BESCHWERDEKAMMERN DES EUROPÄISCHEN PATENTAMTS

BOARDS OF APPEAL OF THE EUROPEAN PATENT OFFICE

CHAMBRES DE RECOURS DE L'OFFICE EUROPEEN DES BREVETS

Publication in the Official Journal ~~Yes~~ / No

File Number: T 442/90 - 3.2.3

Application No.: 85 630 175.9

Publication No.: 0 186 607

Title of invention: Multilayer satin finish automotive paint system

Classification: B05D 5/06, B05D 7/16

D E C I S I O N
of 19 November 1991

Applicant: BASF Corporation

Headword:

EPC Article 56

Keyword: "Inventive step (yes)"

Headnote

Europäisches Patentamt | European Patent Office | Office européen des brevets

Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number : T 442/90 - 3.2.3

D E C I S I O N
of the Technical Board of Appeal 3.2.3
of 19 November 1991

Appellant : BASF Corporation
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Decision under appeal : Decision of Examining Division 2.3.09.085 of the European Patent Office dated 04.01.1990 refusing European patent application No. 85 630 175.9 Article 97(1) EPC.

Composition of the Board :

Chairman : C. T. Wilson
Members : F. Brösamle
J. C. Saisset

Summary of Facts and Submissions

I. Appellant's European patent application No. 85 630 175.9 was refused by a decision of the Examining Division dated 4 January 1990. That decision was based on Claims 1 to 7 filed with letter of 26 February 1988. The independent Claims 1 and 4 read as follows:

"1. A substrate material coated with at least two layers of polymer including a base coat comprising a pigmented thermosetting or thermoplastic resin and a transparent topcoat on the base coat, said transparent topcoat comprising a thermosetting or thermoplastic resin characterized in that said thermoplastic or thermosetting resin of the topcoat contains mica particles provided with an encapsulation layer consisting of titanium dioxide in a particle to resin weight ratio of 0.0001 to 0.32, the mica particles being 5 μm to 150 μm nominal longitudinal dimension and having a thickness of 0.25 μm to 1 μm, the titanium dioxide encapsulation representing 10 % to 85 % by weight of the total weight of the particle."

and

"4. A method of coating a substrate with multiple layers of polymer comprising applying at least one layer of a base coat of pigmented thermosetting or thermoplastic resin to the substrate, applying at least one layer of a transparent thermosetting or thermoplastic topcoat on the base coat, and drying or curing the applied coatings, characterized in that the thermoplastic or thermosetting resin of said transparent topcoat contains mica particles provided with an encapsulation layer consisting of titanium dioxide in a particle to resin weight ratio of 0.0001 to 0.32, the mica particles being 5 μm to 150 μm nominal longitudinal dimension and having a thickness of

about 0.25 μm to 1 μm, the iron oxide encapsulation representing 10 % to about 85 % by weight of the total weight of the particle."

II. The reason given for the refusal was that the subject-matter of the above-mentioned claims does not involve an inventive step in the light of the following documents:

(D2) WO-A-84/01909 and
(D3) EP-A-0 082 503,

since starting from (D2) the skilled person would arrive at the subject-matter of Claims 1 and 4 without the exercise of inventive skill.

III. On 26 February 1990 the Appellant (Applicant) filed a notice of appeal against that decision, paying the appeal fee on 27 February 1990.

The Statement of Grounds of Appeal was filed on 3 May 1990; this statement was accompanied by test results (Examples 1 to 3) comparing test panels with topcoats containing no mica and titanium dioxide and metal oxides respectively.

With letter of 7 May 1990 the Appellant filed further observations and came to the result that the application contains patentable subject-matter.

IV. The Appellant requests that the impugned decision be set aside and that a patent be granted or that the case be remitted to the Examining Division.

Reasons for the Decision

1. The appeal complies with the requirements of Articles 106 to 108 and Rule 64 EPC and is admissible.

2. Formal aspects

2.1 Claim 1 is completely based on Claim 1 as originally filed. It is only reworded. This is also true for Claim 4 in respect of Claim 4 as originally filed. Claims 2, 3 and 5 to 7 correspond to the originally filed Claims 2, 3 and 5 to 7, so that the set of claims as presently on file is not open to an objection under Article 123(2) EPC.

2.2 In Claim 4, see last but one line, "iron oxide" is referred to, though in the handwritten insert it is set out that the encapsulation layer is of "titanium dioxide". Seeing the application as a whole it is obvious that the term "iron oxide" in Claim 4 is a linguistic error in the meaning of Rule 88 EPC since it is clear from the application taken as a whole that nothing other than "titanium dioxide" in the last but one line of Claim 4 could have been intended.

In the following, Claim 4 is therefore dealt with on the basis of "iron oxide" being replaced by "titanium dioxide".

3. Novelty has not been disputed in the impugned decision so that this question does not need further arguments.

4. The question of patentability depends therefore on the question of obviousness or non-obviousness of the claimed "substrate material" (Claim 1) and "method of coating a substrate" (Claim 4).

4.1 Starting point of the invention is (D2), see impugned decision paragraphs 2.1, 2.4, 2.5 and 2.8 of the "Reasons for the Decision".

4.2 From (D2), see in particular page 11, lines 5 to 7, it is known, (see paragraph 2.4 of the impugned decision):

A substrate material coated with at least two layers of polymer including a base coat comprising a pigmented thermosetting or thermoplastic resin and a transparent topcoat on the base coat, said transparent topcoat comprising a thermosetting or thermoplastic resin characterised in that said thermoplastic or thermosetting resin of the topcoat contains mica particles provided with an encapsulation layer consisting of a high temperature stable metal oxide having a thickness of 0.25 μm to 1 μm, the high temperature stable metal oxide encapsulation representing 10 % to 85 % by weight of the total weight of the particle (see particularly page 25, Claim 3).

It is true, see Statement of Grounds of Appeal, page 1, last but one paragraph, that (D2) essentially deals with pigmented basecoats; according to page 11, lines 5 to 7 thereof, the reader is however taught that the opportunity is provided to utilise the metal oxide encapsulated mica particles in the topcoat as claimed in the present application, so that the above interpretation of (D2) is justified.

4.3 The subject-matter of Claim 1 differs from the teaching according to (D2) in that:

(a) a particle to resin weight ratio of about 0.0001 to 0.32 is specified;

(b) the high temperature stable metal oxide is titanium dioxide;

(c) the nominal longitudinal dimension of the mica particles lies between 5 μm and 150 μm.

4.4 For the assessment of inventive step, Article 56 EPC, it is indispensible to define the technical problem which is solved by the claimed invention, when starting from the closest prior art document (D2), to carry out the assessment of inventiveness on an objective basis.

In the Statement of Grounds of Appeal, see annex, "Examples 1 to 3" and in Applicant's letter of 7 May 1990 it is pointed out that the advantages of the invention are outstanding aesthetic properties, including a soft, satin, subdued, lustrous basecoat colouration and other aesthetic properties. From these advantages/properties of the claimed invention, it can be derived that the nearest prior art (D2) is incomplete insofar, since it must be assumed that the claimed advantages/properties there are non-existent.

The objectively remaining technical problem to be solved by the invention when starting from (D2) is obviously therefore to enhance the aesthetic properties of the coating.

4.5 The problem as such is per se certainly not inventive in the meaning of Article 56 EPC, since it is sufficient to study the known substrate material in respect of its aesthetic appearance and to make provisions for improving this aesthetic appearance.

4.6 Appellant has found that the features set out in paragraph 4.3 taken in combination with the features set out in paragraph 4.2 solve the objectively remaining technical problem.

The claimed solution is based on the replacement of iron oxide by titanium dioxide, on a specific weight ratio between the particles and the resin and on the longitudinal dimension of the mica particles.

4.7 It has to be assessed whether this solution to the problem is based on an inventive step or not.

4.7.1 In (D2), see page 12, lines 13 to 18, it is pointed out that iron oxide "can be substituted in whole" by other high temperature stable metal oxides, a list of such oxides being given, but not including the claimed titantium dioxide, nor giving any hint in this direction. Moreover, there is no suggestion that the use of these other metal oxides would produce any enhanced effects over the use of iron oxide. From this teaching of (D2) that iron oxide can be substituted by another metal oxide, the man skilled in the art is taught no more than that such substitution would achieve the same aesthetic properties of a coating. This is, however, not what is envisaged by the present invention, since the objective problem is to improve or enhance the (known) aesthetic properties of a (known) oxide-coating.

4.7.2 Under these circumstances, it follows that - in contrast to the findings of the Examining Division - the choice of a specific other metal oxide to produce an **improved** appearance (and not just the same) cannot be considered to be suggested by (D2). Nor can it be considered to be suggested by (D3), since in (D3) a coating with primarily **one** layer is envisaged and not a substrate material coated with at least two layers (base and top coat) as claimed in Claim 1.

4.7.3 In this context reference is made to the decisions T 02/82 (unpublished) from 7 February 1984 and T 86/82 (unpublished) from 8 February 1984, in which it is held that the existence of an inventive step has normally to be recognised in cases in which the selection of one of a number of known alternatives produces a surprising effect, e.g. improved property, since this surprising effect must then be included in the objective problem to be solved by the invention.

4.7.4 Summarising the arguments of the Appellant brought forward in his letters of 30 April 1990 and 7 May 1990 the Board comes to the conclusion that it cannot be denied that the replacement of the known iron oxide by titanium dioxide results in unexpected properties as demonstrated by comparative tests, see "Examples 1 to 3", which clearly demonstrate that test panels "1B", "2B" and "3B" are characterised by the existence of a lightening of the basecoat resulting in a satin-like metallic appearance without changing the primary colour of the basecoat ("1B"), respectively by the existence of a satin-like metallic appearance without changing the primary (blue) colour of the basecoat ("2B"), respectively by the existence of a pearlescent effect with no colour change of the (white) basecoat ("3B") in contrast to a colour shift of the primary colour of the base coat ("1C, 1D, 1E" i.e. iron oxide), to additive effects in form of a resultant shift of the true colour of the base coat ("2C, 2D, 2E") and to colouration of the white base coat into gold/pink/orange ("3C, 3D, 3E").

4.7.5 The Appellant deems the teaching of (D2) to be a "shot gun" listing without an indication that it would have been obvious that the provision of titanium dioxide as the encapsulation of the mica particles would produce a satin-

like metallic appearance without changing the primary colour of the base coat.

4.7.6 He submits that the Examining Division are not permitted to ignore the results and advantages produced by the claimed subject-matter, since it could not be expected that any difference in the aesthetic properties would be associated with the substitution of iron oxide by titanium oxide. It is felt that the findings of the Examining Division were the result of inadmissible "hindsight".

4.7.7 As a result of the foregoing observations the Board comes to the conclusion that (D2) and (D3), neither taken singly nor in combination would lead a skilled person to the subject-matter of Claim 1.

4.7.8 The remaining documents of the Search Report and of the examining proceedings are:

(D1) EP-A-0 136 246,
(D4) EP-A-0 048 498 and
(D5) EP-A-0 075 755.

(D1) falls under the terms of Article 54(3) EPC and can as a result thereof not be used in combination for the assessment of inventive step. Novelty in view of (D1) was affirmed by the Examining Division, see communication dated 25 November 1987, page 2, paragraph 3 and communication dated 2 December 1988, page 1, remark 1. Since the Board is also of this opinion, (D1) needs no further discussion.

4.7.9 From (D4), see pages 2 and 3, a method for coating a car body is known, in which firstly corrosion resistant layers are applied which are covered by a colour coating and a further coating containing mica particles encapsulated by

titanium dioxide, whereby a clear top coat is finally applied.

Considering (D4), it is obvious that the titanium dioxide is present in the base coat and not as claimed in Claim 1 in the top coat of the substrate material, see Claims 1, 2 and 6 to 8 and page 6, lines 32 to 35 ("Klarlack") of (D4), so that (D4) points away from the teaching of Claim 1.

4.7.10 From (D5), see Claim 1, it is known to encapsulate mica particles by titanium dioxide and to apply thereon a colour coat on the basis of chromium oxide and chromium phosphate as a protective cover. The problem to be solved by this teaching is to create a golden appearance on an article, see page 2, lines 1 to 4 of (D5). This teaching is, however, not the background of the subject-matter of Claim 1.

4.7.11 As a consequence of the above considerations, (D4) and (D5) even if combined with (D2) and (D3) would not lead to the subject-matter of Claim 1 in an obvious manner, since (D4) and (D5) as (D2) and (D3) do not contain any teaching in the direction that iron oxide has to be replaced by titanium dioxide, if enhanced aesthetic properties are envisaged.

4.7.12 Claim 1 is therefore allowable under Article 56 EPC, whereby Claims 2 and 3 cover embodiments of this subject-matter and are also allowable.

5. Claim 4 is a method claim. In its last but one line "iron oxide" is an obvious error and has to be replaced by "titanium dioxide", see above point 2.2.

5.1 The scope of protection of Claim 4 is very closely related to that of allowable Claim 1, so that the same considerations concerning the questions of novelty and inventive step have to be applied, with the result that Claim 4 is considered to contain patentable subject-matter as well, Articles 54 and 56 EPC, and is also allowable. Its dependent Claims 5 to 7 contain again obvious errors, see Claims 6 and 7 in which the words "micron" should be replaced by "mica".

6. Claims 1 to 7 filed with the letter of 26 February 1988 (as present on file), whereby in Claim 4 "iron oxide" is clarified into "titanium dioxide" and in which in Claims 6 and 7 the words "micron" are replaced by "mica" can therefore form the basis for grant of a patent.

The description on file, i.e. pages 1 to 4, 12 to 17 and 19 filed with the letter of 24 July 1989 and pages 5 to 11, 18, 20 and 21 as originally filed, fulfills the essential requirements of the EPC. However the following clarifications appear to be necessary:

- page 3: (line 3) add "falling under the terms of Article 54(3) EPC";

- page 7: (line 8) "tempeerature" to be replaced by "temperature";

- page 8: (line 30) "includ" to be replaced by "include";

- page 11: (line 12) "iron oxide" to be replaced by "titanium dioxide";

- page 18: (line 20) "in" replaced by "an";

- page 19: (line 2) "surfce" replaced by "surface";

- page 19: (line 11) "moistrue" replaced by "moisture";

- page 19: (lines 23/28) "manufctrue" replaced by "manufacture" and

- page 21 (line 27) "spirit and" deleted.

Order

For these reasons, it is decided that:

1. The impugned decision is set aside.

2. The case is remitted to the first instance with the order to grant a patent on the basis of the following documents:

   - Claims 1 to 7 of 26 February 1988, received on 2 March 1988;

   - pages 1 to 4, 12 to 17 and 19 of 24 July 1989, received on 26 July 1989, and

   - pages 5 to 11, 18, 20 and 21 as originally filed

   with the amendments as specified in detail in point 6 above.

The Registrar: The Chairman:

N. Maslin C.T. Wilson

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