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D E C I S I O N
of 5 July 2000

Case Number: T 1029/98 - 3.3.3

Application Number: 91810958.8

Publication Number: 0495338

IPC: C08K 5/3437

Language of the proceedings: EN

Title of invention:

2,9-Dichloroquinacridone-pigmented engineering plastics and coatings

Patentee:

Ciba Specialty Chemicals Holding Inc.

Opponent:

Sun Chemical Corporation

Headword:

-

Relevant legal provisions:

EPC Art. 100(a), 100(b), 114(2)

Keyword:

"Late submitted material - evidence admitted (no)"
"Novelty - prior disclosure - implicit features (no)"
"Inventive step - simple inventions"

Decisions cited:

G 0009/91; G 0010/91; T 0472/92; T 1002/92; T 0039/93;
T 0097/94; T 0068/98

Catchword:

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Boards of Appeal

Chambres de recours

Case Number: T 1029/98 - 3.3.3

D E C I S I O N
of the Technical Board of Appeal 3.3.3
of 5 July 2000

Appellant: Ciba Specialty Chemicals Holding Inc.
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CH-4057 Basel (CH)

Representative:

Respondent: Sun Chemical Corporation
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Representative: Vossius & Partner GbR
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Decision under appeal: Decision of the Opposition Division of the
European Patent Office dated and issued in
writing on 3 September 1998 revoking European
patent No. 0 495 338 pursuant to Article 102(1)
EPC.

Composition of the Board:

Chairman: C. Gérardin
Members: R. Young
V. Di Cerbo

Summary of Facts and Submissions

- I. The mention of the grant of European patent No. 0 495 338, in respect of European patent application No. 91 810 958.8, filed on 9 December 1991 and claiming a US priority of 14 January 1991 (US 641033) was announced on 22 November 1995 (Bulletin 95/47). Claim 1 reads as follows:

"A process for pigmenting engineering plastic substrates and coatings comprising incorporating 0.01-30%, by weight based on the high molecular weight organic material to be pigmented, of 2,9-dichloroquinacridone having a specific surface area of below 30 m²/g into said engineering plastic or coating."

Claims 2 to 8 are dependent claims, directed to elaborations of the process according to Claim 1.

Claim 9, an independent claim, is worded as follows:

"A composition comprising a high molecular weight organic material and 0.01-30%, by weight based on the high molecular weight organic material to be pigmented, of 2,9-dichloroquinacridone having a specific surface area lower than 30 m²/g."

Claims 10 to 14 are dependent claims directed to elaborations of the composition according to Claim 9.

- II. Notice of Opposition was filed on 22 August 1996 on the grounds of insufficient disclosure, lack of novelty and lack of inventive step. The opposition was supported *inter alia* by the following documents:

D1: CH-A-362 475;

D2: US-A-3 157 659;

D3: EP-A-0 267 877;

D4: EP-A-0 305 328;

D5: US-A-4 015 998;

D6: J. Richter, "Color it azo", *Plastics Engineering*,
April 1979, pages 37 to 40;

D8: *Pigment Handbook*, Vol. III, T.C. Patton (Ed.),
John Wiley & Sons, New York 1973, pages 127 to
130,

as well as the later filed, but admitted documents:

Annexes 1 to 9: nine documents concerning alleged prior
use of "Fastogen Super Magenta HS-01" Lot 21573;

Annex 10: experimental data concerning the variation of
thermal stability of samples of 2,9-
dimethylquinacridones and unsubstituted quinacridones
with increasing specific surface area; and

D11: US-A-4 895 948.

III. By a decision dated and issued in writing on
3 September 1998, the Opposition Division revoked the
patent.

According to the decision, whilst the claimed subject-
matter was sufficiently disclosed, and furthermore
novel, it lacked an inventive step starting from the
closest state of the art, which was D2 and/or D5
disclosing pigmented high molecular weight
compositions, taking into account the documents D6, D3
and D4. In particular, the solution of the technical

problem of providing the former compositions with an improved heat stability was solved, according to Claims 1 and 9, by the distinguishing feature of the specified low specific surface area, as proved by the test filed with the Patentee's letter of 18 March 1997. Since, however, the claimed subject-matter was not restricted to specific modifications, and, according to the "text book" D6, it was clear that the influence of particle size and/or surface area was also not restricted to certain modifications and/or specific chemical structures, it was permissible to combine documents concerning different quinacridones and/or pigments in general with the closest state of the art. Hence, the skilled person would know from D6 that most properties of both organic and inorganic pigments depended on particle size and its distribution, larger particles having increased heat stability. It would therefore be obvious to try small specific surface areas and large particle sizes. Since, moreover, the related technical field of quinacridones e.g. according to D3 and/or D4 disclosed specific modifications of unsubstituted quinacridone which had the relevant low specific surface area and were also excellent in heat stability, the observed technical effect could have been expected by the skilled person. Hence there was no inventive step.

The allegation of prior use of "Fastogen Super Magenta HS-01" (Lot 21573) was found to be not proved, in view of many obscurities in the evidence submitted in Annexes 1 to 9.

No mention of Annex 10 or D11 was made in the Reasons for the decision.

IV. On 28 October 1998, a Notice of Appeal against the above decision was filed, the prescribed fee being paid on the same day.

In the Statement of Grounds of Appeal, filed on 30 December 1998 the Appellant (Patentee) argued in substance as follows:

(i) Novelty

The late evidence alleging prior use (Annexes 1 to 9) should not have been admitted to the proceedings, since it could have been produced within the nine month opposition period. In any case, there had been no opportunity to comment on the late evidence, which contravened the provisions of Article 113(1) EPC and amounted to a procedural violation.

(ii) Inventive step

(a) There was no teaching in D2 that increasing particle size contributed to thermal stability. On the contrary, the stability to temperature was disclosed in relation to purity of shade, which was in turn associated with small particle size.

(b) Similar considerations applied to D5, which associated high heat stability with high surface area and colour strength.

(c) None of D3, D4 and D6, on a correct interpretation, associated an increase of particle size, or reduction of surface area of the relevant 2,9-dichloroquinacridone pigments, with improved heat stability. D6 in particular was not a "text book", but a promotion article, and was in any case irrelevant, being primarily concerned with improving opacity rather than heat resistance, and this in relation to azo rather than 2,9-dichloroquinacridone pigments. It thus could not be properly combined with D2. Similarly, in D3 and D4, which related to unsubstituted

quinacridones, the surface area was in no way related to the heat stability, but rather to to the coloristics of the specific crystal modifications concerned.

- (d) The skilled person was in any case aware that unsubstituted quinacridones were much less heat-stable than 2,9-dichloroquinacridones (test of 18 March 1997). In this connection, the test report of Annex 10 was criticised, as being incomplete (no test conditions), not reflecting the prior art (cf. 2,9-dimethylquinacridone) and not comparing like with like (different crystal modifications of unsubstituted quinacridone).
- (e) Consequently, it had not been demonstrated that the person skilled in the art would have combined D3, D4 and D6 with D2 and D5 in a manner leading to the claimed subject-matter.

The Statement of Grounds of Appeal was accompanied by a number of further documents and experimental test reports, in particular:

Test report A: to show that there was no general trend to higher heat stability with decreasing surface area in commercial 2,9-dichloroquinacridones.

V. The Respondent (Opponent) disagreed, in a submission filed on 22 September 1999, with the arguments of the Appellant, and submitted or maintained the following objections:

- (a) lack of sufficiency of disclosure, in particular in relation to the formulation of crude 2,9-dichloroquinacridone.
- (b) lack of novelty in the light of D1 and of D11.

- (c) Public prior use of pigment product including "Fastogen Super Magenta" code HS-01 lot 21573 supplied by Dainippon Ink and Chemicals, Inc. (hereinafter DIC) to Nippon Paints.
- (d) Public prior use of pigment product including "Fastogen Super Magenta" code HS-01 lot #BP003 by Kansai Paint, Inc.
- (e) Lack of inventive step, starting from D2, in the light of D6 (a trade journal), D3 and/or D4, in accordance with the problem and solution approach and the finding in this respect of the decision under appeal.
- (f) The validity of the Appellant's test report A was criticised, in particular on the ground that the purity of the samples, which could affect the thermal stability, had not been stated.

The submission was accompanied by a number of further enclosures, *inter alia*:

- documents supporting the alleged prior use, by Nippon Paints, of lot 21573;
- documents supporting the alleged prior use, by Kansai Paint, Inc., of lot #BP003; and
- documents supporting the validity of the test report in Annex 10.

VI. The Board indicated to the parties, in a communication issued on 1 March 2000 accompanying a summons to oral proceedings, that stringent criteria would be applied to the question of admitting further amplified evidence of the Respondent relating to prior use, decisions T 472/92 (OJ EPO 1998, 161) and T 97/94 (OJ EPO 1998,

467) being specifically referred to in this respect. It was furthermore indicated that the exercise of discretion by the first instance in admitting the late-filed allegation of prior user (Lot 21573) was not such as to amount to a substantial procedural violation.

VII. In a submission faxed on 31 May 2000 and confirmed in a letter received on 2 June 2000, the Appellant replied to the objections of the Respondent and also objected to the introduction of the further alleged prior use (lot #BP003) by Kansai Paint, Inc., as late filed. The submission was accompanied by a number of further test reports and items of documentary evidence.

The submission was also accompanied by 33 amended sets of claims forming auxiliary requests 1 to 11, each request comprising three sub-sets a, b and c, respectively.

VIII. With a submission received on 5 June 2000, the Respondent filed still further items of evidence in the form of declarations numbered D36 to D39 relating to the alleged public prior use of DIC's pigment "Fastogen Super Magenta HS-01" from Lot #BP003, by Kansai Paint, Inc., in particular:

D34: a declaration of Kazuhiro Takeda, of Kansai Paint, concerning a request, in or around May of 1987, by DIC for Kansai Paint to evaluate and examine, over a three year period, the coloristic quality of paints formulated with the above pigment;

and further documents numbered D40 to D44, in support of their previous position, in particular:

D40: J. Richter, "Heat resistant organic pigments for colouring plastics - problems and possibilities", European Plastic News, April 1983;

D41: A.G. Abel, "Heat resistant organic pigments for colouring thermoplastics", Polymer Paint Colour Journal, 26 November 1986, pages 899 to 900;

D43: J. Richter, "Temperaturbeständigkeit neuerer organischer Pigmente in Styrol-Copolymeren", Plastverarbeiter, April 1967, pages 215 to 219; and

D44: J. Richter, "Azopigmente mit verbesserten Echtheitseigenschaften und höherem Deckvermögen für die Kunststoffefärbung", Plastverarbeiter, 1979, No. 4, pages 193 to 196.

IX. A countersubmission was received from the Appellant on 27 June 2000, containing a declaration and further documents.

X. Oral proceedings were held on 5 July 2000. At the oral proceedings, the Board dealt with the issues in the following order:

(a) Sufficiency of disclosure

The representative of the Respondent stated that the ground of insufficiency of disclosure was no longer pursued.

(b) Admissibility of D11 and Annex 10;

The Board indicated to the parties that, whilst the decision under appeal referred to the filing of D11 and the experimental report of Annex 10, it did not refer to them in its reasoning.

Consequently, there was nothing to indicate that either of these items of evidence had been formally admitted to the proceedings. Since the Respondent had furthermore relied on D11 to

support an allegation of lack of novelty, and Annex 10 had apparently given rise to the submission of a large amount of experimental data in response by the Appellant, it would be necessary to consider the admissibility of these two items before proceeding further with the substantive issues.

By common consent of the parties, the admissibility of these items was determined as follows:

D11 was held to be in the proceedings (Article 114(1) EPC);

Annex 10 was held to remain out of the proceedings.

(c) Novelty in the light of the cited prior art.

The representative of the Respondent stated that the objection of lack of novelty in the light of the disclosure of D1 would no longer be pursued, but that he wished to make submissions on the issue of lack of novelty in relation to the disclosure of D2. The Board permitted the discussion of this issue, since the latter document had been identified as the closest state of the art.

The issue of lack of novelty in the light of the disclosures of D2 and D11 was then discussed. After deliberation, the Board informed the parties that neither the disclosure of D2 nor that of D11 was considered to be novelty destroying for the claimed subject-matter.

- (d) Inventive step in the light of D1 to D10, especially D2 to D6, and D11

The Board informed the parties that, since the content of Annex 10 was not in the proceedings, the large body of counter-evidence filed for the first time in appeal should be considered separately. Consequently, the Board would prefer first to hear the case on the basis only of the documents considered by the Opposition Division in reaching their decision (D2 to D6), plus D11.

After the Board considered this discussion to be complete, it invited each of the parties to indicate which, if any, of the further, late-filed documents, it would wish to rely on.

The Respondent indicated that it would wish to introduce at least one of the following documents:

D40, D41, D43 and D44, filed with the submission of 5 June 2000, since they showed a clear relationship between the specific surface area and heat stability of a pigment. The Appellant opposed their introduction, however, since they (i) stemmed from the same author, whose name was associated with a single chemical company, and (ii) in any case concerned azo- rather than quinacridone pigments. Their contents were thus irrelevant.

The Appellant in its turn indicated that it would wish to introduce Test Report A, filed with the Statement of Grounds of Appeal. The Respondent opposed the introduction of Test A, however, since the provenance and purity of the samples tested were in doubt.

- (e) Alleged prior use by Kansai Paint of Lot #BP003

Finally, the Board heard arguments for and against the admissibility of the documents relating to the above issue (in particular D34). The Appellant regarded the allegation as late-filed and the evidential support to be of low probative value, whilst the Respondent emphasised the assiduity with which the necessary declarations had been assembled.

After further deliberation, the Board arrived at the following conclusions in relation to points (d) and (e):

- (d)i) There was no lack of inventive step on the basis of the documents D2 to D6 and D11.
- ii) Neither any of the documents D40, D41, D43 and D44 put forward by the Respondent, nor the evidence of Test A put forward by the Appellant were sufficiently pertinent to be introduced into the proceedings.
- (e) The evidence filed in relation to the alleged prior use, by Kansai Paint, of Lot #BP003 would not be introduced into the proceedings.

In view of the findings under (d)i) and ii) and (e), and since none of the remaining late-filed documents, declarations or other evidence were sought further to be relied upon by the parties, all the issues in the proceedings had been exhaustively discussed. Consequently, the Board was in a position to announce a final decision.

XI. The Appellant requested that the decision under appeal be set aside, and the patent maintained as granted, or, in the alternative, on the basis of one of the auxiliary requests 1 to 11, in that order, filed with the letter dated 31 May 2000.

The Respondent requested that the appeal be dismissed.

Reasons for the Decision

1. The appeal is admissible.
2. *Admissibility of late-filed evidence*

Whilst the basic issue in the case, as decided by the Opposition Division, was relatively simple, it became substantially more complicated as a result of the parties' filing a large number of additional prior art documents and other items of evidence during the appeal.

As adumbrated in the above communication by the Board, the introduction into the proceedings, according to the decision under appeal, of the late-filed alleged prior use of Lot 21573 did not, in the Board's view, imply an exercise of discretion so unreasonable as to amount to a substantial procedural violation. Since the Appellant did not pursue the matter further, the Board sees no reason to alter its view. Consequently, it proceeded on the basis that the evidence of Annexes 1 to 9 filed with the submission dated 12 November 1997, formed part of the proceedings.

As regards the still later filed documents and other items of evidence, however, it is the established case law of the boards of appeal of the EPO, that the legal and factual framework of a case on appeal must remain the same or substantially the same as that of the one decided by the first instance, otherwise no valid judgements on the first instance's decision could be made (T 39/93, OJ EPO 1997, 134 supplementing G 9/91 and G 10/91, OJ EPO 1993, 408 and 420, respectively, and T 1002/92, OJ EPO 1995, 605).

In this connection, the items of such documents and other evidence still sought controversially to be introduced into the proceedings by the parties at the oral proceedings were as follows:

- (i) Documents D40, D41, D43 and D44, cited by the Respondent in the submission received on 5 June 2000 (Section X, point (d)ii), above);
- (ii) Test Report A, filed by the Appellant together with the Statement of Grounds of Appeal (Section X, point (d)ii), above); and
- (iii) Declarations D26 to D35, especially D34, relating to the alleged prior use, by Kansai Paint, of "Fastogen Super Magenta HS-01", Lot #BP003 (Section X, point (e), above).

2.1 With regard to the documents under point i), above, the fact that all these documents are either authored by, or based on information supplied by, a single person associated with a particular chemical firm (see acknowledgment of J. Richter at end of D41) would not, in itself, normally be regarded as a ground for refusing their introduction into the proceedings.

That all these articles are largely concerned with azo pigments rather than the substituted quinacridones with which the patent in suit is concerned weighed more heavily with the Board, however. Furthermore, the remarks concerning a relationship between particle size and heat stability in these documents are rather vague, and in any case are made in the narrow context of azo pigments (D41, referring to Benzimidazolone Yellows) or else relegate the significance of the particle size or particle size distribution itself to a subsidiary role compared with other parameters, such as chemical constitution or crystal modification (D40, first page, left column "Fastness properties"; D41, page 899, left column, last complete paragraph; D43, page 216, left column, last complete paragraph, last two sentences; and D44, page 195, left column, first sentence). This meant that none of these documents is more relevant than, or indeed even as relevant as, D6, which already formed part of the proceedings.

According to the relevant case law of the boards of appeal (see, for example, T 1002/92 (supra)), as regards proceedings before the boards of appeal, new facts evidence and related arguments which go beyond the "indication of facts, evidence and arguments" presented in the Notice of Opposition in support of the grounds of opposition on which the opposition is based, should only very exceptionally be admitted to the proceedings, if such new material is prima facie highly relevant in the sense that it is highly likely to prejudice maintenance of the patent in suit.

It is, however, evident that these documents do not fulfil the relevant criterion of sufficient pertinence, since they are no more relevant than a similar document already in the proceedings.

Consequently, there is no justification for introducing them at such a late stage into the proceedings. It was therefore decided to disregard them pursuant to Article 114(2) EPC.

2.2 As regards ii) Test Report A, filed with the Statement of Grounds of Appeal, this compares the heat stabilities of commercial grades of 2,9-dichloroquinacridones (HS-TN and HS-01) with a sample of a 2,9-dichloroquinacridone according to the patent in suit (RT-265-D), the specific surface areas in m^2/g being: 68.5 (HS-TN), 41.3 (HS-01) and 20.8 (RT-265-D). These data were, however, challenged by the Respondent, firstly since HS-TN was alleged to be a mixture of unknown composition, and secondly since the particle size of the remaining HS-01 commercial grade was a matter of dispute. Even if accepted as correct, this value would have lain further above the claimed limit ($30 \text{ m}^2/\text{g}$) than the comparative sample according to D2, having a specific surface area of $34 \text{ m}^2/\text{g}$. The latter had, however, already been compared, in an experimental report filed during the opposition proceedings (the results of which have not been the subject of dispute) with a sample of RT-265D (letter of 18 March 1997). Consequently, the content of Test Report A was less pertinent than that of the experimental data already forming part of the proceedings and it was decided that a specific consideration of Test Report A is not justified. The latter was therefore disregarded pursuant to Article 114(2) EPC.

2.3 The evidence iii) supporting the allegation of prior public use, by Kansai Paint Inc., of "Fastogen Super Magenta HS-01" lot #BP003, supplied by DIC, and referred to by the Respondent for the first time in a submission filed on 22 September 1999 (Section V,

point (d), above), was initially criticised by the Appellant as being deficient in two respects (statement of 31 May 2000, point 3.2.4):

- (a) It was extremely late, being filed almost five years after the expiry of the nine month opposition period.
- (b) There was a conspicuous absence of any evidence of a date of dispatch, from DIC, of a lot bearing the relevant number (#BP003), to Kansai Paint, Inc., before the priority date of the patent in suit.

Quite apart from these aspects of deficiency, the bulk of the documentation filed in this connection was in the form of declarations of individuals, especially of a senior employee of Kansai Paint, Inc., concerning experimental work allegedly carried out some twelve years previously. Whilst the most pertinent of these declarations was perhaps D34 (section VIII, above), according to which the experimental testing was not subject to any disclosure limitations or confidential obligations (express or implied), the probative value of its experimental results had been questioned by the Appellant, in particular on the basis of an alleged inconsistency in the density or specific gravity stated to characterise Lot #BP003.

Even if these circumstantial matters were to be ignored, however, the contents of the relevant submissions are more fundamentally deficient, in the following respects:

- 2.3.1 The presumed transfer of a sample of "Fastogen Super Magenta HS-01" lot #BP003, from DIC to Kansai Paint, Inc., without obligation of confidence or secrecy, even if accepted as correct, would not itself amount to a relevant prior use, since only the pigment was alleged to be transferred, and not a polymer composition or coating containing the pigment as defined in the claims of the patent in suit. This was explicitly admitted by the representative of the Respondent at the oral proceedings.
- 2.3.2 It was not shown that the experimental testing and evaluation by Kansai Paint, Inc. were done in the presence of the public or even in a place to which any member of the public had access as of right.
- 2.3.3 The argument of the Respondent, that the freedom from obligation of secrecy, etc., means that customers of Kansai Paint would have been welcome to view the results of the tests is irrelevant, since none of the numerous declarations filed attests to the presence, during the testing, of even a single such member of the public. Nor is the Respondent entitled to a presumption of presence of the public in the absence of any such attestation, since the onus of proof "up to the hilt" lies in this case with the Respondent (cf. T 472/92, *supra*).
- 2.3.4 The parallel attempted to be drawn in this connection at the oral proceedings by the Respondent with the situation of a library book in a public library is not pertinent, since the laboratories of Kansai Paint, Inc., like those of any other private enterprise, but unlike a public library, are not normally accessible to the public as of right.

2.3.5 In summary, the late-filed evidence relating to the alleged prior use, by Kansai Paint, Inc., of Lot #BP003, even if accepted word for word at face value, is not apt, even in principle, to demonstrate a relevant prior use.

2.3.6 Hence, the above late-filed documentary evidence and the declarations relating to it were disregarded for lack of relevancy, pursuant to Article 114(2) EPC.

2.4 To summarise, the documents in the proceedings on the basis of which the Board decided the appeal were D1 to D11.

3. *The patent in suit*

The patent in suit is concerned with pigmenting high molecular weight organic materials in the form of engineering plastics or coatings, with a 2,9-dichloroquinacridone, the resulting compositions containing from 0.01 to 30% by weight of the pigment (Claim 1, Claim 9).

3.1 Such compositions are, however, known from the prior art, in particular, from D2 and/or D5, the latter referring to the former (column 2, line 26; column 3, lines 49 and 51), either of which, according to the decision under appeal, could be regarded as the closest state of the art.

3.1.1 According to D2, there is disclosed a process for the production of a a bluish-red pigment of excellent brilliance having high colour fastness and good stability to organic solvents, wherein 2,9-dichloro-7,14-dioxo-5,7,12,14-tetrahydroquinolino-[2, 3b]-acridine (linear-trans-2,9-dichloroquinacridone) in fine particle size is brought into contact with sulphuric acid of the concentration 60% to 75% and at

temperatures of 145°C to 175°C, until an X-ray diffraction pattern shows, at a given series of goniometer angles, a specified profile of lines of great, medium and low intensity (Claim 1 in combination with column 1, lines 32 to 35 and 61 to 68).

The resulting pigment dye, termed a γ -modification, is recognised by its X-ray diffraction pattern. If the mean primary particle size is less than about 0.1 micron, this modification is characterised by a bluish-red shade, good general fastness, above all excellent fastness to light and weathering, and resistance to high temperatures. It is insensitive to chemical influences and not attacked by solvents or plasticizers (column 2, lines 17 to 29).

At a mean primary particle size of less than 0.1 micron, preferably of 0.02 to 0.07 micron, the pigment has the hue of a standard red shade and as a pigment has good tinctorial strength, high brilliance and transparency (column 2, lines 29 to 33).

If the mean primary particle size is more than 0.1 micron, especially 0.3 to 0.7 micron, a bluish-red pigment results which is marked by good hiding power and purity of shade, the hue being clearly displaced to yellow as compared with the γ -modification with smaller particle size (column 2, lines 34 to 38).

According to a typical example (Example 1(d)), a sulphuric acid suspension of the pigment is further processed to yield a sample of the γ -modification of 2,9-dichloroquinacridone having a particle size between 0.2 and 0.4 micron in the direction of greatest extension (column 5, lines 41 to 44).

According to an application example (Example 4), such a pigment may be triturerated in a cone mill or ball mill in a baking lacquer of 40 parts of coconut oil alkyd resin, 12 parts of a urea-formaldehyde resin, 40 parts of xylene and 8 parts of n-butanol, to prepare a coating which is highly glossy and has excellent fastness to weathering and overspraying (column 6, lines 1 to 9).

Furthermore, a repetition of Example 1(d) of D2 by the Appellant during the proceedings before the Opposition Division, the results of which were not challenged by the Respondent, confirmed both the existence of a γ -phase and the features of the particles, which were found to be claret flat prismatic crystals of length 0.1 to 0.8 micron (about 0.2 to 0.5 micron for most particles), as shown by electron microscopy, corresponding to a specific surface area of 34 m²/g (submission dated 18 March 1997, pages 2 to 3).

3.1.2 The disclosure of D5 relates to a heat stable crystal modification of 2,9-dichloroquinacridone (a mixture of γ - and β - polymorphs) and its admixture with molybdate orange, optionally encapsulated in dense amorphous silica (Claims 1 to 3; column 2, lines 33 to 35) for pigmenting high molecular weight organic materials (column 1, line 64 to column 2, line 5; Example 1). It differs from the disclosure of D2 in that it refers only to smaller average particle sizes, of less than about 0.1 μ (column 3, lines 33 to 35).

3.2 Compared with this state of the art, the technical problem may be seen in the search for a further process for pigmenting engineering plastics

substrates and coatings, to provide for improved heat stability, whilst providing products having pure colour shades of high chroma (attractive red colour).

- 3.3 The solution proposed according to Claim 1 of the patent in suit is to incorporate the 2,9-dichloroquinacridone pigment with a specific surface area below 30 m²/g.
- 3.4 It can be seen from the examples of the patent in suit that 2,9-dichloroquinacridone pigments of specific surface area below 30 m²/g, for instance 9.7 m²/g (Example 3) show improved heat resistance, in terms of total colour difference values (ΔE) when incorporated together with conventional adjuvants into a variety of polymers chips of which are moulded at 205°, 260°C and 315°C respectively, compared with similar compositions incorporating the pigment at a conventional (higher) specific surface area. Such polymers include polyvinylchloride (Example 7), high density polyethylene (Example 8), polycarbonate (Example 9) and acrylonitrile-butadiene-styrene (Example 14). An analogous effect is also shown in coating formulations, such as an acrylic/melamine resin based Paint Formulation (Example bridging pages 7 and 8).
- 3.5 Further corroboration is provided by the results of the heat stability tests filed during the proceedings before the Opposition Division, with the submission of 18 March 1997 by the Appellant (then Patentee). According to these tests, made in analogy to Example 14 of the patent in suit (section 3.4, above), specific samples of the products of which were also submitted and on file, the colour co-ordinates according to the CIE*-L*A*B* colour space system were obtained for conventional acrylonitrile-butadiene-

styrene samples which had been injection moulded with a 7 minute dwell time and a 42 second cycle time at 205°, 260° and 315°C.

Inspection of the table of results of these tests shows that a sample containing a 2,9-dichloroquinacridone having a specific surface area of 56 m²/g (according to D5) has a better heat stability (lower change of chroma ΔC^* and lower change of hue ΔH^* , on heating at temperatures from 205°C to 315°C), than one having a smaller specific surface area of 34 m²/g (according to D2). Both these prior art samples, however, whilst having a much better heat stability in these terms than an unsubstituted quinacridone according, say, to D1, have a worse heat stability than a sample according to the patent in suit having a specific surface area of only 21 m²/g.

3.6 In view of the above results, it is credible to the Board, that the claimed measure provides an effective solution of the technical problem. This finding, which is in accordance with the corresponding finding of the decision under appeal, was not challenged by the Respondent.

4. *Sufficiency of disclosure*

The objection of lack of sufficiency was not pursued in appeal. The Board sees no reason to differ from the finding of the decision under appeal in this respect, that there was no lack of sufficiency of disclosure. Thus, the requirements of Article 100(b) EPC are held to be met.

5. *Novelty*

Since the Respondent declared at the oral proceedings, that the allegations of lack of novelty in the light of D1 and of the alleged prior use of "Fastogen Super Magenta HS-01", Lot 21573 would no longer be pursued, and the allegation of prior use, by Kansai Paint, Inc., of Lot #BP003 of the same pigment was not part of the proceedings (section X, above), it remained only for the issue of lack of novelty to be examined in relation to the disclosures of D2 and D11. These will be dealt with in turn.

5.1 There is no explicit mention in D2 of any particular specific surface area of the pigments disclosed, only the relevant average particle sizes being mentioned. Furthermore, the repetition, by the Appellant, of Example 1(d) of D2, which by common consent disclosed the largest particles in D2, led to a finding of a BET surface area of 34 m²/g (section 3.5, above), which lies above the limit set out in the claims of the patent in suit. This was not challenged by the Respondent. Consequently, there is no implicit disclosure in the examples of D2 of a 2,9-dichloroquinacridone pigment having a specific surface area according to Claim 1 of the patent in suit.

5.1.1 The argument of the Respondent at the oral proceedings, that a specific surface area falling within the required range could be derived from the general disclosure, in D2, of particle sizes in the range 0.2 to 0.4 microns in the direction of their greatest extension is not convincing, for the following reasons:

- 5.1.1.1 The first formula relied upon by the Respondent for calculating the specific surface area from the particle size (D8; page 127, equation (7)) depended on the assumption that the particles were spheres, which was admittedly not the case.
- 5.1.1.2 The further formula referred to in the oral proceedings (D8; page 128, equation (19)), which was used to derive a generally inverse relationship between particle size and specific surface area, although stated to be suitable for "irregular particles", was not shown to be applicable to the specific flat prismatic shaped particles found to occur according to D2.
- 5.1.1.3 The calculation in any case did not take account of the relevant particle size distribution, without which a correct relation between particle size and specific surface area could not be derived.
- 5.1.1.4 On the contrary, the Appellant at the oral proceedings was able convincingly to show that it was possible to double the size, in their direction of longest extension, of the long narrow crystals according to D2 (by joining them end to end) without substantially altering their specific surface area in terms of m^2/g .
- 5.1.1.5 Consequently, there was no implicit disclosure in D2 of a pigment inevitably having a specific surface area within the terms of Claim 1 of the patent in suit.
- 5.1.2 In the latter connection, the further suggestion of the Respondent, that the use of the parameter "specific surface area" in connection with the claimed compositions was an "unusual parameter", and represented a way of re-patenting the subject-matter

previously characterised by the measurement of "average particle size" alone is, in the Board's view, fundamentally mistaken, since it is evident that an expression of the specific surface area contains information concerning a physical characteristic of the composition which is not present in a simple measurement of average particle size. This is the proportion, in a sample of the pigment particles, of "internal" molecules of 2,9-dichloroquinacridone, i.e. those which have direct contact only with other such molecules, to "external" such molecules, i.e. those which have contact with the surrounding environment (the high molecular weight organic material in the patent in suit). This information cannot, for the reasons already given, be derived from a knowledge of an average particle size alone.

5.1.3 In summary, the relevant specific surface area of the 2,9-dichloroquinacridone pigment defined in the claims of the patent in suit is not directly and unambiguously derivable from the disclosure of D2. Hence, the disclosure of D2 is not novelty destroying for the subject-matter claimed in the patent in suit.

5.2 The disclosure of D11 may be regarded as falling into two parts: the first part being an introductory review of the prior art preceding the teaching of D11, and the second concerning the subject-matter of the teaching according to D11 itself. It was not disputed that the crossover from the introduction to the teaching occurred at column 2, line 41 of D11.

5.2.1 According to the first part (the introduction) of D11, it is frequently desired to prepare opaque versions of substituted quinacridones, opacity being desired for purposes of hiding a grey or dark substrate (column 1, line 62 to column 2, line 3).

Furthermore, unsubstituted quinacridone of the gamma phase can be produced in an opaque form without additional conditioning steps, oxidation of beta-6,13-dihydroquinacridone in aqueous methanol or similar solvent at relatively low sodium hydroxide concentration, preferably about 3%, yielding a relatively large particle size opaque gamma quinacridone with a surface area of 20-32 m²/g (column 2, lines 4 to 12).

By contrast, when manufacturing beta quinacridone, the sodium salt of 6,13-dihydroquinacridone has to be formed which is then oxidised to the sodium salt of quinacridone and in situ hydrolysed to beta quinacridone. In order to form the intermediate salt, a relatively high sodium hydroxide concentration is required, usually over 10%, or as high as 29.5%. As a consequence of the high base concentration in conjunction with aqueous alcohol, the crude beta quinacridone is generated in large particle size, showing a specific surface area of 3 to 8 m²/g and a particle size in excess of 1 µm, exceeding the optimum particle size required for reasonable opacity and showing exceedingly low strength in TiO₂ extension (tint) and a dark and reasonably transparent masstone (column 2, lines 13 to 28).

In the production of substituted quinacridones (e.g. 2,9-dimethylquinacridone or 2,9-dichloroquinacridone), the oxidation of the substituted 6,13-dihydroquinacridone precursors in aqueous methanol is performed at a similar base concentration, as high as 31% based on total liquids, to achieve complete oxidation. As in the case of beta quinacridone, this oxidation procedure in a highly alkaline medium yields very large particle size products (surface area about 8 m²/g for 2,9-dimethylquinacridone and about 10 m²/g for 2,9-

dichloroquinacridone) exceeding the minimum size required for reasonable opacity and showing very low strength in TiO₂ extension (tint) (column 2, lines 29 to 41).

- 5.2.2 According to the second part (the teaching) of D11, it is an object to provide an improved method for the preparation of opaque substituted quinacridone pigments (column 2, lines 42 to 44).

Opaque disubstituted quinacridone derivatives of pigmentary quality and improved crystallinity can be readily prepared by milling the crude quinacridone precursor materials in an alcohol and in the presence of a base (column 2, lines 48 to 52).

The process can be conducted at ambient or near ambient temperatures in a milling operation having either one or a limited number of steps which allows for particle growth to the desired equilibrium size and narrow particle size distribution (column 2, lines 56 to 61).

The latter aspects are in direct contrast to the aforementioned approaches which generally require elevated temperatures and several distinct operations. In addition, the appropriate particle size growth permits direct isolation of the pigmentary product from the mill slurry. Finally, the resulting opaque pigments exhibit excellent performance characteristics. They are fast to light and weathering and resistant to attack by solvents. They exhibit superior heat stability, permitting their use in a variety of polymeric materials (column 2, line 61 to column 3, line 3).

The process generally proceeds by charging the crude, premilled or acid pasted quinacridone, the alcohol and the base to an appropriate mill, introducing the milling elements, milling the system at a temperature of 20° to 40°C for a period of 24 to 96 hours and isolating the resulting opaque quinacridone derivative. Applicable alcohols include low boiling alcohols such as methanol, ethanol, butanol and pentanol; and glycols such as ethylene glycol. Applicable inorganic and organic bases include alkali metal hydroxides, such as potassium, sodium and lithium hydroxide, and quaternary ammonium hydroxides, such as benzyltrimethylammonium hydroxide (column 3, lines 32 to 48).

This dynamic particle ripening system eventually permits total form conversion and particle growth to the desired equilibrium size (column 4, lines 46 to 48).

According to the relevant Example 4, such a process is applied to crude 2,9-dichloroquinacridone to yield a relatively opaque such pigment with a surface area of 40.7 m²/g (column 7, line 60 to column 8, line 17).

- 5.3 It is evident from the introductory part of D11 (section 5.2.1, above), that the various quinacridone species having large particle sizes and low specific surface areas falling within the limit specified in Claim 1 of the patent in suit are either not 2,9-dichloroquinacridone, but rather unsubstituted quinacridones, or else are not disclosed in combination with a high molecular weight organic material, as required by the claims of the patent in suit.

5.3.1 The argument of the Respondent at the oral proceedings, that the reference to the use of 2,9-dichloroquinacridone of specific surface area $10 \text{ m}^2/\text{g}$ "in TiO_2 extension" anticipated the subject-matter of Claim 1 of the patent in suit, since such a " TiO_2 extension" invariably involved the use of a polymeric medium, was not supported by any evidence, and was contradicted by the Appellant, who drew attention to standard procedures using only an oil additive. The onus of proof of the Respondent was thus not discharged.

5.3.2 Consequently, the introductory part of D11 is not novelty destroying for the claimed subject-matter.

5.4 It is furthermore evident that the teaching of D11 involves particle "ripening" to a desired equilibrium particle size, which, according to the relevant example, has a specific surface area above the permitted limit. Thus there is no basis for interpreting the disclosure as teaching the use of 2,9-dichloroquinacridone pigments having a specific surface area below $30 \text{ m}^2/\text{g}$ as required by the patent in suit. On the contrary, it is evident from the relevant Example 4, that a suitable equilibrium particle size to which the pigment particles were "ripened" corresponds to a specific surface area of $40.7 \text{ m}^2/\text{g}$, i.e. considerably greater than the permitted upper limit of $30 \text{ m}^2/\text{g}$, according to the patent in suit.

5.4.1 The argument that the teaching of D11 permitted the use of other alcohols or bases, which would have an effect on the final particle size is irrelevant, since it does not show that the resulting desired equilibrium particle size would be different from that already taught in D11.

5.4.2 Hence, the illustrative teaching of D11 is also not novelty destroying for the subject-matter of Claim 1 of the patent in suit.

5.5 In summary, the subject-matter of independent Claims 1 and 9, and, by the same token, that of the remaining dependent Claims 1 to 8 and 10 to 14 of the patent in suit is novel.

6. *Inventive step*

In connection with the identity of the closest state of the art, the arguments of the parties were advanced in relation to the disclosure of D2 rather than that of the related document D5. Since, furthermore, the two disclosures are in any case of approximately equivalent relevancy, except that the pigment particle sizes referred to in D5 are smaller than those according to D2 (section 3.1.2, above), the Board sees no reason to follow a different approach.

It is thus necessary to consider whether the skilled person, starting from a pigmented product according to D2 and faced with the problem of increasing its heat resistance whilst providing pure colour shades of high chroma (attractive red colour), would have expected this result to be achieved by reducing the specific surface area of the pigment to below a threshold of 30 m²/g.

6.1 There is no hint to do this according to D2, for the following reasons:

6.1.1 The primary aim of D2 is not to increase heat stability, but to obtain a bluish-red pigment of excellent brilliance, colour fastness and stability to organic solvents (column 1, lines 61 to 68).

- 6.1.2 In this connection, the references to resistance to high temperatures are associated not with a particular pigment particle size, but rather with the relevant crystal (γ -) modification, this being contrasted with the less thermally stable β -modification (column 2, lines 25 to 28 in conjunction with lines 60 to 68). Conversely, whilst various particle sizes are mentioned, the smallest being 0.02 to 0.07 micron, and the largest being 0.3 to 0.7 micron, these are not associated with a particular level of heat stability, but with a particular tinctorial strength, high brilliance and transparency together with good hiding power and purity of shade (column 2, lines 29 to 38).
- 6.1.3 Furthermore, those particles which by common consent represented the largest particles specifically exemplified by D2 (column 5, lines 22 to 25), are referred to as having a size of 0.2 to 0.4 μ in their direction of greatest extension (Example 1(d); column 5, lines 43 to 44). According to the repetition of this example by the Appellant, the results of which have not been contested as to their accuracy, such crystals were found to have a specific surface area of 34 m^2/g , which is above the limit specified in the solution of the technical problem (section 3.1, above).
- 6.1.4 Consequently, there is nothing in D2 which would suggest to the skilled reader that heat stability was specifically dependent on particle size, and the document in any case teaches a particle size corresponding to a specific surface area beyond the upper limit of the solution of the stated problem.

6.2 In the latter connection, it is in the Board's view of significance that, whilst D2 refers to particle sizes of the respective pigments, there is no mention of specific surface area.

6.2.1 It has already been established in this decision that a statement of particle size alone, in the absence of a precise knowledge of the particle shape and size distribution is in practice never sufficient to define the specific surface area in m^2/g , and in particular that in the specific case of long, flat prismatic crystals of the kind stated and found to be formed by 2,9-dichloroquinacridone in the production process according to D2, the average particle size can be changed by a large factor, say up to 100% in the direction of greatest extension, without any significant resulting change in the specific surface area (sections 5.1.1.4, 5.1.2, above).

6.2.2 Consequently, any statements in D2 concerning pigment particle size could in any case not be understood as a reference to the particle specific surface area.

6.2.3 Yet it is the specific surface area, and not the average particle size, which provides the key to the solution of the technical problem. In other words, D2 does not provide the skilled person with so much as a hint as to the relevant parameter which needs to be adjusted to reach the solution of the technical problem, let alone the direction of such adjustment.

6.2.4 In summary, D2 does not make available the objective concept underlying the patent in suit.

6.3 Such a situation has been considered and adjudicated by this Board in a number of previous decisions, in particular T 68/98 of 10 May 2000 (not published in OJ EPO). In the latter case, it was found that, if

the objective concept is not derivable from the closest state of the art, then the means for implementing it are a *fortiori* not derivable. Applying that finding to the present case, the measure of reducing the specific surface area of the pigment particles to below 30 m²/g is not obvious in the light of such prior art.

6.4 Seen against this background, it is evident that the skilled reader would not be led to combine with D2 a prior art disclosure more directly relating to the parameter forming the basis of the objective concept (specific surface area), since, in view of the above finding, the relevance of such a disclosure would not be apparent to him.

6.4.1 In this connection, the Board is unable to concur with the finding, in the decision under appeal, that it was permissible to combine documents, in particular D6, concerning different quinacridones and/or pigments in general with the closest state of the art, since this was based on a conclusion drawn from the fact that the subject-matter of Claims 1 and 9 of the patent in suit was not restricted to particular crystal modifications (Reasons for the Decision, page 11, points a) and b)). Clearly, it is not permissible to rely, for the establishment of an obviousness argument, on knowledge which is only available from the the patent in suit itself (cf. T 39/93, *supra*; Reasons for the decision, point 7.8, etc.).

6.4.2 Consequently, the presentation, as an obvious step, of a combination of the disclosure of D6 with D2 has no basis in law. Similar considerations apply to the disclosures of D3 and D4.

- 6.4.3 In summary, the solution of the technical problem does not arise in an obvious way starting from D2.
- 6.5 Nor would the result have been different starting from D11, with the same statement of problem, as favoured by the Respondent at the oral proceedings, for the following reasons.
- 6.5.1 The disclosure of D11 teaches the preparation of 2,9-dichloroquinacridone pigments having improved opacity. Whilst 2,9-dichloroquinacridones of specified specific surface area below the relevant limit of 30 m²/g are admittedly taught by D11, the particles are stated to exceed the minimum particle size for reasonable opacity (column 2, lines 29 to 41). Thus D11 specifically teaches against pigment particles having a specific surface area corresponding to the solution of the technical problem. On the contrary, in the preparation according to D11 of pigments exhibiting superior heat stability (column 3, line 2), the essential step of milling the crude or subpigmentary form is carried out until particle growth "to the desirable equilibrium size" has taken place (column 4, lines 47 to 49). Since this desired equilibrium size is only exemplified as corresponding to a specific surface area of 40.7 m²/g (Example 4), which is above the limit characterising the solution of the technical problem, there is no association of heat stability with a specific surface area below the relevant threshold.
- 6.5.2 The argument of the Respondent at the oral proceedings, that D11 taught quite generally to "grow particles" is not supported by the disclosure read as

a whole, since it is evident that the essential milling operation is not carried out at random, but only until the desired equilibrium particle size is reached (column 4, lines 47 to 49).

6.5.3 The further argument of the Respondent in this connection, that the disclosure according to D11 suggested the use of other bases and alcohols as additives in the milling operation, which would have a positive effect on the growth of the particles, is irrelevant, since whichever milling additives were used, the skilled person would still aim to reach the relevant desired equilibrium particle size. This corresponds, however, as already established, to a specific surface area falling outside the limit of the solution of the technical problem.

6.5.4 Consequently, the disclosure of D11 points away from the solution of the technical problem and directs attention instead to conventional pigment specific surface areas in the region well in excess of the relevant upper limit of 30 m²/g. There is in any case no suggestion that an increase in particle size would have any general effect on heat resistance, let alone a favourable such effect.

6.6 Nor would a combination of D11 with D2 assist the skilled person to a solution of the technical problem, since the latter does not even suggest the relevant parameter in respect of which an adaptive measure is to be taken (section 6.2.3, above).

6.7 As regards the further documents in the proceedings, and contrary to the view of the Respondent, the skilled person would have no incentive to consult D6, since this document is primarily concerned with azo dyes, and with increasing their opacity rather than their heat stability, the only mention of polycyclic

pigments other than diazo pigments being by way of contrast, since the azo pigments have the further disadvantage of bleeding and/or blooming owing to the fact that they are somewhat soluble in plastics and other solvent containing systems (page 37, middle column, last sentence to right column, last complete sentence). Thus the disclosure of D6 has no apparent relevance to the technical problem addressed. On the contrary, the contrast drawn between azo dyes and polycyclic pigments would incline the skilled person to reject the teaching of D6.

6.7.1 If the skilled person were, in spite of the lack of incentive, to consult D6, he would find that it was concerned with a number of methods of combatting the disadvantage of bleeding and/or blooming in azo pigments, in particular by (1) increasing molecular size (page 38, left column); (2) incorporating polar groups (page 38, foot of left column to page 39, left column); and (3) increasing opacity (page 39, left column, below to page 40, end of article). It is in the latter connection, that an increase in particle size and a concomitant decrease in active surface area are associated with an increase in opacity and an increase in heat stability and lower solubility and thus diminish the tendency to migrate (page 39, middle column, lines 10 to 12). These general remarks concerning heat resistance are thus to be understood in the general context of azo dyestuffs.

6.7.2 Such a disclosure cannot be regarded as a logical source of information, let alone inspiration for the skilled person faced with a problem in a class of pigments belonging to a general group (polycyclic pigments) stated, in D6, to have different behaviour.

- 6.7.2.1 Quite apart from this, the statements in D6 regarding heat resistance are extremely general, and tend to be antagonised by the warnings in D11 that pigment particles of low specific surface area lack opacity.
- 6.7.2.2 Furthermore, they are in contradiction with the uncontested results of the much more relevant experimental report filed by the Appellant during the proceedings before the Opposition Division, which show that particles of a 2,9-dichloroquinacridone pigment according to D2 having a specific surface area of 34 m²/g have a worse heat stability than a similar such pigment according to D5 having a specific surface area of 56 m²/g (point 3.5, above).
- 6.7.2.3 Finally, the remarks in any case do not suggest any particular threshold value of the specific surface area, whereas it is clear from the above results of the Appellant that the relevant effect is not observed in 2,9-dichloroquinacridones at a specific surface area even slightly above the claimed threshold (submission of 18 March 1997).
- 6.7.3 The argument of the Respondent at the oral proceedings concerning the association, in D6, of larger particle size with lower solubility is irrelevant, since the 2,9-dichloroquinacridones with which the patent in suit is concerned are in any case highly insoluble compared with the azo dyes which are the subject of D6, the higher solubility of the latter being specifically stated to be a further disadvantage compared with other pigments (section 6.7.1, last sentence, above). Consequently, the skilled person would not understand the reference as having any relevance to the solution of the technical problem.

- 6.7.4 In summary, D6 is of no apparent relevance in the general context of the technical problem, and the details of its disclosure would not assist the skilled person to a solution of the technical problem.
- 6.8 The disclosures of D3 and D4, whilst admittedly mentioning quinacridone type pigment particles having a specific surface area within the range characterising the solution of the technical problem, relate to unsubstituted quinacridones, rather than the 2,9-dichloroquinacridones with which the patent in suit is concerned, and to the coloristic properties of various crystal modifications thereof.
- 6.8.1 Furthermore, whilst it is stated in D3 that the new (γ_I -) modification has a specific surface area of less than 30 m²/g without loss of properties (page 2, right column, lines 31 to 42), it is also stated that this modification is less heat stable than the (γ_{II} -) modification from which it was prepared (page 3, right column, lines 45 to 46). Hence, the disclosure of D3 does not associate an increase in heat stability with an increase in particle size or reduction in specific surface area, but rather with the nature of the crystal modification.
- 6.8.2 The disclosure of D4 is even more remote, since it is concerned with a further crystal modification of unsubstituted quinacridone, and the latter is not even stated to be heat stable.
- 6.8.3 Thus, neither D3 nor D4 offer any hint to the solution of the technical problem.

6.9 In view of the above, it is evident that the solution of the technical problem does not arise in an obvious way from the state of the art, whether starting from D2, or from D11.

6.10 On the contrary, the significant increase in heat stability provided in the specified 2,9-dichloroquinacridone pigment containing compositions and coatings by the simple modification of a physical parameter must be regarded as surprising in its amplitude.

6.11 In other words, the subject-matter of independent Claims 1 and 9, and, by the same token, that of the remaining dependent Claims 1 to 8 and 10 to 14 of the patent in suit involves an inventive step.

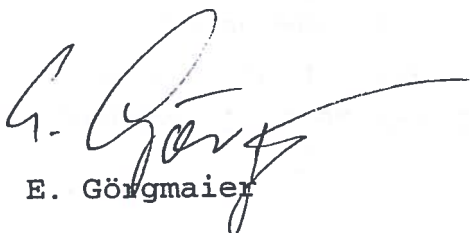
6.12 It follows from the above, that the appeal must be allowed on the basis of the main request. Consequently, there is no necessity for the Board further to consider the auxiliary requests of the Appellant.

Order

For these reasons it is decided that:

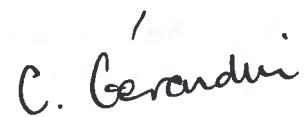
1. The decision under appeal is set aside.
2. The case is remitted to the Opposition Division with the order to maintain the patent as granted.

The Registrar:



E. Görgmaier

The Chairman:



C. Gérardin