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D E C I S I O N
of 14 February 2006

Case Number: T 0523/04 - 3.4.02

Application Number: 90307883.0

Publication Number: 0409608

IPC: G03F 5/08

Language of the proceedings: EN

Title of invention:

Method for offset and similar printing systems

Patentee:

Hoffman, Arnold

Opponent:

Xeikon NV
Agfa-Gevaert N.V.
Xerox Corporation

Headword:

-

Relevant legal provisions:

EPC Art. 123(2), 56

Keyword:

"Added subject-matter (no)"
"Priority validly claimed (yes)"
"Inventive step (yes)"

Decisions cited:

-

Catchword:

-



Case Number: T 0523/04 - 3.4.02

D E C I S I O N
of the Technical Board of Appeal 3.4.02
of 14 February 2006

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Decision under appeal: Interlocutory decision of the Opposition
Division of the European Patent Office posted
18 February 2004 concerning maintenance of
European patent No. 0409608 in amended form.

Composition of the Board:

Chairman: A. Klein
Members: M. Rayner
C. Rennie-Smith

Summary of Facts and Submissions

- I. The present appeal is against the decision of the opposition division, that, having regard to amendments made by the patentee, European patent 409 608 (application number 90 307 883.0 of 19 July 1990, priority 20 July 1989) meets the requirements of the Convention. The appeal was lodged by opponent OIII (Xerox Corporation), with a request to revoke the patent in its entirety. The patent proprietor (=respondent) requests that the appeal be dismissed.

The appeal and subsequent procedural steps were officially notified to opponents I and II, who, however, did not make any substantive contribution to the appeal proceedings, opponent I merely requesting a transfer of opposition be effected in the register and notifying non-attendance at oral proceedings and opponent II remaining silent.

- II. The patent concerns a method for offset and similar printing systems, and, in the decision under appeal reference was made, amongst others, to the following documents:

D2 JP-A-63308473 (a patent family member US-A-4 903 123 has also been mentioned in the proceedings, but the board will refer, as D2 in the present decision, to an English translation furnished by the appellant)

D3 EP-A-0 370 271 (published 30 May 1990, first priority 24 November 1988, second priority 8 August 1989)

D6 US-A-3 928 038

D9 DE-A-2 617 683

D29 "Photomechanical Halftone", Siple

D31 "Electronic colour separation", Molla, pp. 90-94

According to the decision under appeal, claim 1 as presented to the opposition division is supported by the documents as originally filed and its priority is validly claimed.

Having regard to document D3, which is only relevant under Article 54(3) EPC, the frequency claimed in the patent in dispute cannot be derived therefrom, as Figure 11A therein refers not to the invention disclosed in that document but to a conventional half tone dot. Document D2 does not teach that four halftone images have the same spacing between the lines. None of documents D6, D9, D29 or D31 disclose the subject matter claimed.

In assessing inventive step, document D29 can be considered to represent the closest prior art as it discloses methods to produce half tone images. The difference between this disclosure and the patent in suit lies in the latter disclosing use of four colours, wherein the halftone image is electronically produced, instead of three as in document D29. The underlying problem is thus to provide an alternative process to make available halftone colour images. It had not however been shown that a facsimile or transmission by

wire must have the meaning of electronically producing a line screen. A combination of different parts of the disclosure of document D29 to challenge inventive step amounts to ex post facto analysis and is not obvious. The subject matter of the claim differs from document D6 in that the halftone images are electronically produced as a line screen. Even if a halftone image can be electronically produced according to document D9, there is no reason to apply this feature to the disclosure of document D6. Document D9 does not establish any relationship between the same or different frequency and a Moiré effect. A combination of the disclosures can only result from an a posteriori analysis. For similar reasons, it can be concluded that the subject matter claimed involves an inventive step in view of the combination of documents D29 and D9 or D31.

- III. Consequent to auxiliary requests of both parties, oral proceedings were appointed by the board.
- IV. According to the appellant, while the originally filed application refers to four specific colours, cyan, magenta, yellow and black, it does not refer to first, second, third and fourth colours in a general sense. Disclosure of a first, second, third and fourth halftone image cannot be found in the documents as filed. The claim also generalises rotation between each line scan to rotation between each screen. Originally a 30° rotation was disclosed, this has now been generalised to rotation. There is also no support for the expression "faithfully representing". In addition only 254 lines per inch spacing is disclosed in relation to Example 4, this value should therefore be

in the claim. During the oral proceedings, the appellant also objected that the first reference to the wording "in the image" present in claim 1 as granted is not present in the amended claim. In view of these defects, it must be concluded that the claim is not fully supported by the application as originally filed.

Not only does the priority document not support these features, but additionally Example IV therein is much narrower and does not disclose four colours.

With respect to document D3, the appellant argued during the oral proceedings, that Figure 11A thereof shows a line spacing meeting the claim in dispute and thus concluded the claim lacked novelty in the sense of Article 54 EPC. However, this document could be considered out of the assessment of inventive step, as it could only be taken into account in the context of Article 54(3) if the board considered the priority claim of the patent valid.

With respect to document D2, there are no specific ranges for line frequency, but the necessary formulae providing these values in an obvious way are disclosed. Any improvements alleged to be provided by the patent in respect of dot gain or jump only occur because the equipment is more modern. In any case, the values are also obvious taking the teaching of document D6 or D29 into account with document D2, rendering obvious the subject matter claimed in the patent in dispute.

Starting, in the alternative from document D29 in relation to inventive step like the opposition division, page 37 refers to a wired photo and pages 50 to 51 to

four colours. "Wired" means electronically produced on the receiver side. The subject matter claimed is therefore, contrary to the opinion of the opposition division, obvious in the light of this document. Even should "wired" not immediately be understood as electronically produced, this wording means no more than half tone images are later transmitted. Therefore, document D9 immediately guides the skilled person to the solution of the claim in dispute, as just such electronic production is therein disclosed. The subject matter claimed is likewise obvious having regard to a combination of documents D29 and D31, the latter disclosing electronically producing screens. Since the only difference between the teaching of document D6 and the claim in dispute is that the half tone images are electronically produced, as with document D29, document D9 or D31 immediately guides the skilled person starting from document D6 to the solution of the claim in dispute without involving an inventive step.

It must therefore be concluded that the subject matter of claim 1, if new over the disclosure of document D3, does not satisfy Article 56 EPC.

- V. According to the respondent, angles given in the original disclosure show there has been no undue generalisation of the claim. The discussion of Example 4 refers to cyan, magenta, yellow and black colours, but claim 2 was not so limited and there is no reason now so to limit the claim. The word "faithfully" simply means the patentee was not interested in obtaining special effects, but in a faithful representation of the original. The general objections of the appellant on priority appear artificial and

leave out of consideration the common technical knowledge of the skilled person.

Document D29 shows a halftone image composed of three coloured line screens rotated 45° from each other, obtained photomechanically and is thus of no further relevance to the problem addressed in the patent. Whatever "wired" means, it does not compare to electronically producing a halftone image as claimed. Document D6 does not concern electronic screening and so is not relevant. There is no reason to combine either document D6 or D29 with other prior art documents as done by the appellant.

Document D2 is in fact the closest prior art as it is concerned with electronic production and Moiré, but here the same line spacing for the screens is not taught. The problem of Moiré is solved in document D2 using differing screen angles, where a screen angle θ depends on displacements (denoted a and b) between the basic cells containing (sub)pixels in a threshold matrix, for example $a=3$ and $b=1$. Use of the values given in the Table in the middle of page 21, however, lead automatically to a different line spacing in optimising for Moiré, i.e. away from the invention claimed in the patent in dispute. The idea of improving electronic screening by using the same spacing to avoid so-called dot gain or jump cannot be made obvious by any of the documents relating to a photomechanical screen. Document D9 concerns electrical output to steer a laser and not reproduction of an image and so is not relevant. Document D3 is the best advocate of the invention in explaining that the problem of dot gain is associated with line frequency. In summary, the

invention teaches that an improvement in electronic screening is effected by using identical line frequency, which is a problem beyond Moiré.

VI. The single claim of the patent upon which the decision of the opposition division was based is worded as follows.

A method for producing a half-tone colour image faithfully representing a continuous-tone colour original comprising the steps of:

- (a) electronically producing as a line screen a first half-tone image of substantially continuous, parallel first lines at a frequency of between 40 and 160 lines per centimeter (100 and 400 lines per inch), such that the width of said lines at a given point in the first half-tone image continuously varies as a function of the optical density of a first colour component of the original, said first lines defining a first direction,

- (b) similarly electronically producing as a line screen a second such half-tone image of second lines of the same line frequency, such that the width of said second lines at a given point in the second half-tone image continuously varies as a function of the optical density of a second colour component of the original, said second lines defining a second direction rotated from the first direction,

- (c) similarly electronically producing as a line screen a third such half-tone image of third lines of the same frequency, such that the width of said third lines at a given point in the third half-tone image continuously varies as a function of the optical density of a third colour component of the original, said third lines defining a third direction rotated with respect to the first and second directions,
- (d) similarly forming a fourth such half-tone image of fourth lines of the same line frequency such that the width of said fourth lines at a given point in the fourth half-tone image continuously varies as a function of the optical density of a fourth colour component of the original, said fourth lines defining a fourth direction rotated with respect to the first, second and third directions, and combining said first, second, third and fourth images in registration to form said image faithfully representing said continuous-tone colour original.

VII. At the end of the oral proceedings, the board gave its decision.

Reasons for the Decision

1. The appeal is admissible.

2. *Amendments*

- 2.1 The parties agreed that cyan, magenta, yellow and black are disclosed in Example 4 of the application documents as filed. Claim 6 of the documents as filed, for example, refers to electronically separating a colour original without any limitation to specific colours. There is also neither a limitation to the angles of 45°, 90°, 105° and 165° nor to the specific line spacing values used in Example 4. The board therefore reached the conclusion that no subject matter had been added by reference to a first, second, third and fourth colour nor by the unquantified directions rotated or line spacings in the claim under appeal.
- 2.2 While the word "faithfully" is not present in the documents as filed, the board understands it to mean a representation not involving special effects, which is supported by the documents as filed (see, for example, lines 11-14 on page 4 of EP-A2-0 409 808). The board thus concluded that no subject matter had been added by use of this word.
- 2.3 During the oral proceedings, the appellant also objected that the first reference to the wording "in the image" present in claim 1 as granted is not present in the amended claim. However, since the wording "in the first (second, third, fourth) half-tone image" is present in the amended claim, the board sees no sustainable objection under either Article 123(2) or (3) EPC.

3. *Priority*

The board also reached a positive view on priority. Claim 4 of the priority document refers to four separate colours and the specific rotations given are specified as examples. A range of 100 to 400 lpi is given at the bottom of page 3. The last paragraph on the first page explains that creative graphic screens are incapable of producing a reasonable continuous tone reproduction.

4. *Patentability*

4.1 Novelty of claim 1 in dispute was not disputed in the written proceedings. During the oral proceedings, the appellant referred to Figure 11A of document D3, citable only in respect of Article 54(3), as removing novelty from the value of line spacing claimed and thus of the subject matter of claim 1. The board confirms, however, that this Figure refers to dot gain for a conventional halftone dot and not to the inventions disclosed in document D3 and thus sees no reason to disagree with the analysis of the opposition division that novelty is given by the specific range of line frequency.

4.2 In the view of the board, document D2 can be considered as closest prior art document because it relates to electronic production of a half-tone image, where problems associated with Moiré are addressed. The document is concerned with threshold value matrices containing values for (sub)pixel display. As can be seen from Figure 5 or 11 showing dots obtained as the level goes higher corresponding to becoming darker, the

idea is that the thresholds are set so output moves from isolated dots to ever thickening lines. In the middle of page 16, for example, it is then explained that in order to suppress occurrence of Moiré, the screen angle, in other words the angle of the lines, is made to differ among respective colours. However, it is not stated that the line frequency for the line screens is the same.

- 4.3 The appellant did not explain how this feature was disclosed in document D2, relying on a vague and general statement that it was disclosed by the formulae given on pages 17 and 18. The respondent on the other hand convincingly explained that achievement of a screen angle θ depends on displacements (denoted a and b) between the basic cells containing (sub)pixels in the threshold matrix, for example a=3 and b=1. The document also looks at how the angled line can be smoothed and in the middle of page 21 it is explained that using the values in the Table in Figure 24 allows the circuit to be set easily and different screens for four respective colours obtained. However, in the Table, different angles are shown as deriving from differing cell displacement vectors a, b, say 4,1; 4,2; 4,3 and 4,4. As the basic cells have different displacements, no matter how smartly the thresholds are calculated, differing physical cell use entailing a differing spacing is needed to build up differently angled pixel lines in the matrix. Therefore, in agreement with the opposition division and the respondent, the board considers that document D2 does not disclose that that the line frequency is the same for the screens for the respective colours. The board is therefore satisfied as

to novelty of the claimed subject matter having regard to this document.

- 4.4 The problem of dot gain or jump phenomenon is addressed by the novel subject matter of claim 1. It is a problem which does not occur with contact screens, which can be precisely aligned mechanically, but arises where halftone screens are electronically produced. In other words, it is a problem beyond Moiré particular to electronic systems.
- 4.5 As remarked by the appellant during the oral proceedings, since the board accepts the priority of the claim in dispute, document D3 cannot be used in challenging inventive step. Nevertheless the board found the document useful in view of its teaching deriving from the first priority which generally teaches screens of different ruling spacings for the different colour halftones as can be seen for example in Figure 3D. Interestingly, in a teaching deriving from the second priority, document D3 then goes on to teach that the screen rulings should be the same to avoid problems with abnormal dot gain which lead to a dot gain or jump phenomenon detrimental to stability of the colour tone (see, for example line 28 et seq. in column 20). As the respondents argued, the advantages explained for the second teaching can be taken as an independent support for inventive step of the subject matter of the claim in dispute. At all events, the board attaches more weight to this teaching than to the allegation by the appellant that the problem does not exist with more modern electronic screening equipment, as this allegation was not substantiated. The board

therefore accepted the submissions of the respondent concerning the existence of the problem.

4.6 The board did not find the problem addressed at all in the other documents relied on by the appellant and thus formed the view that the subject matter of claim 1 involves an inventive step because, accordingly, its solution cannot be considered obvious to the skilled person in view of the prior art. The appellants advanced a number of challenges to the inventive step of the subject matter of claim 1 based on weaving a number of different documents together for rather thin reasons to try to reach the subject matter claimed. Document D29, for example, is an older document and parts relied upon by the appellant derive from, for example, 1929. The crunch comes with the question as to whether "making line plates directly from a wired photo" is the same as "electronically producing as a line screen". The board considers this is not the case, as it was convinced by the respondent, who referred to corresponding statements in document D31 (see for example the first paragraph of the right hand column on the first page), that electronic screening is a technique only introduced in the early 1970s. Therefore, the insistence of the appellant that wiring three separate negatives from Chicago to New York in the 1920s meets the wording of the claim did not convince the board.

4.7 It was never disputed that document D6 does not concern electronically produced halftone screens. Even if there is a disclosure of halftone screens with lines of connected dots of the respective screens identical except as to their angulation (column 2, lines 37-38),

the document cannot therefore come any closer than document D29 to the subject matter claimed. Accordingly, there is no obvious route from either of these documents to the invention claimed. There is, moreover, no reason why it is obvious to call on the teaching of document D9, but even if this is done the invention is not reached, this latter document being really about steering a laser as an engraving electronic beam, i.e. a later stage, not electronically producing a halftone image (see, for example, the second paragraph on page 5 and Figures 5a to 5e). Document D31 is a general document dealing with halftones, including electronic screening and mentioning screen rulings, but which does not really go beyond the electronic dot generators discussed at the beginning of the patent in dispute. There is also no convincing way to combine the teachings of document D29 or D6 with that of document D2 because there is no reason for the skilled person to introduce teaching from a different conventional technique in preference to the matrix advocated. The board does not therefore see how the disclosure of any of documents D6, D9, D29 or D31 can be structured into a persuasive argument challenging inventive step.

- 4.8 Accordingly, the appeal fails because nothing therein caused the board to question the finding of the opposition division that, account being taken of the amendments made by the patent proprietor during the opposition proceedings, the patent and the invention to which it relates met the requirements of the Convention. Moreover, since opponents I and II did not make any substantive contribution pertinent to the issues up for decision, no further comment by the board concerning these opponents is necessary in the present decision.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

M. Kiehl

A. G. Klein