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D E C I S I O N
of 5 February 2003

Case Number: T 1024/98 - 3.3.6

Application Number: 91100836.5

Publication Number: 0439148

IPC: B41M 5/30

Language of the proceedings: EN

Title of invention:
Heat-sensitive recording material

Patentee:
OJI PAPER CO., LTD.

Opponent:
OKUNO Masafumi

Headword:
Recording material/OJI PAPER

Relevant legal provisions:
EPC Art. 56, 84, 123
EPC R. 66

Keyword:
"Main request: clarity (yes) - only mandatory features are to be incorporated into a claim"
"Fresh ground of opposition - not admitted"
"Inventive step (yes) - *ex post facto* analysis inadmissible"

Decisions cited:
T 0323/97, G 0009/91, G 0010/91

Catchword:
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Case Number: T 1024/98 - 3.3.6

D E C I S I O N
of the Technical Board of Appeal 3.3.6
of 5 February 2003

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Decision under appeal: **Interlocutory decision of the Opposition Division of the European Patent Office posted 6 July 1998 concerning maintenance of European patent No. 0 439 148 in amended form.**

Composition of the Board:

Chairman: P. Krasa
Members: G. N. C. Raths
M.-B. Tardo-Dino

Summary of Facts and Submissions

I. This appeal is against the interlocutory decision of the Opposition Division concerning maintenance in amended form of European patent 0 439 148 relating to a heat-sensitive recording material.

In a notice of opposition, based on lack of inventive step, the following documents were, inter alia, cited:

(1) EP-A-0 306 916;

(2) EP-A-0 245 836;

(3) "Chemistry of Functional Dyes", vol. XV, 1989, 412-415.

II. The Opposition Division found that the subject-matter of the claims according to the respondent's (patent proprietor's) then pending second auxiliary request was both novel and inventive.

III. The appellant (opponent) lodged an appeal against the Opposition Division's decision.

IV. Under cover of the letter of 2 January 2003, the respondent filed new sets of claims as a main request and as an auxiliary request, and also a test report.

Main request

Set of claims for the Contracting States DE and GB

Claim 1 reads as follows:

"1. A heat-sensitive recording material comprising (a) a base sheet and (b) a heat-sensitive recording layer formed on the base sheet and comprising a colorless or pale-colored basic dye, a color developing material which develops a color on contact with the dye, and a heat-fusible material, the recording material being characterized in that the basic dye comprises 3-di(n-butyl)amino-6-methyl-7-phenylaminofluoran, and that the heat-fusible material consists of di(p-methylbenzyl) oxalate and at least one member selected from the group consisting of 1,2-bis(phenoxy)ethane, 1,2-bis(3-methylphenoxy)ethane, 1-(4-methoxyphenoxy)-2-(2-methylphenoxy)ethane, stearic acid amide and methylol stearamide wherein di(p-methylbenzyl) oxalate accounts for 25 to 95% by weight of the total amount of the heat fusible material, provided that the color developing material comprises neither 4-hydroxy-4'-n-propoxydiphenylsulfone, nor (4-hydroxyphenylthio)acetic acid 2-(4-hydroxyphenylthio)ethylester."

The dependent claims 2 to 8 are directed to particular embodiments of claim 1. Claim 2 relates to the amount of the oxalate, claim 3 to the amount of the heat-fusible material and claim 6 to the colour developing material. Claims 4 and 5 relate to the basic dye, claims 7 and 8 to a binder.

Set of claims for the Contracting State FR

Claim 1 differs from claim 1 of the main request for the Contracting States DE and GB in that the passage "provided that the color developing material comprises neither 4-hydroxy-4'-n-propoxydiphenylsulfone, nor (4-hydroxyphenylthio)acetic acid 2-(4-hydroxyphenylthio)ethylester" was replaced by

"provided that the color developing material does not comprise 4-hydroxy-4'-n-propoxydiphenylsulfone."

The dependent claims 2 to 8 have the same wording as those for the Contracting States DE and GB.

Auxiliary request

Set of claims for the Contracting States DE and GB

Claim 1 differs from claim 1 of the main request in that "at least one member" was replaced by "one member".

The same applies for claim 1 for the Contracting State FR. The dependent claims of both sets of claims (2 to 8 each) have the same wording as in the main request

The goal of the test report was to show the effect due to methylolstearamide.

V. The appellant argued that the claims lacked clarity because of terms like "heat-fusible material" and that the melting point of the heat fusible material was missing.

The appellant also submitted that the admissibility of the requests under Article 123(2) EPC will have to be discussed in view of decision T 323/97.

As to inventive step, the appellant submitted that the claimed subject-matter was obvious over the combined teachings of documents (1) and (3) and that, furthermore, beneficial adhesion properties were not credible over the whole range of claim 1.

VI. The respondent argued in essence that there was no lack of clarity as to "heat fusible materials".

Further, the use of a heat-fusible material consisting of di(p-methylbenzyl) oxalate (DpMBo) in combination with one of the three ethane derivatives or the two amide components as defined in claim 1 was not obvious.

VII. Oral proceedings took place on 5 February 2003.

The appellant requested that the decision under appeal be set aside and that the European patent No. 0 439 148 be revoked.

It withdrew its request for reimbursement of the appeal fee for procedural violation.

The respondent requested that the patent be maintained on the basis of claims 1 to 8 for the Contracting States of DE and GB and claims 1 to 8 for the Contracting State of FR (main request), or alternatively on the basis of the auxiliary request, both requests submitted under cover of the letter dated 2 January 2003.

VIII. At the end of the oral proceedings the Chairman announced the decision of the Board.

Reasons for the Decision

Main request

1. *Set of claims for the Contracting State FR*

1.1 Article 84 EPC

The appellant objected that methylol stearamide has a melting point of about 107 to 110°C, and thus does not meet the requirements of the heat-fusible material having a melting point of about 80 to about 105°C (patent as granted, claim 2 or page 4, lines 9 and 10). The melting range would be an essential feature to be incorporated into claim 1.

The Board does not agree. In claim 1 five different heat-fusible materials are enumerated at least one of which was to be used together with DpMBo. Under cover of its letter of 2 January 2003 the respondent had proved, among others, that also the use of methylol stearic acid amide together with DpMBo solved the technical problem of the patent in suit. There was no need to incorporate the melting range into claim 1 because all the five compounds have a known and a characterising melting point.

Since the heat-fusible materials are mentioned verbatim in claim 1, the wording of claim 1 leaves no doubt as to clarity.

The Board concludes that claim 1 complies with the requirements of Article 84 EPC. In respect of the dependent claims 2 to 8 no objections were raised, and the Board is satisfied that the dependent claims meet the requirements of Article 84 EPC.

1.2 Article 123 EPC

With respect to Article 123(2) EPC, the appellant cited the following passage of claim 1 "the heat fusible

material consists of di(p-methylbenzyl) oxalate and at least one member selected from the group consisting of 1,2-bis(phenoxy)ethane, 1,2-bis(3-methyl-phenoxy)ethane, 1-(4-methoxyphenoxy)-2-(2-methylphenoxy)ethane, stearic acid amide and methylol stearamide wherein di(p-methylbenzyl) oxalate accounts for 25 to 95% by weight of the total amount of the heat fusible material provided that the colour developing material does not comprise 4-hydroxy-4'-n-propoxydiphenylsulfone".

(i) The appellant objected that because of the amendment of claim 1 as granted the above mentioned passage comprises now a combination which as such was not disclosed in the application as originally filed (Article 123(2) EPC).

The Board does not agree. Claim 1 as originally filed comprised (a) a basic dye comprising 3-di(n-butyl)amino-6-methyl-7-phenylamino-fluoran, (b) a colour developing material and (c) a heat-fusible material. In claim 1 of the main request the basic dye (a) and the colour developing material (b) were mentioned in the general form as originally disclosed. As to the heat fusible material, the relevant passage of the description read: "...there is no restriction on the total amount of the heat-fusible material comprising di(p-methylbenzyl) oxalate...in combination with another heat fusible material..." (application as originally filed, page 4, lines 13 to 16; patent in suit, page 4, lines 1 and 2) and "Various conventionally used substances are usable as heat-fusible materials

having a melting point of about 80 to 105 °C ... Examples of such heat fusible materials are **stearic acid amide, methylol stearamide**, **1,2-bis(phenoxy)ethane**, 1,2-bis(4-methylphenoxy)ethane, **1,2-bis(3-methylphenoxy)ethane, 1-(4-methoxyphenoxy)-2-(2-methylphenoxy)ethane**, 1,4-dimethoxynaphthalene, 1,4-diethoxynaphtalene, dibenzyl terephthalate, 1-hydroxy-2-naphtoic acid phenyl ester, dibenzyl oxalate, 2-hydroxy-4-benzyloxybenzophenenone,p-benzyl-hydroxy-2-naphtoic acid phenyl ester, dibenzyl oxalate, 2-hydroxy-4-benzyloxybenzophenone, p-benzyl-biphenyl" (application as originally filed, page 5, lines 3 and 4 in combination with lines 7 to 11, patent in suit, page 4, lines 9 to 15). Therefore, compositions in which DpMBo was combined with one (or more) of the five other heat fusible compounds require only a selection from one list, i.e. that of these five compounds selected from the above quoted enumeration of fusible materials. Thus by the amendment there was no creation of new information and, in particular, not a new combination not originally disclosed. Consequently, the combination objected to finds its basis in the cited passages. As far as the above mentioned amendment is concerned, the Board finds that claim 1 does not violate Article 123(2) EPC.

(ii) The appellant objected that the expression "at least one" means "one or more" whereas the passage "di(p-methylbenzyl) oxalate ...in combination with another heat-fusible material" (patent in suit, page 4, lines 1 and 2) means

"di(p-methylbenzyl) oxalate with only one other heat-fusible material". Therefore there would be a contradiction between "at least one" and "another", which would amount to an objetion under Article 123(2)EPC.

The Board does not agree. The critical passage of claim 1 as originally filed and as granted read: "...the heat-fusible material comprises di(p-methylbenzyl) oxalate". In other words, the heat-fusible material does not only consist of DpMBo; other heat-fusible materials are not excluded. The number of heat-fusible materials is not limited to one but it may be constituted of several ones.

Therefore, the Board finds that claim 1 meets the requirements of Article 123(2) EPC.

(iii) Furthermore, claim 1 contains a disclaimer which was already present in claim 1 as granted and, thus, did not result from an amendment of the latter. The appellant referring to decision T 323/97 submitted that claim 1 was not allowable since the disclaimer was an amendment for which there was no support in the application as originally filed. Therefore, so the appellant argued, claim 1 does not meet the requirements of Article 123(2) EPC.

In support of the admissibility of its request the appellant contended that the Board has to check whether the amended patent meets the requirements of the EPC (Article 102 in combination with Rule 66(1) EPC).

The Enlarged Board of Appeal has stated that it is not in conformity with the purpose of the appeal procedure "to consider grounds of opposition on which the decision of the Opposition Division has not been based" and has ruled that in appeal procedure a Board of Appeal may not consider a fresh ground for opposition but only the grounds of opposition on which the opposition was based, unless the patentee agrees that a fresh ground for opposition may be considered. Nevertheless, in case of amendments of the claims (or other parts of the patent) in the course of opposition or appeal proceedings such amendments are to be examined as to their compliance with the requirements of the EPC, e.g. with the provision of Article 123(2) EPC (G 9/91, OJ EPO 1993, 408; points 18 and 19 of the Reasons for the Decision).

As already indicated, the disclaimer objected to did not result from an amendment of the claim in the course of the opposition or appeal proceedings and during the oral proceedings before the Board, the respondent did not agree to deal with the disclaimer under Article 123(2) EPC. So, the Board had no power to consider this fresh ground for opposition, obviously not raised as a result of a factual change in the present case but in view of a possible change of case law after the cited decision T 323/97.

(iv) The Board is also satisfied that the subject-matter of claim 1 meets the requirements of Article 123(3) EPC.

1.3 Inventive step

1.3.1 The problem to be solved according to the patent in suit was to obtain a heat-sensitive recording material of high sensitivity (measured in terms of optical density) which can be stored even in a high temperature environment with no reduction in the whiteness of background white area (unrecorded area) on the recording material and without adhesion of residual substances to the thermal head (page 3, lines 35 to 37).

1.3.2 Heat-sensitive recording layers comprising (a) a dye such as 3-di(n-butyl)amino-6-methyl-7-anilinofluoran (b) a colour developing agent and (c) a heat fusible material comprising dibenzyl oxalate in amounts of 30 wt% or 33 wt% were disclosed by document (1) (see eg Examples 2 and 4) which citation the Board takes as the starting point for evaluating inventive step, as also did the Opposition Division and the appellant. The problem as defined in document (1) was to improve heat-responsibility (sensitivity) and image storability and to prevent deterioration in the white area and in the coloured area (page 3, lines 8, 11 and 12).

With respect to residual substances on the thermal head, document (1) taught that the amount of the heat-fusible material deposited would increase when the amounts of colour developing agent and of the dibenzyl oxalate were superior to 600% by weight, based on the weight of the dye precursor (page 5, lines 35 to 40).

1.3.3 According to the patent in suit DpMBo obtained only a B-rating for residual substances adhering to the thermal head (see table 1, page 9) i.e. a small amount

of residual substances adhered to the head.

In view of these results the problem underlying the patent in suit in the light of document (1) may be redefined as an improvement of the composition for a heat-sensitive recording material with a view to reducing residual substances adhering to the thermal head.

Examples 2 and 3 of the patent in suit as well as the experiments submitted with the letters of 4 August 1999 and 2 January 2003 show that the above mentioned problem was credibly solved. All these experiments got an A-rating in the residue test, i.e. substantially no residual substance adhered to the thermal head.

The improvement of the composition consisted in adding one of the second heat fusible materials to DpMBo.

1.3.4 The question which remains to be decided is whether the solution to the above mentioned technical problem involves an inventive step or not.

According to one example of document (1) the heat responsibility was improved when the heat sensitive recording material comprised stearic acid amide or methylol stearamide in addition to dibenzyl oxalate (formula (II)) (page 5, lines 41 to 43).

According to the Figures 1 and 2 of document (3) a good dynamic image density was obtained with DpMBo (second best candidate of four sensitizers, dibenzyl oxalate being the best sensitizer) and the static image density was improved by using DpMBo (second worst candidate of four sensitizers) instead of dibenzyl oxalate (worst

sensitizer).

The appellant concluded therefrom that the skilled person would have replaced dibenzyl oxalate in document (1) by DpMBo of document (3) and thus would have arrived at the heat-sensitive recording material according to claim 1 of the patent in suit. Therefore, the subject-matter of claim 1, so the appellant argued, was obvious.

1.3.5 The Board does not agree. In document (3) the effect of one heat-fusible compound only, and not of several compounds, was measured. There was no suggestion in document (3) about possible beneficial interaction of DpMBo with another heat fusible material with a view to reducing the amount of residual substances adhering to the thermal head.

The problem of residual substances adhering to the thermal head was not addressed in document (3). The beneficial use of at least one of the components selected from 1,2-bis(phenoxy)ethane, 1,2-bis(3-methyl-phenoxy)-ethane, 1-(4-methoxyphenoxy)-2-(2-methylphenoxy)ethane, stearic acid amide and methylol stearamide together with DpMBo was made known by the patent in suit. According to document (1), a decrease in the deposit of thermally fusible matter was reached by using between 5 and 600% by weight of dibenzyl oxalate (based on the weight of the dye precursor)(page 5, lines 38 to 40). There was no hint that DpMBo qualifying in static image density as second worst candidate of four sensitizers (document (3), Figure 2) would be an appropriate compound when the objective was the reduction of residues on the thermal head. There was no other pointer to any possible

improvement in residual substance adhesion to the thermal head. Therefore, the appellant's approach is an inadmissible *ex post facto* analysis which draws on the knowledge of the patent in suit.

Therefore, the composition of DpMBo with at least one of the heat-fusible materials as defined in the heat-sensitive recording material according to claim 1 of the patent in suit was not obvious.

1.3.6 For all these reasons, the subject-matter of claim 1 involves an inventive step. Consequently, the subject-matter of claim 1 meets the requirements of Article 56 EPC.

1.3.7 The depending claims derive their patentability from claim 1.

2. *Set of claims for the Contracting State of DE and GB*

2.1 Claim 1 of the set of claims for the Contracting States DE and GB differs essentially from claim 1 for the Contracting State FR in that the proviso contains additionally: "nor (4-hydroxyphenylthioacetic acid 2-(4-hydroxyphenyl-thio)ethylester".

The depending claims 2 to 8 are identical to those of the set of claims for the Contracting State of FR.

2.2 The reasoning with respect to novelty and inventive step is *mutatis mutandis* the same as set out in points 1.3.1 to 1.3.7.

2.3 The main request being allowable there is no need to deal with the auxiliary request.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the first instance with the order to maintain the patent in amended form with claims 1 to 8 for the Contracting States of DE and GB and of claims 1 to 8 for the Contracting State of FR according to the main request submitted under cover of the letter dated 2 January 2003 and a description to be adapted thereto.

The Registrar: The Chairman:

G. Rauh P. Krasa