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D E C I S I O N
of 2 March 2004

Case Number: T 0631/02 - 3.4.2

Application Number: 95920294.6

Publication Number: 0821814

IPC: G03G 9/12

Language of the proceedings: EN

Title of invention:
Process for forming an image on ceramic substrates

Applicant:
Hewlett-Packard Indigo B.V.

Opponent:
-

Headword:
-

Relevant legal provisions:
EPC Art. 54

Keyword:
"Novelty - no"

Decisions cited:
T 0523/89

Catchword:
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0631/02 - 3.4.2

D E C I S I O N
of the Technical Board of Appeal 3.4.2
of 2 March 2004

Appellant: Hewlett-Packard Indigo B.V.
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Representative: Leadbetter, Benedict
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Decision under appeal: **Decision of the Examining Division of the European Patent Office posted 18 December 2001 refusing European application No. 95920294.6 pursuant to Article 97(1) EPC.**

Composition of the Board:

Chairman: A. G. Klein
Members: M. P. Stock
G. E. Weiss

Summary of Facts and Submissions

I. European patent application No. 95 920 294.6 (International publication No. WO 96/33446) was refused by the Examining Division on the ground that the application did not meet the requirements of Articles 54(1) and 123(2) EPC. The following documents were cited:

D1: EP-A-0 317 969

D2: Dictionary of Ceramics, 3rd ed. 1994, page 233

D3: Römpp Chemie Lexikon, 9th ed., page 2193

II. The Examining Division reasoned that the subject-matter of claims 10 and 11 underlying the decision extended beyond the application as filed because there was no basis for replacing "adding pre-dispersed ceramic pigments" by "adding at least one ceramic pigment" in claim 10 and by replacing "is" by "comprises" in claim 11.

The Examining Division reasoned further that the subject-matter of claims 1 to 4 and 10 to 16 lacked novelty. D1 disclosed a toner comprising eg alumina and/or Auric Brown (iron oxide) which fell under the definition of ceramic pigments given in D2 or D3. The toner disclosed in D1 possessed all features indicated in claim 1 and was suitable for the intended use, ie "for forming ceramic pigment images on a ceramic substrate".

It was stated in the decision that claims 15 and 16 were not clear because the term "process colour pigment" had no well-recognised meaning. Moreover, the subject-matter of claims 15 and 16 extended beyond the application as filed because pigments "cyan, magenta and yellow" had been generalised from "Yellow, Cyan or Magenta process MBC pigments".

According to the Examining Division the subject-matter of claims 5 to 9 involved patentable subject-matter in view of the documents cited in the Search Report.

III. The applicant (appellant) lodged an appeal against the decision of the Examining Division and requested to grant a patent on the basis of the claims underlying the decision (main set of claims) and alternatively on the basis of a first and a second auxiliary set of claims submitted with the statement setting out the grounds of appeal ("appeal brief").

The arguments of the appellant can be summarised as follows:

In "Process A" and "Process B" disclosed in the application the black pigment added is not pre-dispersed. Therefore, the new wording of claim 10 is much closer to the actual examples than the wording of original claim 14.

As to claim 11 it is noted that according to page 7, lines 29 to 31 of the application "other toner polymers may be used". Hence both ionomers and other polymers may be used in separate examples. It is also well-known that mixtures of ionomers and other polymers are used

in liquid toners. Therefore, a person skilled in the art would have understood that the invention included a toner in which the polymer only comprised a ionomer.

As to the objected lack of novelty, it is incorrect that the liquid toner of D1 is in fact suitable for the intended use. The toner of D1 is not suitable for forming ceramic pigment images on a ceramic substrate. In D1 a printed image is held together by the polymer in the polymer particles. However, in forming a ceramic image, the image is fired at an elevated temperature at which the polymer is vaporised. The pigment of D1, which then is no more than a powder, will then not form a suitable image. The term "ceramic pigment" as used in the application is clearly a material that can be used to print a sintered coloured image on a ceramic base. The terms "ceramic colour particles" and "ceramic pigments" are interchangeably used in the application. A distinction between the two terms is not relevant in view of the fact that the prior art is not suitable for the intended use. However, in the first auxiliary set of claims, "sintering" is introduced in the use statement, and in the second auxiliary set of claims "ceramic pigment" is replaced by "ceramic colour" which means a pigment encased in a sinterable material.

IV. In preparation of the oral proceedings requested by the appellant the Board gave its preliminary non-binding opinion (see annex to the summons, dated 8 September 2003):

The Board in particular noted that employing the wording used in claim 1 of the main and first auxiliary set of claims, D1 apparently disclosed a toner

comprising toner particles comprising a polymer having a ceramic pigment dispersed therein, a non-polar carrier liquid, and a charge director which promotes electrostatic charging of the toner particles. For the question of novelty it was decisive whether the toner disclosed in D1 is suitable for forming (sintered) ceramic pigment images on a ceramic substrate. The Board noted that it agreed with the interpretation of such a situation by the Guidelines C-III, 4.8, which was confirmed by the decision T 523/89 cited in Case Law of the Boards of Appeal, 4th edition 2001, see paragraph 5.3.3 bridging pages 100 and 101. Auric Brown, which is iron oxide, and alumina disclosed in D1, see page 6, lines 13 to 23, apparently fall under the definition of "ceramic pigments" provided by D2 or D3. It appeared that these ceramic pigments used in the toner as defined in claim 1 sinters on a ceramic substrate upon heating to an appropriate temperature. Thus this toner was suitable for forming ceramic pigment images on a ceramic substrate.

Concerning the appellant's argument that upon firing the pigment in D1 is left as a powder which then forms no usable image, the Board said it saw no reason why the indicated ceramic pigments should not sinter, if the toner were heated to a temperature which were sufficiently elevated.

Hence, it appeared that the subject-matter of claim 1 according to the main and first auxiliary set of claims was not new within the meaning of Article 54(1) and (2) EPC.

The same reasoning applied to claims 10 and 13 of the main set and claims 11 and 14 of the first auxiliary set related to methods of producing toner suitable for forming sintered images on a ceramic substrate.

V. With letter dated 30 January 2004 the appellant submitted claims according to a "replacement main claim set" and "replacement first to third auxiliary sets", and presented arguments in support of these sets.

Claim 1 according to the main set reads as follows:

"1. A toner suitable for forming ceramic pigment images on a ceramic substrate comprising:
toner particles comprising a polymer having ceramic pigment particles dispersed therein;
a non-polar carrier liquid;
a charge director which promotes electrostatic charging of the toner particles."

Claim 1 according to the first auxiliary set reads as follows:

"1. A toner suitable for forming sintered ceramic pigment images on a ceramic substrate comprising:
toner particles comprising a polymer having ceramic pigment particles dispersed therein;
a non-polar carrier liquid;
a charge director which promotes electrostatic charging of the toner particles."

Claim 1 according to the second auxiliary set reads as follows:

"1. A toner suitable for forming ceramic pigment images on a ceramic substrate comprising:
toner particles comprising a polymer having ceramic color particles dispersed therein;
a non-polar carrier liquid;
a charge director which promotes electrostatic charging of the toner particles."

Claim 1 according to the third auxiliary set reads as follows:

"1. A toner suitable for forming ceramic pigment images on a ceramic substrate comprising:
toner particles comprising a polymer having ceramic pigment particles dispersed therein;
a non-polar carrier liquid;
a charge director which promotes electrostatic charging of the toner particles,
wherein when a toner image formed by said toner is heated on a ceramic substrate together with the substrate and other printed toner images of different colors, the ceramic pigment particles fuse to each other and to the ceramic substrate."

All sets of claims contain corresponding claims directed to methods of forming images using the toner and methods of producing the toner.

VI. By letter dated 26 February 2004 the appellant informed the Board that he would not be attending the oral proceedings.

VII. Oral proceedings were held on 2 March 2004 in the absence of the appellant. At the end of the oral proceedings the decision was given.

Reasons for the Decision

1. The wording of claim 1 according to the main and first to third auxiliary sets differs from the wording of claim 1 according to the former main set which was discussed by the Board in the annex to the summons, by the terms underlined by the appellant, as shown in paragraph V above.

It is evident that the subject-matter of claim 1 of the former main set is not substantially changed by defining that ceramic pigment **particles** are dispersed in a polymer, see main, first and third auxiliary set. The term "colour particles" introduced in the second set also means "pigment particles" in the context of the present application, see point 4 below. Therefore these new definitions cannot overcome the objection of lack of novelty put forward in the Board's preliminary opinion.

The same is true for the toner being suitable for forming **sintered** ceramic pigment images, see second auxiliary set. It was stated in the preliminary opinion that the toner disclosed in D1 is suitable for forming sintered ceramic pigment images.

Moreover it cannot be seen why the toner disclosed in D1 should not be usable for multicolour images in accordance with the last underlined feature in claim 1 of the third auxiliary set.

2. The appellant has argued in the letter dated 30 January 2004 that the coloured part of ceramic colours (referred to as pigments) are metal oxides and melt at different temperatures. Thus, the use of the pigments of the ceramic colours, without a frit or coating does not allow for the fusing of multiple colours together to form a single multicoloured image. Since ceramic pigment and ceramic colour are identical, as is agreed by the Board in its preliminary opinion, it follows from the definition provided by D2 that ceramic pigments are mixtures of pigments suspended in glass. This encapsulation allows for fusing of the colour to the substrate at a much lower temperature than the melting point of the pigment itself. It also allows for a uniform temperature for firing all colours and ensures for good bonding to the substrate and other colours. There is no assurance, in the absence of glass, that metal oxides themselves would stick to the substrate or to each other. There is no teaching in D1 that such melting, if it were to occur, would give rise to a ceramic image.

3. These arguments could not convince the Board. The term "ceramic colour particles" is used in the present application in the same way as "ceramic pigment particles", namely to express that these particles sinter in the range of 700°C to 1800°C, see page 4, lines 2 to 6 and 28 to 31. These terms are understood as meaning the same as the expression "ceramic

pigments" consistently used elsewhere in the application. For "pigments" the definition found in D2 applies: "Pigments are solid particles of colour, which are suspended in glass to form ceramic colours. Ceramic pigments, as well as having good colouring properties, must be able to withstand firing temperatures of at least 750°C, and possibly up to 1400°C, in contact with fluxes and glazes." There is no indication whatsoever in the present application that the pigments used there are encapsulated in glass frit as argued by the appellant. Hence, the toner disclosed in D1 comprising ceramic pigments, falls under the definition of claim 1 according to any of the appellant's requests, for the reasons set out in the Board's preliminary opinion.

4. Therefore, it is concluded that the application does not meet the requirements of Article 52(1) EPC because the subject-matter of claim 1 according the main set and the first to third auxiliary set is not new in the meaning of Article 54(1) and (2) EPC.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

P. Martorana A. G. Klein