's argument to be surprised by a negative decision by the Opposition Decision fails.

Finally, in this decision, the stereoisomeric forms of EDDS were not relevant in the assessment of inventive step since Claim 1 does not differentiate between the different forms of EDDS.

The requirements of Article 113 EPC were fulfilled.

3. *Rule 67 EPC*

Rule 67 EPC requires as a precondition for the reimbursement of the appeal fee that the appeal is allowed. Since in the present case the appeal is not successful, already for this very reason the appellant's request for the reimbursement of the appeal fee must fail.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

G. Rauh

P. Krasa