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File Number: T 517/89 - 3.3.1  
Application No.: 82 304 461.5  
Publication No.: 0 073 636  
Title of invention: Photographic elements containing ballasted couplers

Classification: G03C 7/32

DECISION  
of 23 April 1991

Proprietor of the patent: Eastman Kodak Company  
Opponent: Agfa-Gevaert AG, Leverkusen

Headword: Ballasted Couplers/KODAK  
EPC Art. 54(1), 56, 114(1), 111(1)  
Keyword: "Novelty (yes, after amendment)" - "Inventive step (confirmed),  
ex post facto considerations rejected"

Headnote



Case Number : T 517/89 - 3.3.1

**D E C I S I O N**  
**of the Technical Board of Appeal 3.3.1**  
**of 23 April 1991**

**Appellant :**  
**(Opponent)**

Agfa-Gevaert AG, Leverkusen  
Patentabteilung  
Postfach  
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**Respondent :**  
**(Proprietor of the patent)**

Eastman Kodak Company  
(a New Jersey Corporation)  
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**Representative :**

Baron, Paul Alexander Clifford  
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**Decision under appeal :**

Interlocutory decision of the Opposition Division  
of the European Patent Office dated 5 June 1989  
concerning maintenance of European patent  
No. 0 073 636 in amended form.

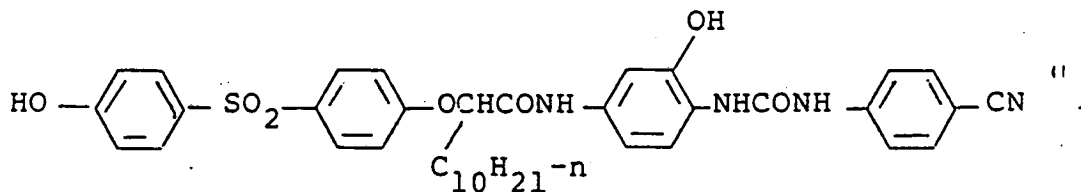
**Composition of the Board :**

**Chairman :** K.J.A. Jahn  
**Members :** R.K. Spangenberg  
J.A. Stephens-Ofner

Summary of Facts and Submissions

I. This appeal lies from the interlocutory decision of the Opposition Division of the EPO dated 5 June 1989 concerning the maintenance in amended form of European patent No. 73 636, granted in response to European patent application No. 82 304 461.5 filed on 24 August 1982 on the basis of 8 claims. The decision under appeal was based upon Claim 1 as granted, amended by the introduction of a proviso at its end, and reading as follows:

"A photographic element comprising a support, a photographic silver halide emulsion and associated therewith, a nondiffusible photographic coupler which reacts with oxidized color developing agent to give a compound which may or may not be an image dye characterized in that said coupler contains a coupling group COUP-bonded at a position other than the coupling position to a ballast group which is substituted with a hydroxyphenylsulfonyl or hydroxyphenylsulfinyl group with the proviso that the coupler is not a compound of the formula:



The decision under appeal referred to 8 documents, the following being the most relevant:

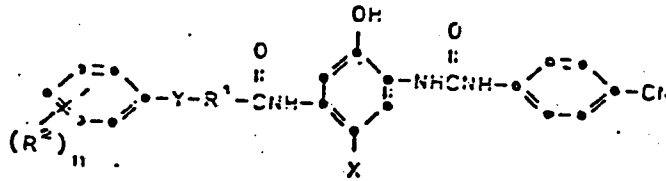
- (1) US serial No. 85 140 (filed 15 October 1979), priority document of EP-A-0 028 099 (published on 6 May 1981).

According to the Opposition Division the subject-matter of the above claim was novel since photographic elements containing Coupler No. 12 of document (1) were no longer covered by it. The remaining subject-matter as far as it overlapped with that disclosed in document (1), was not specifically disclosed in that document, but could only be derived from it by four steps of selection. This selection was not obvious in view of the technical problem of increasing the reactivity of couplers having a ballast group bonded to a non-coupling position, since document (1) did not hint at selecting a particular ballast group for solving this problem. Hence there was no suggestion to use the ballast group of Coupler No. 12 of document (1) together with the other couplers according to the patent in suit, including those comprised by the general formula of that document.

- II. The appeal was filed on 12 August 1989 and the appropriate fee was paid at the same date. A statement of grounds of appeal was received on 22 September 1989.

Oral proceedings took place on 23 April 1991. At the beginning of these proceedings it was indicated that the subject-matter of Claim 1 as maintained by the Opposition Division may not be novel, taking into account the whole content of document (1). After the parties had presented their comments to this issue the Respondent withdrew Claim 1 as maintained by the Opposition Division and submitted a new Claim 1. This new Claim 1 corresponds to Claim 1 as maintained by the Opposition Division, with the exception that the disclaimer at its end now reads as follows:

"with the exception of couplers of the formula



wherein R<sup>2</sup> is a hydroxyphenylsulfonyl group

X is hydrogen or a coupling-off group

Y is oxygen or sulfur

R<sup>1</sup> is a branched alkylene group of 2 to 20 carbon atoms; and

n is 1 to 3".

III. In the Appellant's (Opponent's) submission this claim still covered subject-matter disclosed by document (1) (the only citation which the Appellant continued to rely upon), since the expression "hydroxyphenylsulfonyl" also comprised "hydroxyphenylsulfonamido", as could be seen from e.g. Coupler C-8 of the patent in suit. With respect to the question of inventive step, he argued that the use of the ballast group contained in Coupler No. 12 of document (1), together with other common COUP-groups, was obvious, because a person skilled in the art would have inferred from Example 4 of document (1) that coupler No. 12 had enhanced reactivity since it required less silver for obtaining the same colour density than the other couplers mentioned in this example. Since the only structural difference between the tested couplers was in the ballast group, there was a clear incentive to use this ballast group for improving the reactivity of other known couplers.

- IV. The Respondent (Patent Proprietor) submitted that Coupler C-8 did not fall within the scope of the present claims, since the expression "hydroxyphenylsulfonamido" was not covered by them. He further submitted that Example 4 of document (1) contained obvious errors, since "Coupler No. 12" in this example was the coupler obtained according to the process described on page 11, i.e. Coupler No. 11 from the list on page 5, having a chloro substituent in the coupling position and being a two-equivalent coupler. Consequently, the conclusions drawn from this example by the Appellant were not correct. In any case, this example only disclosed the maximum colour densities (D-max) obtained with three photographic elements containing specific cyan couplers, i.e. particular combinations of COUP and ballast groups, but was wholly silent on the possible reasons for the differences in coupler reactivity which might have been derivable from these values. The observed D-max values might therefore have been influenced by numerous factors and it was not possible without the benefit of hindsight to correlate them with the presence of a hydroxyphenylsulfonyl substituent in the ballast group. Therefore, the use of the ballast group specified in the present Claim 1 together with the COUP-groups defined therein produced a surprising effect and was thus patentable.
- V. The Appellant requested that the decision under appeal be set aside and the patent revoked.

The Respondent requested that patent be maintained on the basis of Claim 1 as submitted in the course of the oral proceedings.

At the end of the oral proceedings the decision of the Board was announced to maintain the patent as requested by the Respondent.

### Reasons for the Decision

1. Having regard to the facts set out in paragraphs I and II above the appeal is admissible.
2. No objection under Article 123 EPC arises against the disclaimer in Claim 1, since the disclaimed subject-matter can be unambiguously derived from Claim 2 of document (1), and the corresponding part of the description (see pages 3 and 4 together with Coupler No. 12 described on page 5).

According to this disclosure the substituent R<sup>2</sup> can be an arylsulfonyl group, the aryl moiety of which has from 6 to 20 carbon atoms and can be substituted by inter alia a hydroxy group. Since an aryl moiety having 6 carbon atoms is unambiguously a phenyl group, the above disclosure is identical with the mentioning of hydroxyphenylsulfonyl as one of several individually described alternative meanings of R<sup>2</sup>. In the Board's judgment, the mental act of choosing one of these individually described alternatives does not add to the above disclosure any new element which might result in a new, more specific technical teaching. This finding is based on the same principle of evaluating the disclosure of a document, i.e. what is made available to the public by it, already applied in the Decision "Diastereomere" (T 12/81, OJ EPO 1982, 296, in particular paragraph 14.2).

### 3. Novelty

Although novelty has not been specifically pleaded in the statement of grounds of appeal, it was nonetheless argued at the Board's prompting (see paragraph III above), similarly to the way in which it had been before the Opposition Division. In the course of that argument it became clear that the principle used by the Opposition

Division to interpret document (1), i.e. to restrict its disclosure to the specific embodiments, differed from that consistently applied by this Board, which is explained in the preceding paragraph (see T 12/81 and other more recent decisions, e.g. T 124/87, OJ EPO 1989, 491 or T 12/90 of 23 August 1990 (not published in the OJ EPO)).

As can be derived from paragraph 2 above, the disclaimer in the amended Claim 1 submitted in the course of the oral proceedings clearly excludes the generic group of chemical compounds disclosed in document (1) and therefore establishes novelty vis-à-vis this prior art.

Additionally, the Appellant argued that in the light of the description, in particular with respect to the Coupler C-8 on page 6 and the ballast group B-4 mentioned on the bottom of page 5 of the patent in suit, the expression "hydroxyphenylsulfonyl group" as used in Claim 1 must be construed as comprising the hydroxyphenylsulfonamido group also mentioned in Claim 2 of document (1). Therefore, the present Claim 1 would still comprise known subject-matter.

The Board, however, does not share this opinion. The expression "hydroxyphenylsulfonyl group" has a clear meaning in organic chemistry, in that it relates to such a group linked to a carbon atom of the rest of the ballast group, whereas in the sulfonamido group the sulfur atom is bound through a nitrogen atom to that rest. Therefore, the ballast group B-4 of the patent in suit is not comprised by the subject-matter of Claim 1. This has been expressly confirmed by the Respondent during the oral proceedings.

The Board is therefore satisfied that the present Claim 1 on its proper construction relates to novel subject-matter.



4. Inventive Step

4.1 According to the patent specification, page 2, line 4 to page 3, line 3, a great number of couplers for photographic elements belong to the state of the art all having COUP-groups of greatly differing chemical structures. The patent in suit relates to photographic elements containing couplers in general, including all kinds of cyan couplers as well as magenta and yellow couplers with a particular ballast group and any conventional coupling group (COUP group). According to the uncontested statement in the patent specification, page 2, lines 50 to 54, these couplers have improved properties, in particular improved reactivity. Document (1), which was considered as closest state of the art by the Opposition Division, relates to cyan couplers of a specific structure which yield sharp cutting dyes of relatively pure hue having improved stability against bleaching, i.e. it relates to a technical problem quite different from that set out in the patent in suit.

Therefore, this document does not qualify as closest state of the art, despite of the fact that it accidentally discloses couplers which were comprised by the patent in suit in the text as granted. In these circumstances, it would be arbitrary to select a particular document as being closest to the patent in suit.

4.2 The technical problem vis-à-vis the state of the art as acknowledged in the patent in suit (see the preceding paragraph) can therefore be seen in providing photographic elements that contain couplers with improved reactivity.

The solution to this problem proposed by the patent in suit essentially consists in providing photographic elements comprising couplers which contain a ballast group

bonded to the COUP-group in a position other than the coupling position and being substituted by a hydroxyphenylsulfonyl or a hydroxyphenylsulfinyl group.

The test results summarised in Table I on page 18 of the patent specification demonstrate that the above problem has thereby been effectively solved, since the tested couplers according to the patent in suit show a higher maximum dye density (D-max, which increases with increasing coupler reactivity) than the comparison couplers of the structures indicated on pages 19 and 20, which were not contested as forming part of the state of the art.

4.3 According to the Respondent's uncontested submission it was common general knowledge that a ballast group was normally present in a dye forming coupler in order to make the coupler non-diffusible in the photographic element, and to render the couplers compatible with high boiling solvents (coupler solvents) used for dispersing the couplers in the photographic element (see the patent specification, page 2, lines 43 to 49). Nothing else was taught by the numerous documents cited as prior art in the patent in suit. With this technical background in mind, a person skilled in the art would certainly not have considered modifying just the "inert" ballast group with a view to increasing the coupler reactivity. Thus, this background art did in no way hint at solving the existing problem in the way envisaged by the patent in suit. This was not contested by the Appellant. Therefore, a more detailed analysis of this background art is not required.

In the Appellant's opinion, however, a skilled person reading Example 4 of document (1) would have recognised that the particular ballast group, contained in "Coupler No. 12", was the one responsible for the enhanced

reactivity of that coupler, as distinct from two other tested couplers having conventional ballast groups, and would therefore have used this ballast group also for increasing the reactivity of other couplers.

The Board does not share this opinion. As already indicated in paragraph 4.1 above, in document (1) the problem of increasing the reactivity of couplers is not addressed. It is therefore doubtful whether a person skilled in the art faced with this problem would have considered it worth while to study this document in detail. However, even if one would admit that this would have been the case, such more thorough consideration would not have pointed towards the particular ballast group as being responsible for the improved reactivity.

Example 4 of document (1) lists inter alia the D-max values of three photographic elements comprising cyan couplers having the characteristic 2-cyanophenylureido group in the 2-position of the phenol moiety disclosed in this document as being the new valuable contribution to the state of the art. No particular emphasis is given to the reactivity of the tested couplers. Moreover, the striking high D-max of "Coupler No. 12" in this example with respect to silver coverage is, as a person skilled in the art would have immediately recognised, due to the fact that this coupler is identical with the two-equivalent coupler described as Coupler No. 11 on page 5 and not the four-equivalent coupler described as Coupler No. 12 on the same page, since this finding is consistent with the preparation of "Coupler No. 12" described on pages 11 and 12. For similar reasons it is likely that "Coupler No. 13" of Example 4 is in fact Coupler No. 12 of page 5, because "Coupler No. 12 on page 5 is a two-equivalent coupler whereas the silver coverage indicated in Example 4 for this coupler points to a four-equivalent coupler and the

numerically closest coupler of this type is Coupler No. 12. It is also true that this latter coupler shows slightly increased reactivity against Coupler No. 7, containing a conventional ballast group not substituted by a hydroxyphenylsulfonyl group.

However, Example 4 of document (1) does not reveal anything more than the fact that the use of a particular coupler in a particular photographic element under particular processing conditions results in a particular D-max value, which can only be correlated with the reactivity of the coupler concerned, taking into account all other parameters of this example. Thus the observed enhanced reactivity may have had numerous causes. In the Board's judgment, in the absence of any further indication what the cause of the enhanced reactivity might have been, it was not possible for a person exercising only ordinary skill, to determine this cause. In particular, a skilled person having in mind the normal function of a ballast group in a coupler molecule would certainly not have focussed his considerations regarding reactivity, on the structure of a substituent in the ballast group, which itself is only a part of the coupler structure. In other words, even if the starting point for investigations eventually leading to the subject-matter of the patent in suit would indeed have been this example, it would not have been routine work to arrive at the claimed invention. Thus, in the Board's judgement, the Appellant's submission is based on the benefit of hindsight and therefore does not establish that document (1), the only state of the art the Appellant continued to rely upon during the appeal proceedings, provided any pointer towards the basic idea underlying the patent in suit, i.e. that a hydroxyphenylsulfonyl substituent in a ballast group increases the reactivity of couplers in photographic elements, regardless of the chemical structure of the COUP

group and presence or absence of a coupling-off group in the coupling position, namely whether or not the dye formation from the coupler requires two or four equivalents of silver.

5. For these reasons, the present Claim 1 relates to patentable subject-matter. Claims 2 to 8 relate to specific embodiments of the photographic elements of Claim 1 and are therefore also allowable. However, the amendment of Claim 1 in the course of the oral proceedings requires some major consequential amendments to the description, as well as the deletion of embodiments in the description which do not relate to the invention as claimed and had led the Appellant to an inappropriate construction of Claim 1 (see paragraph 3.2 above). Therefore the Board finds it appropriate to exercise its power under Article 111(1) EPC and to remit the case to the Opposition Division in order to bring the description in conformity with the allowable set of claims.


Order

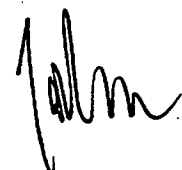
For these reasons, it is decided that:

1. The decision of the Opposition Division is set aside.
2. The case is remitted to the Opposition Division with the order to maintain the patent on the basis of Claim 1 as submitted in the course of the oral proceedings.

The Registrar:

The Chairman:

  
E. Görgmaier

  
K. Jahn