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Datasheet for the decision of 8 September 2014

Case Number: T 0498/13 - 3.3.01

Application Number: 06011251.3

Publication Number: 1728837

IPC: C09D11/00, C09D17/00, C09B67/00

Language of the proceedings: EN

Title of invention:
Pigment dispersion, inkjet ink using the pigment dispersion, method for preparing the pigment dispersion and image forming method using the inkjet ink

Patent Proprietor:
Ricoh Company, Ltd.

Opponent:
CANTALUPPI & PARTNERS S.R.L.

Headword:
Method for preparting a pigment dispersion/RICOH COMPANY Ltd.

Relevant legal provisions:
EPC Art. 100(b), 56

Keyword:
Main request - Sufficiency of disclosure - (yes)
Main request - Inventive step - (yes) -
Unexpected improved effect credibly shown

Decisions cited:
T 0409/91, T 0226/85

Catchword:

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Case Number: T 0498/13 - 3.3.01

D E C I S I O N
of Technical Board of Appeal 3.3.01
of 8 September 2014

Appellant: (Opponent)	CANTALUPPI & PARTNERS S.R.L. Piazetta Cappellato Pedrocchi 18 35122 Padova (IT)
Representative:	Susanetto, C. Cantaluppi & Partners S.r.l. Piazzetta Cappellato Pedrocchi, 18 35122 Padova (IT)
Respondent: (Patent Proprietor)	Ricoh Company, Ltd. 3-6, Nakamagome 1-chome Ohta-ku Tokyo 143-8555 (JP)
Representative:	Linn, K. Meissner, Bolte & Partner GbR Anwaltssozietät GbR Widenmayerstrasse 47 80538 München (DE)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 2 January 2013 rejecting the opposition filed against European patent No. 1728837 pursuant to Article 101(2) EPC.**

Composition of the Board:

Chairman	A. Lindner
Members:	J. Ousset
	D. Rogers

Summary of Facts and Submissions

I. The appeal of the opponent (hereinafter appellant) lies from the decision of the opposition division, whereby the opposition against European patent No. 1 728 837 was rejected.

II. The following documents are referred to in this decision:

(2) US 2003/0196571 A1
(8) English translation of JP 11-080633
(15) Experimental report provided by the respondent with its letter of 5 September 2013.
(16) Experimental report II provided by the respondent with its letter of 5 September 2013.
(17) EP 1 225 207 A1
(21) Experimental report III provided by the respondent with its letter of 5 September 2013.

III. Claim 1 of the main request (granted version of the claims) reads as follows:

"1. A method for preparing a pigment dispersion, comprising:

subjecting a mixture comprising at least a pigment, a dispersant and water to a first dispersion treatment using a media mill to prepare a first dispersion; and then subjecting the first dispersion to a second dispersion treatment using a media-less mill to prepare the pigment dispersion,
wherein when the pigment is a pigment other than carbon black, the pigment in the pigment dispersion has an average particle diameter (D50) of from 20 to 50 nm, and a standard deviation of particle diameter of less

than the average particle diameter (D50), and when the pigment is a carbon black, the pigment in the pigment dispersion has an average particle diameter (D50) of from 70 to 180 nm, and a standard deviation of particle diameter of not greater than one half of the average particle diameter (D50)."

IV. The appellant argued mainly as follows:

a) The claimed subject-matter was not sufficiently described in order to allow reproducibility over the whole claimed scope. Decisions T 409/91 and T 226/85 were cited in order to support this allegation. The scope of the claims covered all rotor speeds, all dispersant amounts, all dispersants and all pigment concentrations. The patent in suit (see [0036], [0044], [0046-47] and [0050]) showed concrete evidence of the lack of sufficiency over the whole claimed scope.

b) No further comments were made in relation to the lack of novelty.

c) Document (17) represented the closest prior art, since it described a two-step milling process comprising milling a pigment, water and a dispersant, whereby a media-containing mill was used first and then a media-less mill. To improve chroma and image density of aqueous inkjet inks, the skilled person would consider document (2), dealing with the same problem. Hence, an inventive step should not be acknowledged.

d) Experimental results (15) were not credible, since they disclosed an increase of the particle size after milling and no unexpected effect was shown.

Experimental results (16) had no probative value, since unnecessary additional changes were made between the process of the patent in suit and the comparative examples. Appellant's new example 13 had a worse image density and a worse chroma than example 5 and 8 of document (2). The technical effects described in document (21) were predictable (see document (17), column 7, lines 53-55).

e) In these experimental results the ink obtained according to a two-stage process according to the patent in suit was compared with an ink obtained via a one-stage process, which did not correspond to the content of the prior art document (17).

f) The combination of document (17) with document (8) was obvious for the person skilled in the art, because

i) both related to the production of particulate dispersions for ink jet inks
ii) both related to ink jet inks containing carbon black and other pigments
iii) both addressed the same technical problem and,
iv) were in identical International Classifications and thus would be consulted by the person skilled in the art.

g) The carbon black pigment dispersions having an average particle diameter of 50 nm and a standard deviation of 20 were already disclosed in document (8). In view of the disclosure of document (17) (see [0007] and [0027]), the combination of this

document with document (8) rendered the claimed subject-matter obvious.

V. The respondent argued mainly as follows:

a) Paragraphs [0022] to [0055] of the patent in suit gave clear guidance how to reproduce the claimed invention without undue effort.

b) Embodiments which did not comply with the definition of claim 1 were not covered irrespective of the rotor speeds, dispersant amounts and dispersant and pigment concentrations; these features were not used to define the claimed invention. The skilled person could thus reproduce the invention by using the examples and the common knowledge. In decisions T 409/91 and T 226/85, reproducibility of the inventions was denied but they referred to claims in which the disputed feature - contrary to the present case - was in the wording of the claims.

c) Document (2) was to be considered as the closest prior art. Document (17) aimed at rapidly preparing fine pigments but did not mention any improved properties for pigment dispersions.

d) Document (8) was considered the closest prior art with respect to carbon black pigments but did not disclose a two-step dispersion treatment using successively a media mill and a media-less mill.

e) A technical effect was shown by the experimental results of documents (15), (16), (21) and (21a) compared to the disclosures of document (2) and (8).

f) If document (17) was to be considered as the closest prior art, then there was no motivation to combine its teaching with the teaching of documents (2) or (8).

VI. With a letter of 19 August 2014 the appellant informed the board that it would not be attending the oral proceedings scheduled for 8 September 2014.

VII. The appellant requested in writing that the decision of the first instance be set aside and the patent revoked.

VIII. The respondent requested, as a main request, that the appeal be dismissed, or alternatively, that the decision under appeal be set aside and the patent maintained upon the basis of the claims of any of auxiliary requests 1 - 5, filed under cover of a letter dated 5 September 2013.

IX. At the end of the oral proceedings, the decision of the board was announced.

Reasons for the Decision

1. The appeal is admissible.

Main request

2. Article 100 b) EPC

2.1 Decision T 409/91 cited by the appellant to support its argument notably differs from the present case. The subject-matter of claim 1 was a distillate, thus a

compound and not a process. Moreover, the description contained examples which showed that the repetition of one example did not lead to a reproducible result. In the current case, the description contains several examples in Table 1 from which it can be taken that the process of claim 1 leads to pigment compositions having the particle size and the standard deviation in accordance with the wording of claim 1. In the absence of any contrary results from the appellant which has the burden of proof, the board has no reason to doubt the validity of these results.

Similarly, in decision T 226/85, the appellants (opponents) had filed experimental results which demonstrated that the claimed invention was not reproducible over the whole scope. In the present case, the appellant did not provide any evidence which could support its argument.

2.2 The appellant also argued that the description failed to show that the process was reproducible for all rotors, speeds, all dispersant amounts, all dispersants and all pigment concentrations. The appellant also held that the content of the patent itself (see [0036], [0044], [0046-47] and [0050] provided concrete evidence of the lack of reproducibility of the claimed process.

2.2.1 The board cannot concur with the appellant's argument. [0036] recites how the average particle diameter and the standard deviation of particle diameter can be controlled. Although no specific values are mentioned in this paragraph as to the temperature of the liquid to be dispersed, the speed of the rotor, the dispersing time.., the description contains specific examples which are taken into consideration by the person skilled in the art when trying to vary these different

parameters. A similar reasoning is applicable for the content of [0044], which relates to the amount of dispersant for the making of the inkjet ink. In [0046-47], the description justifies the choice and the nature of the preferred dispersant and in [0050], the choice of the range representing the amount of pigment in the said dispersant is also mentioned. The board does not see in these paragraphs anything which could be considered as a concrete evidence of a lack of reproducibility. On the contrary, the board is convinced that in the light of all this information the skilled person is able to carry out the invention as defined in the main request in its entirety without undue burden.

2.3 As a consequence, the ground for opposition according to Article 100(b) EPC does not prejudice the maintenance of the patent on the basis of the main request.

3. Novelty is no longer objected to by the appellant and the board sees no reason to do so. Novelty of the claimed matter is thus acknowledged.

4. Inventive step

Closest prior art

4.1 Document (2) represents the closest prior art. It describes a pigment dispersion composition having the same constituents as the composition obtained in the patent in suit (see claim 1 of document (2)). This composition is obtained starting from the same mixture of constituents (see claim 8 of document (2)) but differs from the claimed process only in that the process described in document (2) for making the

pigment dispersion claimed in claim 1 is a one-step process whereas a two-step process is required in the patent in suit. Moreover, the problem to be solved by the pigment dispersion of document (2) is the same as the problem of the patent in suit (see [0012] of document (2) and [0013] of the patent in suit), namely discharge stability, ink stability and chromaticness.

The appellant argued that document (17) should be considered as the closest prior art. The board disagrees with this assertion. It is true that document (17) discloses a two-step process starting from the same mixture of constituents as the one of the patent in suit. However, nothing is said in document (17) as to the standard deviation of the particle diameter in the obtained dispersion. Moreover, document (17) is primarily concerned with the provision of a process enabling quick preparation of a pigmented ink jet ink (see column 2, lines 35-37) which is in contrast to the preparation of inks having very small average particle diameters and narrow standard deviations of particle diameter.

Therefore, document (2) represents the most promising spring board for the skilled person towards the claimed invention.

Problem

4.2 The problem underlying the patent in suit can be seen in the provision of a process to make available a dispersed pigment composition having improved properties in terms of a good combination of discharging and preservation stability.

Solution

4.3 In order to demonstrate the improved properties of the dispersed pigment composition obtained by the claimed two-step process, the respondent provided comparative data (document (21)), wherein a carbon black dispersion according to the patent in suit (two-step process) was compared with a carbon black dispersion having comparable average particle size as well as comparable standard deviation but prepared according to the process described in document (2) (one-step process). The table on page 2 of document (21) (see experiment 1 and comparative experiments 1-1 and 1-2) shows a noticeably better discharging stability as well as a better preservability of the ink for the dispersion obtained by the process of claim 1 of the patent in suit. A similar improvement is also observed for pigment dispersions not containing carbon black according to the present invention (see Table 1, example 1 of the patent in suit) and experiments 2-1 and 2-2 of the table in document (21).

4.4 The last point to be dealt with is whether this improvement could have been deduced in an obvious manner by the skilled person from the teaching of the available prior art and its common knowledge.

4.4.1 As explained in point 4.3, the process described in document (2) does not lead to pigment dispersions having the properties shown by the compositions prepared according to the process of claim 1 of the patent in suit. Moreover, document (2) does not mention two-step processes at all. Hence, from this document, the person skilled in the art cannot infer the claimed process. Regarding the combination with document (17), the following is noted: Although document (17) discloses a two-step process similar to the one

according to present claim 1, there is no hint therein of the specific properties shown in document (21) for the dispersions having the average particle diameter and the standard deviation obtained according to the process of claim 1 of the patent in suit. Moreover, in all the examples, none of which comprises carbon black, the particle size ranges from 125 nm to 178 nm, which is far away from the corresponding range in claim 1 of the patent in suit (20 to 50 nm for non-carbon black pigments). Hence, document (17) does not give to the skilled person any hint to work with pigment dispersions having a smaller particle size and a narrow standard deviation of particle diameter in order to arrive at the improved properties as shown in document (21) for the specific dispersions obtained according to the process of claim 1. As a consequence, document (2), neither alone nor in combination with document (17) renders the method as claimed in the main request obvious.

4.5 The appellant further contended that the combination of document (8), which alternatively had been defined as closest prior art for carbon black pigments, with document (17) would render the claimed process when the pigment is carbon black obvious for the skilled person.

4.5.1 Document (8) neither discloses a dispersion treatment in the presence of water (see point 3.2.2 of the decision under appeal) nor a two-step method for preparing a pigment dispersion As a consequence, this document is not relevant for the assessment of inventive step of the present main request, neither alone nor in combination with document (17) or any of the other cited prior art documents.

4.6 The board concludes that the claimed subject-matter of claim 1 is based on an inventive step. Claims 2 and 3 being dependent of claim 1 are thus also inventive. Since the main request fulfils the requirements of the EPC, a decision of the board on the pending auxiliary requests is not necessary.

Order

For these reasons it is decided that:

1. The appeal is dismissed.

The Registrar: The Chairman:

M. Schalow A. Lindner

Decision electronically authenticated