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D E C I S I O N
of 19 November 1997

Case Number: T 0046/94 - 3.4.2

Application Number: 88109391.8

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Language of the proceedings: EN

Title of invention:
control method for a both-surface/multiplex recording apparatus

Applicant/Patentee:
CANON KABUSHIKI KAISHA

Opponent:
Océ-Nederland B.V.

Headword:
-

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step (no)"

Decisions cited:
-

Headnote/Catchword:



Case Number: T 0046/94 - 3.4.2

D E C I S I O N
of the Technical Board of Appeal 3.4.2
of 19 November 1997

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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 19 November 1993
revoking European patent No. 0 295 612 pursuant
to Article 102(1) EPC.

Composition of the Board:

Chairman: E. Turrini
Members: A. G. Klein
M. Lewenton

Summary of Facts and Submissions

- I. European patent No. 0 295 612 granted on the basis of European application No. 88 109 391.8 was revoked by decision of the Opposition Division.

The reasons for the decision of revocation were that the claims then on file did not meet the requirements of Article 84 as to clarity, that they comprised added subject-matter in contravention with the provisions of Article 123(2) EPC and that their subject-matter lacked an inventive step in the sense of Article 56 EPC in view in particular of the contents of documents:

IBM Technical Disclosure Bulletin, vol. 24, No. 1B, June 1981, pages 810 and 811 (D2); and

US-A-4 453 841 (D6).

- II. The appellant (proprietor of the patent) filed an appeal against the decision.

- III. The respondent (opponent) in submitting his observations in response to appellant's statement of the grounds of appeal, referred in particular to document

US-A-4 437 756 (D8)

which had not been cited earlier in the examination or opposition procedures.

IV. In a communication issued in preparation for the oral proceedings held on 19 November 1997, the Board of Appeal informed the parties of its provisional opinion that the Opposition Division's conclusions under Articles 56, 84 and 123(2) EPC appeared to be founded.

The Board also indicated that, given its high relevance and the fact that it could not have been produced earlier by the respondent, document D8 would be admitted into the appeal procedure.

V. The appellant requested that the decision under appeal be set aside and that the patent be granted in amended form on the basis of a main request or of three auxiliary requests as submitted during the oral proceedings.

Claim 1 of appellant's main request reads as follows:

"1. A control method for a both-surface recording apparatus provided with
memory means (440) for memorizing and reading record information belonging to a sequence of pages,
recording means (405; 505; 605) for recording pages of the record information, read out from said memory means, discretely on first and second surfaces of recording media (402; 502; 602),
a recirculating path for recirculating a recording medium, on a first surface of which a page has been recorded, back to said recording means, and
control means (440) for controlling said memory means, said recording means and said recirculating, wherein
recording of different pages is continuously effected on a first surface of each of a plurality of recording media until the first recording medium is recirculated,
thereafter, recording of a page which, according

to said sequence of pages, directly follows the page on the first surface of said first recording medium is effected on a second surface of said first recording medium,

thereafter, until the recording directly following the recording on the first surface of the last recording medium, the recording is alternately effected either on a first surface of a further recording medium, or on a second surface of a recirculated recording medium,

characterised in that

- (1) in the alternate recording, recording is alternately effected for successive ones of remaining even-numbered and odd-numbered pages of said sequence of pages according to the order of said sequence of pages,
- (2) the page of record information read out from the memory means in order to be recorded on the recording medium is determined in dependence on the feeding path of the recording medium to the recording means, and
- (3) page lines of record information outputted from said memory means and to be formed on the first surface and page lines of record information outputted from said memory means and to be formed onto the second surface are read out from said memory means in opposite directions."

Claim 1 of appellant's first auxiliary request comprises the same preamble as claim 1 of the main request, the characterising portion being replaced by the following:

"characterized in that

if recording media only on the first surface of which recording has been effected remain in said both-surface recording apparatus when an exhaust of the recording media occurs before recording on a

predetermined number of recording media is terminated, the page sequence of printing is changed and the printing of the page sequence on both surfaces is completed for all recording media already fed into the recording apparatus."

Claim 1 of appellant's second auxiliary request comprises the same preamble as claims 1 of his main and first auxiliary requests, the characterising portion being replaced by the following:

"characterized in that

- (1) the page of record information read out from the memory means in order to be recorded on the recording medium is determined in dependence on the feeding path of the recording medium to the recording means,
- (2) if recording media only on the first surface of which recording has been effected remain in said both-surface recording apparatus when an exhaust of the recording media occurs before recording on a predetermined number of recording media is terminated, the sheet supply is changed to the supply from the recirculating path, such that the printing of the page sequence on both surfaces is completed for all recording media already fed into the recording apparatus."

Claim 1 of appellant's third auxiliary request corresponds to claims 1 of the second auxiliary request with the following changes:

Paragraph (1) of the characterising portion is replaced by the following paragraph (1):

"(1) the read-out operation of the memory means is determined in dependence on the sheet supply of the recording medium from the recirculating path to the recording means,"

and the expression "the sheet supply" in paragraph (2) of the characterising portion is replaced by the expression "the order of sheet supply".

VI. The respondent requested that the appeal be dismissed.

VII. In support of his request the appellant stressed that the invention related to a specific type of recording apparatus, which recorded sequences of **different** pages of information onto the front or back surfaces of successive recording media, as defined in the preamble of the claims. Document D2 was the sole citation to describe such an apparatus, the other citations being dedicated to printing or copying apparatus for the recording of a plurality of **identical** pages of information onto successive recording media.

The crux of the invention consisted in a particular technique for addressing the memory means in such a way as to read pages of information in the correct sequence. As set out in paragraph (2) of claim 1 of the main request, and shown in boxes 3 to 8 of Figure 32 of the patent in suit, this addressing was directly controlled by the feeding path of the respective recording medium to the recording means. As would be easily understood by the skilled person from the flow chart of Figure 32, sensing means were provided in the recirculating path in order to monitor the presence of a recording medium to be re-supplied to the recording means. This directly resulted in controlling the memory

location addressing means in such a way that the appropriate page of information be read for recording onto the recording medium.

This mode of operation allowed that the sequence of pages of information as provided to the recording means be automatically changed with any change or interruption in the feeding of the recording media, for instance in case of exhaustion of the supply of fresh recording media.

This technique was not suggested by the prior art, which consistently required complex control procedures, using for instance flag signals, for both the recording media feeding means and the memory addressing means.

With respect to paragraphs (1) and (3) of claim 1 of the main request, the respondent acknowledged that the specific recording sequence and the inversion of the reading direction as defined there were known per se. When combined with the features of paragraph (2) they however contributed to the achieving of a particularly effective operation of the recording apparatus.

Concerning finally the changing of the sequence of pages of information to be recorded in case of exhaustion of the recording media and the subsequent completion of the printing for all recording media already fed into the recording apparatus, as defined in substance in claim 1 of the various auxiliary requests, the appellant submitted that document D8 related to a different apparatus, in which a same page of information had to be copied onto each of the pages still present in the circulating path after interruption of the printing process. In such situation document D8 only proposed to automatically terminate the process in the same manner as when a stop button is activated by the operator, as set out in column 7,

lines 25 to 35, so that there was no need for any change of sequence of pages of information in the sense of the claims.

VIII. The respondent for his part stressed that the sequence of recording steps set out in claim 1 of the main request was already disclosed in document D2, and that there was no other possibility for the selection of the appropriate page of information to be read in each step than whether through a recording medium fed directly to the recording means or through the recirculating path. Since the apparatus of document D2 printed the right image at the right place it could not operate in any other manner.

In addition, the patent in suit did not provide any disclosure of a memory control process relying only on information delivered by the feeding path.

The features of paragraph (3) of claim 1 of the main request as directed to the inversion of the reading direction were totally independent from the other features. The necessity for such inversion followed from the orientation and sense of recirculation of the recording media in the recording means, and its principle and effects were clearly disclosed in document D6.

With respect to the control of the recording process after exhaustion of the recording media, the solution consisting in carrying on the printing onto the recording media still present in the apparatus was already disclosed in document D8. In the apparatus of document D2, once all recording media had received the appropriate image information on their first surface, it was evident that no further fresh recording medium would be fed to the recording means and that, accordingly, the printing process would also be carried

on only with the recording media still present in the recirculating path, until the end of the recording process.

Reasons for the Decision

1. The appeal is admissible.
2. The amended claims as filed by the respondent as his main and first to third auxiliary requests at the oral proceedings of 19 November 1997 at least overcome the objections under Article 84 EPC put forward by the Board in its communication annexed to the summons to attend said oral proceedings.

Since the amended claims fail for other reasons, the question whether they comply with the provisions of Article 123(2) and (3) EPC need not be discussed in detail here.

3. *Inventive step*
 - 3.1 Appellant's main request
 - 3.1.1 Document D2 undisputedly discloses an electrophotographic printer with duplex capability, i.e. a "both-surface recording apparatus" in the sense of claim 1, which is operated by a control method as set out in the preamble of the claim.
 - 3.1.2 Document D2 also discloses a sequence of recording operations comprising the printing of pages of information in the following order: pages 2, 4, 1, 6, 3, 8, 5, 10, 7, etc. ... (see page 811, second paragraph, first sentence). Thus, "in the alternate recording" starting from the printing onto page 4,

"successive ones of remaining even-numbered pages", namely pages 4, 6, 8, 10, etc. ... are recorded in alternance with "successive ones of remaining odd-numbered pages", namely pages 1, 3, 5, 7, etc. ..., as is set out in paragraph (1) of the characterising portion of claim 1. This was admitted also by the appellant at the oral proceedings.

- 3.1.3 Document D2 in the Board's opinion also discloses the features of paragraph (2) of the characterising portion of the claim, according to which "the page of record information read out from the memory means in order to be recorded on the recording medium is determined **in dependence on the feeding path** of the recording medium to the recording means" (emphasis added). As a matter of fact, the printer could not possibly produce correct documents if the selection of the page of information read out from the memory means was not dependent on whether the recording medium for the next page of information is either a blank sheet fed directly to the recording mean from the paper feed station 18 for receiving an even-numbered page information, or a recirculated recording medium, which has already received on its first side such even-numbered page of information and is re-fed to the recording means through the recirculating path in order to receive the corresponding odd-numbered page of information on its other side.

Appellant's argumentation in favour of the inventive contribution of the features defined in paragraph (2) of the characterising portion is based on the assumption that these features would limit the scope of the claim to a control method in which the addressing of the proper memory location to be read out to the recording means would be under direct and exclusive control of the operation of the feeding means in the sense that the mere detection of the presence of a

recording medium in the feeding path would automatically result in the appropriate addressing of the memory means, so that the conventional process controller as used for the addressing operations could be dispensed with.

Such interpretation is not, in the Board's opinion, supported by the broad wording of paragraph (2), which merely states that the page of record information to be read out is determined in dependence on the feeding path and does not exclude that the memory means and the feeding means be both controlled, either by the same process controller or by respective controllers linked to each other. In these cases also, the selection of the proper memory location could only depend on two conditions, namely whether the next recording medium is a recirculated one or not.

Appellant's interpretation of paragraph (2) is not considered to be supported by the remaining patent documents, either. The flow chart of Figure 32, which is the sole element relied upon by the appellant, comprises a block referenced 3 which represents a testing step with the following indication: "SUPPLY SHEET FROM SHEET RESUPPLY ROLLER? (BACK FACE)." In dependence on the result of the test, either a back page counter or a front page counter are incremented by two units. This portion of the flow chart, in particular the question indicated in block 3, in the appellant's view shows that detection of a recording medium in the recirculation path would directly result in the adequate addressing of the memory means.

The Board cannot however follow this line of argumentation, which is not consistent with the corresponding explanations in the description. As a matter of fact, the passage in column 14, lines 45 to 58 of the patent specification indicates that "whether

a sheet **should be supplied** from the sheet resupply roller 221 (415, 515, 615) is judged (3), and if the answer is "NO", a front page counter value memorized in the memory of the printer control device 202 is set in the output page counter (4), and the front page counter is counted up by "2"(5)" (emphasis added). The fact that the control means in step 3 have to determine whether a sheet "should be supplied" before the addressing of the memory is changed does not mean that such addressing exclusively results from a sheet being actually fed either from the recirculating path or directly from the blank sheet supply path.

- 3.1.4 Document D2 does not disclose the features of paragraph (3) of the characterising portion of claim 1, according to which lines of record information as output from the memory means to be formed on the first surface of the recording medium and lines output to be formed onto the second surface of said recording medium are read out from the memory means in opposite directions. This inversion technique aims at achieving the same image orientation on both surface of a recording medium despite the fact that the orientation of a recording medium when it passes a second time through the recording means for recording on its other side is always reversed with respect to its orientation during the first passage (see present description, column 10, lines 5 to 13).

The problem of an incorrect orientation of images recorded on the respective sides of a recording medium is evident to identify. Its solution consisting in inverting the data fed to the recording means as set out in paragraph (3) is well known in the art, as was admitted by the respondent at the oral proceedings, and is evidenced for instance by document D6 (see column 8, lines 19 to 44). Implementing the same solution to solve the same problem in the device disclosed in

document D2 does not in the Board's opinion involve an inventive step in the sense of Article 56 EPC.

The appellant in this respect submitted that the features set out in paragraph (3), although known per se in the art, contributed to a particularly effective control method by their combination with the features of paragraphs (1) and (2). In the Board's opinion, however, the question of a correct orientation of the images recorded on the respective sides of a recording medium as addressed by paragraph (3) is entirely independent of the question of controlling the sequence of information pages to be read out from the memory as addressed by paragraphs (1) and (2). The features set out in paragraph (3), which are the only features to distinguish the subject-matter of claim 1 from the control method disclosed in documents D2, cannot therefore be considered to achieve in combination with the remaining features any synergetic effect which could justify recognition of the necessary inventive step.

3.2 Appellant's first auxiliary request

3.2.1 A control method as set out in the preamble of claim 1 of respondent's first auxiliary request, which is the same as the preamble of claim 1 of his main request, is undisputedly disclosed in document D2. This document is silent as to the way the apparatus it describes responds to an exhaustion of the recording media before completion of a recording operation.

Thus the subject-matter of claim 1 of appellant's first auxiliary request is distinguished from the method disclosed in document D2 by the steps defined in the characterising portion of the claim, according to which, if at the time of such exhaustion recording media still remain in the apparatus which have only

been subjected to recording on one of their surfaces, the recording sequence is changed and the recording is completed for all recording media already fed into the apparatus.

- 3.2.2 Providing an adequate response to accidental interruption of the recording process in case for instance of an exhaustion of the recording media to be supplied to the apparatus is a most common concern for the skilled designer of printing or copying machines.

Attention is drawn in this respect to document D8 as filed by the respondent in the appeal procedure only, i. e. largely after expiry of the nine months period for filing an opposition as provided for in Article 99(1) EPC.

This document was cited against a corresponding claim filed by the appellant a few days only before the oral proceedings held in the opposition procedure and at the end of which the patent was revoked. Since this claim was directed to an aspect which had not been claimed before, document D8 could not have been cited earlier by the respondent.

Document D8 is considered highly relevant against the patentability of the subject-matter of claim 1 of the present first auxiliary request and it is admitted into the appeal procedure under Article 114 EPC, accordingly (see also point IV of the decision).

Document D8 relates to a double-side image forming apparatus and it is specifically dedicated to the problem of coping with accidental interruptions during the process of image formation (see "summary of the invention", the paragraph bridging columns 1 and 2). As summarised in the second sentence of the abstract, the apparatus is adapted, when the image formation on the

first phase of the image bearing members is interrupted before completion of the desired number of image formations, to conduct in continuation the image formation on the second phase of the image bearing member stored in the storage section. Such continuation of the image formation on the second phase of the image bearing members stored in the storage section is applied in particular in case the copy sheets are exhausted in the paper feed stations (see column 7, lines 25 to 45).

Document D8 thus discloses the steps set out in the characterising portion of claim 1, to solve the same technical problem. The subject-matter of the claim therefore does not in the Board's opinion involve an inventive step in the sense of Article 56 EPC.

- 3.2.3 The appellant in this respect argued that in contrast with the apparatus of the patent in suit which was capable of recording a sequence of different images on successive surfaces, the apparatus of document D8 could only form a series of identical images onto the respective surfaces of a series of recording media. Thus, in case of an interruption of the feeding of fresh recording media, only a same image had to be recorded onto the second surface of the recording media remaining in the apparatus after having received an image on their first surface. Therefore no page sequence in the sense of the claim had to be changed in the continuation mode.

The Board does not deny that some kind of adaptation would be necessary to transfer the continuation technique disclosed in document D8 to the apparatus of document D2 but such adaptation, which incidentally is not defined in the claim, would not in its view go beyond the skilled person's average capacity. In particular, as rightly pointed out by the respondent,

normal operation of the apparatus of document D2 also involves that once the last recording medium to receive image information on its first surface has been fed to the recording means, the following recording sessions are performed successively onto the second surfaces of all the recording media remaining at this stage in the apparatus, no further first surface recording being performed in between. Thus, implementing the solution disclosed in document D8 in the apparatus of document D2 would require no more than initiating a similar ending sequence upon detection of exhaustion of the recording media to be fed to the apparatus.

3.3 Appellant's second auxiliary request

A control method as set out in the preamble of claim 1, which is the same as the preamble of claim 1 of the main request, is undisputedly known from document D2.

The feature of paragraph (1) of the characterising portion of the claim as directed to the determination of the page of information read out from the memory means in dependence of the feeding path, which are identical to the features of paragraph (2) of the characterising portion of claim 1 of the main request, are known also from document D2, for the reasons set out in paragraph 3.1.3 above.

The remaining features of the characterising portion of the claim, as defined in paragraph (2) and directed to the response to an exhaustion of the recording media, are substantially identical to the features of the characterising portion of claim 1 of appellant's first auxiliary request. Providing these features, which are known from document D8, in the control method known from document D2, does not involve an inventive step for the reasons set out in paragraph 3.2 above.

The subject-matter of claim 1 appellant's second auxiliary request does not for these reasons involve an inventive step in the sense of Article 56 EPC either.

3.4 Appellant's third auxiliary request

As compared to claim 1 of appellant's second auxiliary request, claim 1 of his third auxiliary request comprises the following amendments which do not introduce any additional limitation of the claimed subject-matter:

- (i) Whilst according to claim 1 of the second auxiliary request it was "the page of record information read out from the memory means in order to be recorded on the recording medium" which was determined in the manner set out in feature (1) of the characterising portion, what is now determined is "the read out operation of the memory means" in general, which clearly encompasses the narrower definition of the claim of the second auxiliary request.
- (ii) According to claim 1 of the second auxiliary request, the determination set out also in feature (1) was made in dependence "on the feeding path of the recording medium to the recording means" instead of being dependent "on the sheet supply of the recording medium from the recirculating path to the recording means" as now set out in claim 1 of the third auxiliary request. Since the feeding path according to the remainder of the claim either supplies sheets directly or from the recirculating path, with no other possibility, the dependence on the feeding path as defined in claim 1 of the second

auxiliary request is strictly equivalent to the dependence on the sheet supply from the recirculating path as now defined in the third auxiliary request.

- (iii) Feature (2) of the characterising portion of claim 1 of the second auxiliary request stated that "the sheet supply" was changed in response to an exhaustion of the recording media. The quoted expression already implied that the order in which sheets were supplied to the recording means was changed and, accordingly, replacement of the expression by the expression "the order of sheet supply" does not in effect change the scope of the claim either.

For these reasons, the subject-matter of claim 1 of appellant's third auxiliary request lacks an inventive step in the sense of Article 56 EPC for the same reasons than claim 1 of his second auxiliary request, as set out in paragraph 3.3 above.

- 4. Since the claims as amended according to appellant's main and first to third auxiliary requests do not define patentable subject-matter, a patent cannot be maintained on the basis of these claims.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

P. Martorana

The Chairman:

E. Turrini