

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

File Number: W 5/92 - 3.5.1

Application No.:

Publication No.: PCT US 91/03089

Title of invention: Apparatus and method for grey-level printing using a binary architected printhead

Classification: HO4N 1/40

D E C I S I O N
of 28 February 1992

Applicant: Eastman Kodak Company

Headword:

PCT Article 17(3)(a); Rules 13.1, 40.1 and 40.2(c)

Keyword: "Lack of unity "a priori" (yes)"

Headnote



Case Number : W 5/92 - 3.5.1
International Application No. PCT/US 91/03089

D E C I S I O N
of the Technical Board of Appeal 3.5.1
of 28 February 1992

Applicant : Eastman Kodak Company
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Representative : N. Rushefsky
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Subject of the Decision : Protest according to Rule 40.2(c) of the Patent
Cooperation Treaty made by the applicants against
the invitation (payment of additional fee) of the
European Patent Office (branch at The Hague)
received 14 October 1991.

Composition of the Board :

Chairman : P.K.J. Van den Berg
Members : A.S. Clelland
M. Schar

Summary of Facts and Submissions

- I. International Patent Application PCT/US 91/03089 was filed at the USPTO on 6 May 1991.

- II. On 9 September 1991, the European Patent Office, as competent International Search Authority (ISA), issued an invitation pursuant to Article 17(3)(a) and Rule 40.1 PCT to pay an additional search fee.

- III. The ISA considered that the application did not comply with the requirement of unity of invention as set forth in Rule 13 PCT and indicated that the subject-matter claimed related to the following two groups of inventions:
 - 1. Claims 1-11: Multi element grey-level printhead with distributed energy driving of the recording elements

 - 2. Claims 12-32: Grey-level printhead with correction of non-uniformities in the recording elements

- IV. The applicant paid the additional search fee under protest and argued that since various appendant claims in the alleged second group, in particular Claims 17, 25 and 26, included the features of the alleged first group, there was a single general inventive concept linking the two groups of claims.

Reasons for the Decision

- 1. The protest complies with the formal requirements of Rules 40.2 and 40.3 PCT and is accordingly admissible.

2. In accordance with Rule 40.1 PCT the invitation provided for in Article 17(3)(a) PCT to pay additional fees must specify the reasons for which the international application is not considered as complying with the requirement of unity of invention. It is the established jurisprudence of the Boards of Appeal (see W 04/85), OJ EPO 2/1987, pages 63 to 66, and W 07/86, OJ EPO 2/1987, pages 67 to 69) that in the absence of adequate reasoning such an invitation cannot be upheld. In the first of the above-mentioned decisions it was moreover held that in straightforward cases all that may be necessary to substantiate lack of unity is a list of the claimed subject-matter, particularly when the list makes perfectly clear that the application does not relate to a single general inventive concept within the meaning of Rule 13.1 PCT.

3. It is therefore necessary to consider whether the present case is so straightforward that a mere listing of claims suffices to substantiate lack of unity. It is the Board's view that for the reasons given below this requirement is indeed met.

4. The application is concerned with non-impact printing apparatus, the described embodiments relating to an electrophotographic arrangement in which an electrostatically charged web is illuminated by an array of light-emitting diodes (LEDs) to produce an electrostatic image which can be fixed on paper by means of a toner. In known arrangements discussed in the introduction to the description the problem arises that because the LEDs are driven simultaneously a heavy-duty power supply is required and a high thermal load is placed on the printhead, requiring expensive heat sinks. This problem is in one known arrangement overcome by energising different

segments of LEDs at different times during a time period for recording a line of pixels. Also known is grey-level recording in which pixels of differing densities are recorded by controlling the time period for which an LED is driven and thus the length of time for which it emits light. The introduction goes on to discuss the manner in which binary data is supplied to the printhead for the predetermined time period. The problem of thermal loading is said to arise in the use of binary printheads for grey-level recording because when data on the illumination time is supplied to the printhead in the form of a binary word the most significant bit will cause the printhead to draw a heavy current for a relatively lengthy time. The invention is said to have as its object the provision of a grey-level printer apparatus employing a binary architected printhead wherein the problems of thermal loading are minimised and exposure periods made relatively shorter than suggested by the prior art.

5. Turning now to the invention as claimed, the alleged first group of claims includes three independent claims, Claims 1, 6 and 7. These claims are each directed to non-impact recording apparatus having a plurality of recording elements to which image data signals are supplied; enabling signals are supplied to groups of elements, in Claims 1 and 7 explicitly in non-overlapping manner and in Claims 1 and 6 weighted as regards their duration such that the pulses enabled for the differing sets of elements are of differing length (Claim 1) and long pulses in a set are followed by shorter pulses (Claim 6). It can be seen that each of Claims 1, 6 and 7 is concerned with solving the related problems of heavy power consumption and heating of the printhead.

6. Turning now to the alleged second group of claims, independent Claims 12, 19, 20 and 29 can be identified.

None of these claims makes any reference to the manner in which recording elements are enabled, these claims rather being concerned with non-impact printing apparatus of the same general kind as the previous claims but in which correction means is provided for modifying and correcting the printing data signal. This does not appear related to the problem set forth in the introduction to the description; it is rather concerned with the problem of variation in brightness characteristic of the LEDs, these being graded according to their brightness level and a correction being applied by means of a look-up table in which the characteristic of each LED is stored. In the Board's opinion the problem of LED brightness variation is not related to that of power consumption and thermal loading; although the description at page 1 lines 18 to 20 refers to "problems associated with non-uniformities in light emissions due to thermal gradients on the printhead" it is clear that the solution is seen in the reduction of thermal gradients and not in storage of LED characteristics as in the second group of claims. The solution of the first problem is control of the enabling time and sequence of different sets of recording elements, whilst the solution to the second problem is the provision of correction means for modifying the data signal to take account of differing LED characteristics. The Board accordingly concludes that there is no single general inventive concept which links the two groups of claims and that the case is sufficiently straightforward for a listing of the subject-matter of the two groups of claims to suffice to substantiate this lack of unity.

7. In the protest it is alleged that certain claims of the second group "bear a unifying similarity" to claims of the first group. The claims referred to in the second group are all dependent claims which include the features of the first group: thus Claims 17, 25, 26, 30 and 31 of the

second group are all directed to the sequence and time for which the sets of recording elements are enabled, the means by which the problem of high power consumption and thermal loading is solved (see paragraph 4 above). The Board are unable to accept this argument. Rule 13.1 PCT requires that an international application shall relate to one invention only or to a group of inventions so linked as to form a single general inventive concept. Implicit in this definition is that the "invention" is to be considered in its broadest aspect. Thus, the "Guidelines for International Search to be carried out under the Patent Cooperation Treaty", document PCT/INT/5 dated 18 November 1977, states at chapter VII paragraph 5 that "the mere fact that an international application contains several independent claims of the same category or claims of different categories related under PCT Rules 13.2 and 13.3 is in itself no reason for objection on the grounds of lack of unity of invention". Attention is drawn to the use of the word "independent". Although in the present instance the ISA has referred to groups of claims without differentiating between the independent claims the Board consider that the only reasonable interpretation of the groupings must refer to the broadest claims, i.e. the independent claims.

Order

For these reasons, it is decided that:

The protest according to Rule 40.2(c) PCT is dismissed.

The Registrar:

The Chairman:

M. Kiehl

P.K.J. Van den Berg