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D E C I S I O N
of 15 January 2002

Case Number: T 0549/95 - 3.3.6

Application Number: 87303819.4

Publication Number: 0245020

IPC: G03C 1/73

Language of the proceedings: EN

Title of invention:
Photochromic articles

Patentee:
PILKINGTON PLC

Opponent:
Optische Werke G. Rodenstock

Headword:
Piperidino substituent/PILKINGTON

Relevant legal provisions:
EPC Art. 54, 56, 104(1)

Keyword:
"Novelty (yes) - no unambiguous disclosure in the relevant prior art document; alleged falsity of formula not convincingly proved"
"Inventive step (yes) - no suggestion in the prior art"
"Apportionment of costs (refused - necessity to clarify arguments in a further hearing"

Decisions cited:
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Catchword:

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0549/95 - 3.3.6

D E C I S I O N
of the Technical Board of Appeal 3.3.6
of 15 January 2002

Appellant: (Opponent)
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Respondent: (Proprietor of the patent)
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Decision under appeal: **Decision of the Opposition Division of the European Patent Office posted 4 May 1995 rejecting the opposition filed against European patent No. 0 245 020 pursuant to Article 102(2) EPC.**

Composition of the Board:

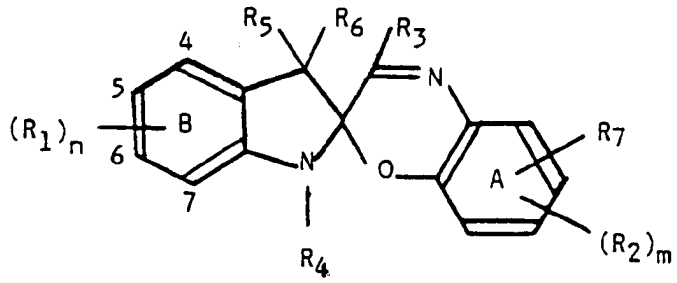
Chairman: P. Krasa
Members: G. N. C. Raths
W. Moser

Summary of Facts and Submissions

I. This appeal is against the decision of the Opposition Division rejecting European patent No. 0 245 020 concerning photochromic articles.

II. Claim 1 of the patent in suit as granted reads for all designated Contracting States except ES:

"1. A plastic organic photochromic article comprising a plastics host material having a photochromic spiro-oxazine compound incorporated therein or applied thereto, characterized in that the photochromic spiro-oxazine compound which is incorporated in or applied to the plastics host material is a photochromic compound of the general formula (I):



(I)

wherein n is an integer of 1 to 4, and m is 1, 2 or 3, each of R_1 and R_2 independently represents (i) a hydrogen atom or an amine functionality of general formula -NR'R", wherein each of R' and R" independently represents a hydrogen atom or an alkyl, cycloalkyl or phenyl group or a substituted derivative thereof, or an amine functionality which is a cycloheteroalkyl ring or a substituted cycloheteroalkyl ring which ring includes one or more heteroatoms, (ii) a group of formula -R, -OR, -SR, -COR, or -COOR wherein R represents H, alkyl,

aryl or heteroaryl, (iii) -Hal, $-CH_2Hal$, $-CH(Hal)_2$, $-C(Hal)_3$ wherein Hal represents halogen, or (iv) $-NO_2$, -CN, -SCN, with the proviso that ring A is always substituted at the 6' position by a group R_2 which is an amine-functionality as defined above;
R_4 represents -H, alkyl, alkenyl, phenyl, phenylalkyl, mono-, di- or tri-substituted phenyl or alkoxy,
each of R_5 and R_6 independently represents -H, alkyl, alkenyl, phenyl, phenylalkyl such as benzyl, mono-, di- or tri-substituted phenyl, or R_5 and R_6 together represent an alicyclic ring including spiro carbons, norbornane, and adamantane,
R_3 represents a hydrogen atom, or an alkyl, aryl or heteroaryl group,
R_7 is as defined for R_1 and R_2 above, or is a ring system fused to ring A, which ring system may incorporate aromatic and/or alicyclic rings, the said ring system optionally carrying one or more substituents R_8, the substituent R_8 being as defined above for R_1 and R_2, and Ring B may optionally contain one or more ring nitrogen atoms."

Claim 14 is directed to a photochromic compound of the general formula (I) as defined in Claim 1.

As for the Contracting State ES, Claim 1 is identical with Claim 1 of the other designated contracting States, and Claims 11, 14 and 25 concern a lens, a process for preparing any plastics organic photochromic article and a process for preparing a photochromic compound, respectively.

III. The notice of opposition, based on lack of novelty and inventive step (Articles 100(a), 54 and 56 EPC) cited, inter alia, documents

(1) EP-A-0 146 135 and

(5) "Lehrbuch der Organischen Chemie", "Reaktivität und Orientierung bei der nukleophilen aromatischen Substitution", Morrison and Boyd, 3rd edn., 1986.

IV. In its decision the Opposition Division found in essence that the subject-matter of all the Claims of the patent was novel and involved also an inventive step, in particular, in view of citations (1) and (5).

V. An appeal was filed against this decision. The appellant (opponent) argued in essence that the subject-matter of Claims 1 and 14 of the patent in suit lacked novelty over document (1) because this document disclosed a chemical compound falling in the range of chemical compounds of formula (I) as defined in said claims. According to the appellant, the structural formula of this compound had been drawn up incorrectly (see Example 2 of document (1)). However, following the recipe given in Example 2 of document (1) would inevitably lead to a compound claimed in claims 1 and 14 of the patent in suit, the subject-matter of which therefore lacked novelty.

Further, the appellant was of the opinion that the subject-matter of Claims 1 and 14 of the patent in suit lacked an inventive step in view of document (1).

VI. The respondent (proprietor) argued in essence that it had not been made available to the public that the product obtained in Example 2 of document (1) had a substituent pattern anticipating that of compounds of the patent in suit.

VII. Oral proceedings took place on 18 November 1999. The proceedings were continued in writing and, by a communication dated 22 November 1999, the Board left it to the parties' discretion to carry out the method according to Example 2 of document (1) and to submit the results.

VIII. By letter dated 2 May 2000 the appellant submitted two ^{1}H NMR spectra and by letter dated 10 July 2000 two ^{13}C NMR spectra as support for the alleged identity of the compound prepared according to example (2) of document (1) with a compound of present claim 1 or 14.

IX. The respondent refuted the appellant's arguments and submitted that the NMR data alone would not allow to distinguish between various positions of the substituent R_2 (in formula (I)).

X. In an annex to the summons to attend oral proceedings on 21 September 2001 - which were deferred -, the Board informed the parties that no convincing evidence regarding lack of novelty had been submitted. Oral proceedings finally took place on 15 January 2002. Apart from attacking novelty, the appellant was of the opinion that the subject-matter did not involve an inventive step.

XI. The appellant requests that the decision under appeal be set aside and the patent be revoked.

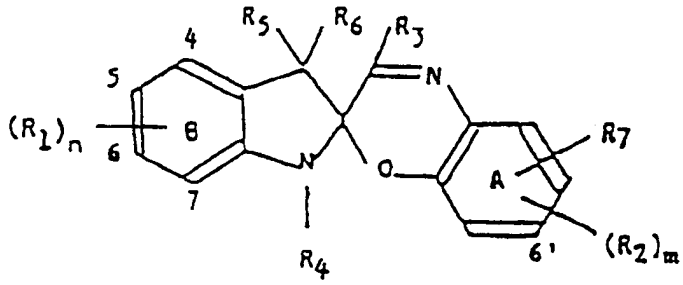
The respondent requests that the appeal be dismissed. Further, the respondent requests apportionment of its costs incurred for preparing for and attending the oral proceedings of 18 November 1999.

XII. At the end of the oral proceedings the final decision was announced by the Chairman.

Reasons for the Decision

1. Novelty

1.1 Claim 1 concerns a plastic organic photochromic article comprising a plastics host material having a photochromic spiro-oxazine compound incorporated therein or applied thereto, characterized in that the photochromic spiro-oxazine compound which is incorporated in or applied to the plastics host material is a photochromic compound of the general formula (I):



(I)

wherein n and R_1 to R_7 are as defined above.

Claim 14 concerns the photochromic compound of general formula (I).

1.2 Document (1) discloses a recipe for synthesizing a compound designated "1,3,3- trimetyl-spiro(indolino-2'-(1-piperidyl)-2,3'-(3H)naphth(2,1-b)(1,4)oxazin)" and the corresponding structural formula showing a piperidino substituent at the 2' position of the

molecule (page 7, Example 2; page 8, lines 15 to 25); the 2' position is that of the residue R_3 in the above formula I. In other words, the compound of the formula given in Example 2 of document (1) shows an 1-piperidyl group at the 2' position instead of the radical R_3 (which according to the definition in the patent in suit cannot be 1-piperyl; see above point II).

The appellant argued that the indication of the formula and the corresponding name were wrong and that actually the 1-piperidino substituent should be at the 6' position of the molecule. Had the formula and the name of the obtained product been correctly indicated, it would have anticipated the subject-matter of Claim 14 of the patent in suit.

1.3 After a first hearing, taking place on 18 November 1999, a reasonable doubt existed in regards to the property of the compelling product obtained by the process according to Example 2 of document (1). The facts on which the Board had to decide were not established to its satisfaction.

In the annex to the summons to attend oral proceedings on 21 September 2001, then deferred to 15 January 2002, the Board informed the parties that the adduced evidence was not sufficient to prove that only the 6'-substituted compound was obtained, that it still was not clear whether other by-products were obtained, and that the measures for isolating the alleged product were not clear. The submissions filed by the Appellant did not mention a protocol or report showing experimental details such as the amounts of the starting material, the temperature and heating time actually used when synthesizing the samples of which ^1H

NMR and ^{13}C NMR spectra were submitted; one ^{1}H NMR spectrum was dated 21 February 1996, another was not dated (see annex to letter of 2 May 2002). A spectrum of old date and a spectrum of unknown date, respectively, are of doubtful evidential value and, hence, not appropriate when it comes to assessing the point at issue. Notwithstanding the fact that the respondent contested that those spectra unambiguously stood for the 6'-isomer, it was not a question of how to interpret them but of how the crucial products were obtained, in particular of how they were isolated from the reaction mixture. During oral proceedings on 15 January 2002, the appellant argued that the assertion of having reproduced the recipe according to Example 2 of document (1) to the letter was sufficient to satisfy the Board's request, a detailed information of the test protocol not being necessary. In its opinion it did what the Board had requested. It also suggested having an independent expert carry out the method.

1.4 The Board does not agree to these arguments submitted by the appellant. The appellant had to substantiate its submissions; the clear objective of the Board's communication was to give the appellant the opportunity of adducing evidence that when carrying out the method according to Example 2 unambiguously and by necessity a product would be obtained having no other formula than 1,3,3,-trimethyl-6'-piperidino-spiro[indolin-2,3'-(3H)-naphto[2,1-b](1,4)oxazine]. The Board drew the attention of the appellant to the lack of further substantiation; actually, the appellant was given plenty of time for carrying out the method in a proper way. There was no evidence that, on the one hand, the product as defined according to Example 2 of document

(1) was not obtained and that, on the other hand, only a product meeting the requirements of Claim 1 of the patent was inevitably obtained. The Board considers the appellant's allegations to be unproven, and, hence, not sufficiently substantiated.

As to the appellant's offer to commission an independent expert, this suggestion cannot acquit the appellant from its burden of establishing its own evidence in time. It lies within the parties' responsibility to decide which particular means of evidence would be suitable to support their case.

Therefore, the Board concluded that the appellant did not adduce sufficient evidence proving that, when carrying out the method according to Example 2 of document (1), a product was obtained having the piperidino substituent at the 6' position, thus falling under the subject-matter of Claim 1 of the patent in suit.

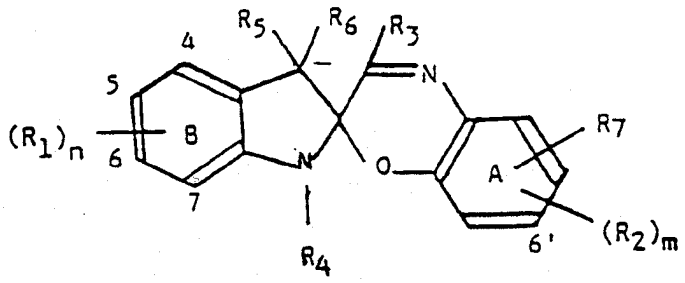
As regards the name and formula of the product indicated in Example 2 of document (1), there is no proof that this product would not have been obtained, in particular, since the chromatographic medium and the running agent may play a selective role. Also, photochromic substances being of this formula type have two formula structures, called modification (1) and modification (2), being in equilibrium, but modification (1), which is the original form, is colourless, and modification (2) is blue; the piperidino substituent at the 2' position presents a steric hindrance and, in addition, an electronic hindrance for the reverse reaction from coloured modification (2) to the colourless original form under

increasing temperature; these were features the inventors of document (1) were looking for (page 3, lines 16 to 26); the cited passage explains the formula of the product obtained in Example 2 with the piperidino substituent at the 2' position. In the absence of any other proof, the Board cannot come to another conclusion.

Therefore, document (1) does not anticipate in a clear and unambiguous manner the subject-matter of Claim 1 for all the designated Contracting States and of Claim 14 for all the designated Contracting States except ES; hence, the subject-matter of these claims is novel, and, thus, meets the requirements of Article 54(1),(2) EPC. Dependent Claims 2 to 13 and 15 to 17 for all the designated Contracting States except ES and dependent Claims 2 to 13 and 15 to 29 for ES relate to specific embodiments of this invention. Therefore, these claims also meet the requirements of Article 54(1)(2) EPC.

2. *Inventive step*

2.1 Claim 1 concerns a plastic organic photochromic article comprising a plastics host material having a photochromic spiro-oxazine compound incorporated therein or applied thereto, characterized in that the photochromic spiro-oxazine compound which is incorporated in or applied to the plastics host material is a photochromic compound of the general formula (I):



(I)

wherein n and R_1 to R_7 are as defined above.

2.2 Such photochromic articles are known from document (1) which the Board accepts as the starting point for evaluating inventive step and which, in particular, is concerned with the technical problem of photochromic compounds, the photochromic effect of which changes only little with increasing temperature, i.e. which have good darkening properties also at increased temperature (page 1, lines 28 to 32). The respondent did not submit comparative tests based on the photochromic articles known from document (1).

2.3 The technical problem as stated in the patent in suit was to provide photochromic articles having a denser coloring in their darkened condition than previously known plastic organic photochromic articles (page 2, lines 17 to 18).

Therefore, in the absence of any evidence of a beneficial effect of the photochromic articles according to the patent in suit over those of document (1), the technical problem has to be reformulated as consisting in the provision of a further photochromic article.

2.4 This technical problem was said to be solved by plastic organic photochromic article comprising a plastics to which the photochromic spiro-oxazine compound of the formula (I) was applied, i.e. by the subject-matter of Claim 1 of the patent in suit.

The induced optical density values of lenses comprising the photochromic spiro-oxazine compounds according to Examples 1 to 17 of the patent in suit demonstrate the very dense colouring of the lenses. Therefore, the Board is satisfied that the problem as defined is credibly solved over the whole scope of Claim 1.

2.5 The question remains whether the claimed solution of the existing technical problem involves an inventive step.

2.6 The appellant argued as follows:

Document (1) disclosed the photochromic properties of spiro-oxazines. The skilled person would not have attached too much importance to the substitution pattern of the spiro-oxazine compounds; document (5) disclosed a recipe for having on such spiro-oxazines the piperidino substituent at the 6' position; thus, it concluded that photochromic articles having a 6' derivative would be obvious.

2.7 The Board does not agree. It is true that document (5) discloses a recipe for preparing a spiro-oxazine ring having the piperidino substituent at the 6' position. But neither was a pointer there in document (1) to a different substitution pattern leading to the desired and practically usable photochromic intensity effect, nor did document (5) mention any properties of

6'-derivatives. Rather, it has to be stressed that document (1) attached importance to the substituent in the 2' position, since the 2' position presents a steric hindrance and, in addition, an electronic hindrance for the reverse reaction from the coloured modification form to the colourless modification form (page 3, lines 16 to 26); this was a property the inventors of document (1) were looking for. The skilled person had no clue about the existing structural differences of the chemical compounds and did not know that these differences had no essential disadvantageous bearing on the desired photochromic property (see also T 852/91, catchwords).

2.8 For the above reasons, the Board finds that the subject-matter of Claim 1 for all the designated Contracting States involves an inventive step, and so do the subject-matter of Claim 14 for all the designated Contracting States except ES, directed to a photochromic compound and the subject-matter of Claim 14 for ES, directed to a process for preparing a photochromic article. Dependent Claims 2 to 13 and 15 to 17 for all the designated Contracting States except ES and dependent Claims 2 to 13 and 15 to 29 for ES relate to specific embodiments of this invention. Therefore, these claims are likewise allowable.

3. *Apportionment of costs*

By letter of 13 April 2000, the respondent requested that apportionment of costs be awarded in respect to the costs incurred for preparing for and attending the oral proceedings on 18 November 1999.

Pursuant to Article 104(1) EPC, each party to the

proceedings shall meet the costs he has incurred unless, for reasons, of equity, a different apportionment of costs incurred during taking evidence or in oral proceedings is ordered by the competent deciding body of the EPO.

In the present case, the requirements for such a different apportionment of costs are not met. During the oral proceedings of 18 November 1999 it became obvious that, in view of the provisions of Articles 113(1) and 114(1) EC and the principle of fairness which governs the proceedings before the EPO, the parties to the appeal proceedings had to be offered the opportunity to carry out the method according to Example 2 of document (1) and to submit the respective results prior to final assessment of the content of that document by the Board. Hence, the fact that the Board refrained from giving the final decision already at the end of the oral proceedings of 18 November 1999 is not related to the conduct of the appellant. It follows that a different apportionment of costs would therefore not be equitable within the meaning of Article 104(1) EPC. Consequently, the request of the respondent for apportionment of costs has to be refused.

Order

For these reasons it is decided that:

1. The appeal is dismissed.

2. The request for apportionment of costs is refused.

The Registrar: The Chairman:

G. Rauh P. Krasa