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D E C I S I O N  
of 5 February 1996

Case Number: T 0401/93 - 3.5.1

Application Number: 86303870.9

Publication Number: 0202931

IPC: H04N 1/46

Language of the proceedings: EN

Title of invention:

Full color, continuous tone laser diode photographic imaging  
apparatus and method

Applicant:

MINNESOTA MINING AND MANUFACTURING COMPANY

Opponent:

-

Headword:

-

Relevant legal provisions:

EPC Art. 111, 116

Keyword:

"Pending request for oral proceedings (no)"  
"Remittal to the first instance"

Decisions cited:

T 0019/87

Catchword:

-



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Boards of Appeal

Chambres de recours

Case Number: T 0401/93 - 3.5.1

D E C I S I O N  
of the Technical Board of Appeal 3.5.1  
of 5 February 1996

Appellant: MINNESOTA MINING AND MANUFACTURING COMPANY  
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Decision under appeal: Decision of the Examining Division of the European  
Patent Office posted 17 December 1992 refusing  
European patent application No. 86 303 870.9  
pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: P. K. J. van den Berg  
Members: R. Randes  
G. Davies

## Summary of Facts and Submissions

I. European patent application No. 86 303 870.9, filed on 21 May 1986 claiming a priority of 22 May 1985 and published under No. 0 202 931, was refused by a decision of the Examining Division dated 17 December 1992.

II. The reason for the refusal was that the subject-matter of independent claims 1 and 7 of the set of 11 claims filed on 17 August 1992 lacked an inventive step having regard to the prior art documents:

D1: US-A-4 346 401,

D2: EP-A-0 119 334,

D3: S.M. Sze, "Physics of semiconductor devices", 1981, 730-739.

It was furthermore stated that the additional features of the dependent claims 2 to 6 and 8 to 10 did not appear to involve an inventive step since they merely represented simple design choices.

III. On 18 February 1993 the applicants filed a notice of appeal against this decision and on 19 February 1993 paid the prescribed appeal fee. A statement setting out the grounds of appeal was filed on 15 April 1993. The appellants requested that a patent be granted on the basis of newly filed claims 1 to 10, or, as first, second and third alternative requests, on the basis of one of three further submitted sets of claims. Furthermore, it was requested that the appeal fee be reimbursed on the grounds that Article 116 EPC had not

been complied with in the proceedings before the Examining Division. In case the Board considered refusing the main request, oral proceedings were requested.

IV. In a communication dated 21 June 1995, the rapporteur expressed the preliminary view that neither the appellants' main request nor the request for reimbursement of the appeal fee could be granted. The appellants were asked to state whether they upheld their conditional request for oral proceedings.

V. In a reply filed on 21 December 1995, the appellants declared that they cancelled the main request and asked that the case be remitted to the Examining Division on the basis of the claims of the "first alternative request", which were re-filed. It was further requested that "no adverse disposition be taken to this application without providing the applicants with an opportunity of being heard and, in the unlikely event that the Examiner should consider refusal of this application, then oral proceedings are requested".

VI. The main request, referred to as the "first alternative request" in the statement setting out the grounds of appeal, consists of the following application documents:

Claims:

Claims 1 to 10 first filed on 15 April 1993 and re-filed on 21 December 1995

Description:

Pages 1, 5 to 23 as originally filed  
Pages 2 to 4 filed on 21 December 1995,

Drawings:

Sheets 1/3 to 3/3 as originally filed

VII. Auxiliary request 1 is based on claims 1 to 10 filed on 15 April 1993 and headed "2nd alternative request". Auxiliary request 2 is based on claims 1 to 6 also filed on 15 April 1993 and headed "3rd alternative request".

VIII. Claim 1 of the main request reads:

"1. A laser imaging apparatus (10) for producing multi-color, continuous tone images on a photographic element (16) upon exposure to radiation (14), the photographic element (16) including a substrate (20) and at least two superposed photosensitive layers (22, 26, 30) on one side of the substrate, each photosensitive layer (22, 26, 30) being associated with a different photographic coupler capable of forming a different color dye upon exposure and development by reaction with an oxidized photographic developer, the photosensitive layers (22, 26, 30) being sensitized to different wavelengths of the electromagnetic spectrum, the imaging apparatus (10) comprising:

a plurality of laser sources (12, 12a, 12b) equal in number to the number of said photosensitive layers (22, 26, 30), each of said laser sources (12, 12a, 12b) emitting radiation (14) at a particular wavelength of the electromagnetic spectrum which is different from that of any of the other laser sources (12, 12a, 12b) and which corresponds to said wavelength at which one of said photosensitive layers (22, 26, 30) is sensitized;

means for modulating (38, 38a 38b) said radiation (14) of said laser sources (12, 12a, 12b) to correspondingly modulate said exposure of said photosensitive layers (22, 26, 30) and thereby the density of said color upon development;

means for directing (18) said radiation (14) emitted by said laser sources (12, 12a, 12b) to said photographic element (16), focusing (67, 74, 76) said radiation (14) to a spot and transversely scanning said

radiation (14) spot across the surface of said photographic element (16); and

means for advancing (80) said photographic element (16) relative to said scanned radiation (14) in a direction having a component direction perpendicular to said direction of scanning so that all portions of said photosensitive layers (22, 26, 30) are exposed to said radiation (14);

so that an image is produced by said exposure of said photosensitive layers (22, 26, 30) to said laser radiation (14), so that said image is multi-colored in that any color within the color space defined by said color dyes may be produced by the selection, said superposition and said density of said at least two color dyes and so that said color has a continuous tone in that the density of said color may be determined by modulation of all of said laser sources (12, 12a, 12b) and thereby the exposure of all of said photosensitive layers (22, 26, 30);

characterised in that each of the laser sources (12, 12a, 12b) comprises a laser diode emitting radiation at a respective laser diode wavelength in the far red or infrared region, that the means for modulating (38, 38a, 38b) continuously modulates the intensity of said radiation (14) emitted by said laser diodes (12, 12a, 12b) whereby the input to said laser diodes is directly modulated, and that each photosensitive layer of said photographic element is sensitised at a respective laser diode wavelength in the far red or infrared region."

Claim 7 of the main request reads:

"7. A method of producing multi-colour, continuous tone images on a photographic element (16) including a substrate (20) and at least two superposed photosensitive layers (22, 26, 30) on one side of the

substrate, each photosensitive layer (22, 26, 30) being associated with a different photographic coupler capable of forming a different color dye upon development by reaction with an oxidized color photographic developer, the photosensitive layers (22, 26, 30) being sensitized to different wavelengths of the electromagnetic spectrum, the method comprising the steps of:

providing laser sources (12, 12a, 12b) corresponding in number to the number of said photosensitive layers (22, 26, 30) each laser source (12, 12a, 12b) emitting radiation (14) at a different wavelength of the electromagnetic spectrum and corresponding in wavelength to said wavelength at which a different one of said photosensitive layers (22, 26, 30) is sensitized;

directing radiation (14) from said laser sources (12, 12a, 12b) to said photographic element (16) so that radiation (14) from each of said laser sources (12, 12a, 12b) sensitizes each of said photosensitive layers (22, 26, 30) to produce a color in each photosensitive layer (22, 26, 30) upon reaction with a photographic developer;

modulating the intensity of said radiation (14) of said laser sources (12, 12a, 12b) and directed to said photographic element (16) so that the density of said color produced upon reaction with a photographic developer is correspondingly modulated in a continuous tone;

characterised in that each of the laser sources (12, 12a, 12b) comprises a laser diode emitting radiation at a respective laser diode wavelength in the far red or infrared region, that the intensity of said radiation (14) is continuously modulated whereby the input to the laser diodes (12, 12a, 12b) is directly modulated and each photosensitive layer of said photographic element is sensitised at a respective laser diode wavelength in the far red or infrared region.

## Reasons for the Decision

1. The appeal is admissible.

2. *The request for an "opportunity to be heard"*

2.1 In the letter filed on 21 December 1995, the appellants asked for an opportunity to be heard before any adverse disposition would be taken to the application. One of the appellants' requests is for reimbursement of the appeal fee on the grounds of a substantial procedural violation. The Board refuses this request (see point 3 below), which may be regarded as an adverse disposition. However, the Board is of the opinion that the present decision can be issued without oral proceedings since the reasons for not granting the request have already been set out in the Board's communication, to which the appellants were invited to file comments. Since the appellants have had an opportunity to be heard on this point but did not contest the said reasons, it is understood that they do not wish to forward further arguments.

3. *Procedural violation*

3.1 The appellants request the reimbursement of the appeal fee on the grounds that the Examining Division failed to comply with the appellants' right to oral proceedings under Article 116 EPC.

3.2 In their letter dated 23 January 1992, the appellants (then applicants) requested oral proceedings in case the examiner considered refusing the application. A subsequent letter, dated 13 August 1992, contained the following formulation: "we request the Examiner to



notify the undersigned by telephone as a preliminary either to Oral Proceedings or an immediate decision by the Examining Division so as to enable an appeal to be filed without further delay".

3.3 The letter dated 23 January 1992 contained a (conditional) request for oral proceedings. Although never explicitly withdrawn, this request was effectively replaced by the request expressed in the letter dated 13 August 1992 which indicated the possibility of an immediate appealable decision, ie a refusal, as an alternative to oral proceedings. The latter request thus partly contradicted the first one. In the Board's view, in such a situation an Examining Division has the right to assume that the first request has been abandoned. In the present case this is all the more so because the applicants had even given an explicit reason for cancelling the request for oral proceedings: the sooner a decision was issued, the sooner it could be appealed. Therefore, at the time the Examining Division took their decision there was no outstanding request for oral proceedings.

3.4 The appellants have pointed out that according to the case law of the Boards of appeal (eg T 19/87 OJ EPO 1988, 268) an Examining Division, if in doubt about a request for oral proceedings, ought to contact the party for clarification. In the present case, however, the Board is of the opinion that no grounds for doubt existed.

3.5 For the above reasons, the Board finds that no substantive procedural violation has taken place. It follows that the request for reimbursement of the appeal fee must be refused.

The main request

4. *Amendments to the application*

The main amendment to the application is the addition of a feature to the independent claims specifying that the laser diodes emit radiation in the "far red or infrared region". The appellants have not indicated any passage in the application as filed which might support the expression "far red". Thus, in so far as wavelengths beyond the infrared region are implied, this feature might constitute an unallowable extension.

Since the present case is remitted to the Examining Division for reasons indicated further below, it is left to the first instance to decide this issue.

5. *Inventive step*

5.1 Claim 1 is directed to a laser imaging apparatus comprising a plurality of lasers emitting radiation on to photographic material for creating a colour image corresponding to stored digital data. Claim 7 is directed to a corresponding method. In the independent claims considered by the Examining Division the wavelengths of the lasers were not specified. The argumentation in the decision to refuse the application relies however on the assumption that the radiation is in the visible region. Briefly, the argument is that D1 - concerning an imaging apparatus comprising three gas lasers emitting red, green and blue light, respectively, which expose a conventional photographic film - represents the closest prior art, and that the proposed substitution of continuously modulated semiconductor lasers is obvious in view of D2 and/or D3. The envisaged combination is thus an apparatus with lasers operating in the visible region, as according to D1.

5.2 In the present claim 1 (and claim 7) it is specified that the lasers emit radiation in the far red or infrared region and that "each photosensitive layer of said photographic element is sensitised... in the far red or infrared region". The limitation to infrared radiation - as opposed to visible light - is in correspondence with the described embodiments. Against this claim the arguments in the decision under appeal are insufficient, since the invention aims at eliminating a number of problems caused exactly by the use of visible light. These problems are stated in the description and include the disadvantage that the known imaging process must be performed in a dark room. To solve these problems, IR radiation is used. Neither these technical problems nor their solution were considered by the Examining Division.

5.3 The Board notes that dependent claim 4 of the set of claims upon which the Examining Division's decision is based specifies that the lasers operate in the infrared region. This claim was also refused for lack of inventive step. However, since no reasoning was provided, either in the decision or in previous communications, a proper examination of this subject-matter has yet to be performed.

In this context, it is noted that in the decision under appeal the Examining Division considered the "laser imaging system" of independent claim 11 to be inventive. The reason given was that "the inclusion of the materials... are not suggested in prior art". Moreover, it is observed that the new claim 1 apparently implies that the layers of photographic elements must contain materials such that the layers are sensitised in the far red or infrared region.

5.4 To safeguard the applicant's right to a two-instance procedure the case is remitted to the Examining Division for further prosecution (Article 111 EPC).

Auxiliary requests 1 and 2

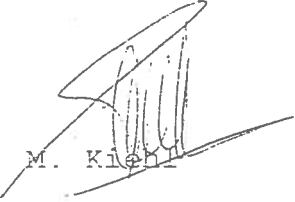
6. Since the main request has been granted there is no need to consider the auxiliary requests.

Order

For these reasons it is decided that:


1. The decision under appeal is set aside.
2. The case is remitted to the Examining Division for further prosecution on the basis of the application documents indicated at point VI above.
3. The request for reimbursement of the appeal fee is refused.

The Registrar:



M. Kienl

The Chairman:



P. K. J. van den Berg

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