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**DECISION**  
of 25 June 2003

**Case Number:** T 0515/00 - 3.2.5  
**Application Number:** 92302716.3  
**Publication Number:** 0506461  
**IPC:** B41J 21/08  
**Language of the proceedings:** EN

**Title of invention:**

Tape printing device for printing a plurality of printing lines directly adjacent to each other across the width of a tape

**Patentee:**

BROTHER KOGYO KABUSHIKI KAISHA

**Opponent:**

ESSELTE N.V.

**Headword:**

-

**Relevant legal provisions:**

EPC Art. 54, 56, 83, 84, 87(1), 123

**Keyword:**

"Added subject-matter (main request and first auxiliary request) - no"

"Clarity (yes)"

"Disclosure - sufficiency (yes)"

"Inventive step (main request) - no"

"Inventive step (first auxiliary request) - yes"

"Entitlement to priority - yes"

**Decisions cited:**

G 0002/98

**Catchword:**

-



Case Number: T 0515/00 - 3.2.5

**D E C I S I O N**  
of the Technical Board of Appeal 3.2.5  
of 25 June 2003

**Appellant:**  
(Opponent)

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**Decision under appeal:**

Interlocutory decision of the Opposition  
Division of the European Patent Office posted  
8 March 2000 concerning maintenance of European  
patent No. 0506461 in amended form.

**Composition of the Board:**

**Chairman:** P. E. Michel  
**Members:** H. M. Schram  
S. U. Hoffmann

## Summary of Facts and Submissions

- I. The appellant (opponent) lodged an appeal against the interlocutory decision of the Opposition Division maintaining the European patent No. 0 506 461 in amended form.

The Opposition Division held that the grounds of opposition based on Article 100(a) EPC (lack of novelty and inventive step) and the objections raised under Articles 83, 84 and 123(2) EPC against claim 1 as amended did not prejudice the maintenance of the patent in amended form.

- II. Oral proceedings were held before the Board of Appeal on 25 June 2003.

(i) The appellant requested that the decision under appeal be set aside and that the patent be revoked.

(ii) The respondent (patentee) requested that the decision under appeal be set aside and that the patent be maintained on the basis of claim 1 filed as main request during oral proceedings, or on the basis of the first auxiliary request filed during oral proceedings.

- III. Claim 1 according to the main request reads as follows:

"1. A tape printing device (2) for printing lines of characters at different positions across the width of a print medium tape (9), comprising:

character input means (3, 4) for enabling a user to input character data;

command input means for enabling a user to input command data specifying on which of the plurality of lines an input character is to be printed;

input data buffer (31) for storing the data input from said character and command input means;

a printing head (7) for printing characters on said print medium tape (9);

printing setting means (27), responsive to the command data input from said command input means, for selectively setting input character data in at least one of a plurality of printing lines, defined by dividing a printing area across a width of the print medium tape (9) into the plurality of printing lines, in accordance with the data stored in said input data memory (31);

data arrangement means (27, 32, 33, 34, 35) for arranging the character data stored in said input data buffer (31) in order to enable the printing of a plurality of printing lines of characters directly adjacent to each other across the tape width according to a printing line set by said printing setting means (27), wherein said data arrangement means includes a plurality of pointers (34, 35), each of said plurality of pointers corresponding to one of said plurality of printing lines; and

controlling means (C) controlling said printing head (7) based on the data arranged by said data arrangement means (27, 32, 33, 34, 35)."

Claim 1 according to the first auxiliary request differs from claim 1 according to the main request in that the feature "; and wherein said data arrangement

means further includes a plurality of arrangement memories (32, 33), each having addresses, each of said plurality of arrangement memories corresponding to one of said plurality of printing lines, each pointer (34, 35) storing one of the addresses in the corresponding arrangement memory (32, 33)" is added at the end of claim 1 according to the main request.

IV. The following documents have been *inter alia* referred to in the appeal proceedings:

D1: User's Guide to Merlin Express XT and Merlin Express Elite, Varitronic Systems Inc., July 1988.

D7: EP-A 0 137 342

D12: JP-A 62 128 774 (English translation)

D15: US-A 4 408 907

D16: JP-U 1 178 948 (English translation)

D17: *Data Structures, files and databases*, Bamford, C. and Curran, P., MacMillan Education Ltd., Basingstoke, 1987, page 38.

D18: *The C Programming Language*, Kernighan, B. W. and Ritchie, D. M., Prentice-Hall, Inc. Englewood Cliffs, New Jersey, 1978, page 89.

D19: Instruction manual of the tape printer Tape Worpro LM 1200

The last three documents were filed by the appellant with the statement of grounds of appeal.

- V. In the written procedure and during oral proceedings, the appellant argued essentially as follows:

During the opposition proceedings claim 1 as granted was *inter alia* amended by adding the feature that "data arrangement means includes a plurality of pointers (34, 35), each of said plurality of pointers corresponding to one of said plurality of printing lines". It was on the basis of this feature that the Opposition Division acknowledged inventive step and maintained the patent in amended form. However, there was no explicit or implicit disclosure of this feature in the application as filed. In particular, the specific wording "corresponding to" was neither explicitly disclosed, nor clear. The added feature was in fact incorrect, since the first pointer pointed to all of the character code data and command code data shifted from the input buffer into an arrangement memory. The data that was pointed at corresponded to both single-line and multi-line printing and comprised the character data of all printing lines, not just the first line. According to claim 1 of the main request the data arrangement means included a plurality of pointers for arranging the character data stored in said input data buffer. There was no disclosure however that pointers could operate on the input buffer, on the contrary, the pointers were said to act on arrangement memories. The claim did not specify that the pointers were memory locations in the respective arrangement memories and themselves had addresses. What was disclosed in the application as filed was a correspondence between a pointer and an

arrangement memory, and, apart from the first printing line, a correspondence between an arrangement memory and a printing line. By omitting the arrangement memory, a new invention was created. To put it differently, claim 1 of the main request was an intermediate generalization. The data arrangement means was thus extremely broadly defined in claim 1 of the main request, it encompassed for example the possibility of using a single arrangement memory for arranging the character data. There was no disclosure of how to carry out the invention in this case, the embodiment disclosed in the specification required dedicated arrangement memories, one for each printing line. To sum up, the breadth of claim 1 of the main request was not directly and unambiguously derivable from the application as filed, so that the claim contravened the requirements of Article 123(2) EPC.

There was also no support for the feature "each of said plurality of pointers corresponding to one of said plurality of printing lines", contrary to Article 84 EPC, since lack of support and added subject-matter were two sides of the same coin. Claim 1 of the main request also lacked clarity in the sense of Article 84 EPC. In particular, the claim did not clearly define how pointers were used in conjunction with the data arrangement means. Moreover, the claim did not specify whether the address of the pointer or its content corresponded to a printing line.

The claimed invention was insufficiently disclosed, cf. Article 83 EPC, for substantially the same reasons given for inadmissible amendment, lack of support and

lack of clarity. In particular, as already noted, there was no disclosure of carrying out the invention without using arrangement memories for each printing line.

Claim 1 of the main request was not entitled to the claimed priority. Claim 1 of the priority document required that the tape printing device comprised: (i) a pattern data storing means for storing the dot pattern data of characters, (ii) a printing buffer for receiving and storing the dot pattern data of characters to be printed, and (iii) data composing means for composing the dot pattern data of characters in printing lines which are to be printed adjacent to each other across the tape width. Since claim 1 of the main request did not include these essential features, the invention as claimed was no longer the same invention in the meaning of Article 87(1) EPC.

The subject-matter of claim 1 of the main request was not new with respect to document D1. As acknowledged in the decision under appeal, this document disclosed a tape printing device comprising character input means, command input means, an input data buffer, a printing head, printing setting means, and controlling means for controlling the printing head, as claimed in claim 1 of the main request. The Opposition Division had wrongly seen the feature that the data arrangement means included pointers corresponding one-to-one to printing lines as a distinguishing feature, since by pressing the "cut key" in the multi-line mode the user entered a line of characters and could type a subsequent printing line, so that the pressing of the cut key created a pointer corresponding to a printing line (see page 34, left column, points 3 to 9). The subject-matter of



claim 1 of the main request also lacked novelty with respect to the label printer known from document D12. Since the labels were on a reel of tape, this device was *suitable* for printing lines of characters at different positions across the width of a print medium tape. Pointers were implicitly disclosed in this document, since the CPU determined the print start positions in the printing areas. This also followed from document D17, which taught that pointers were needed when a data structure is dynamic, i.e. they were indispensable in the printer known from document D12.

Document D1 could be regarded as the closest prior art. The objective technical problem was to provide a tape printing device which arranged the data in an efficient manner so as to allow fast processing and printing. It was common knowledge, as exemplified by e.g. document D17, that the use of pointers was advantageous for arranging data in an efficient way. The subject-matter of claim 1 of the main request thus lacked an inventive step.

The additional feature of the first auxiliary request, viz. to assign a pointer and an arrangement memory to each printing line in a one-to-one correspondence, was obvious to the person skilled in the art, because this was known to further increase the processing speed, see e.g. documents D7, D15 and D16.

VI. In the written procedure and during oral proceedings, the respondent argued essentially as follows:

The term corresponding was used in its usual sense. The claimed device related to a printer for printing lines

at different positions across the width of a tape (multi-line mode). In the multi-line mode each pointer corresponded to, or pointed to the characters in the respective printing line at the end of the data arranging process. That the device was capable of printing full size characters in the single-line mode as well should not be taken into account. What the claim might encompass is not the issue in determining whether subject-matter has been added or not. Claim 1 of the main request did not teach the person skilled in the art anything he or she wasn't taught by the application as filed. The pointers were clearly disclosed as separate items in Figure 3 of the application as filed and could be claimed in their own right. It followed that the subject-matter of claim 1 was not inadmissibly amended.

The term pointer itself was well-known in the art. Pointers were locations (addresses) in RAM memory storing (other) addresses in memory. This was described in column 7, lines 26 to 31, and shown in Figure 3 of the application as filed. All was clear. The claim thus met the requirements of Article 84 EPC.

One way of carrying out the invention was described in the preferred embodiment disclosed in column 4, line 48ff, of the application as filed. The trick to arrange the data in such a way that input characters from different printing lines could be printed adjacent to each other across the width of the tape was to shift the input data buffer into a memory, to assign an address to the upper printing line pointer and a corresponding address to the lower printing line pointer. By incrementing both pointers in the same way,

upper and lower line data could be read out simultaneously. It was academic to distinguish between different arrangement memory locations, since all memory was memory in the same RAM. The invention was thus sufficiently disclosed.

The description of the priority document was substantially identical to that of the application as filed. The subject-matter of claim 1 of the main request was disclosed in the description of the application as filed and thus also in the priority document. The patent was thus entitled to the claimed priority.

None of the documents cited by the appellant disclosed a tape printing device comprising pointers. The term "pointer" had a precise meaning in the art. It was not correct to equate pointers to anything that points to something. Addressing a memory was not pointing. An input buffer could also be accessed by the CPU directly, without the need to create dedicated memory locations in RAM for this purpose. The cut key of document D1 was not a pointer, and did not give rise to a pointer in the sense of the invention. There was no disclosure that the labels in document D12 were printed with the printing lines in the tape direction. The subject-matter of claim 1 of the main request was thus novel.

In the tape printing device according to claim 1 of the main request an alternative way of arranging the data to that of document D1 was claimed. There was no requirement in the Convention that this way should be better than the prior art. The claimed device was not

obvious to the skilled person. It was not contested that pointers were known in the art of programming. The invention was based on the insight that each printing line had its own pointer, which allowed a very elegant and efficient way of arranging the data in the desired way. To take pointers was one step, to take one pointer for each printing line, was another leap.

The subject-matter of claim 1 of the auxiliary request was a *fortiori* non-obvious, since providing data arrangement means including a plurality of arrangement memories in combination with pointers was not known in the art. Documents D7, D15 and D16 did not relate to tape printers. The speed doubling in the printing device known from document D15 resulted from printing two lines simultaneously, not from data arrangement means as now claimed. A combination of documents D1 and D7, D15 or D16 would hence not lead to the claimed invention.

## Reasons for the Decision

### Main request

#### 1. Admissibility of the amendments (Article 123(2) EPC)

Apart from amendments to a few reference numerals, the following features of claim 1 have been added with respect to claim 1 as granted:

- (i) command input means for enabling a user to input command data specifying on which of the plurality of lines an input character is to be printed;

- (ii) input data buffer (31) for storing the data input from said character and command input means;
- (iii) (printing setting means (27)), responsive to the command data input from said command input means, for selectively setting input character data in at least one of a plurality of printing lines,
- (iv) wherein said data arrangement means includes a plurality of pointers (34, 35),
- (v) each of said plurality of pointers corresponding to one of said plurality of printing lines;

A basis for the first four amendments in the application as filed (cf. published version) is the following: feature (i): see column 7, lines 49 to 53, and column 9, lines 50 to 51 (the operator can select in which printing line a character is printed); feature (ii): see column 7, lines 7 to 11, and Figure 11; feature (iii): see again column 7, lines 49 to 53, and column 9, lines 50 to 51; feature (iv): see Figure 3.

It was not disputed by the appellant that there is a basis in the application as filed for the features (i) to (iii). The contentious features are features (iv) and (v). The main objection of the appellant against feature (iv) is, that arrangement memories should have been recited in the claim with a view to avoid intermediate generalization. With respect to feature (v) the appellant argued essentially that the way pointers interact with the arrangement memories and what the exact correspondence between the pointers and

filed that from a hardware point of view the number of pointers in RAM must correspond in a one-to-one relationship to the number of printing lines. The expression "corresponding to" in feature (v) should be understood in this sense. This is also clear from Figure 3 as filed, which discloses two pointers for the case that there are two lines. It may be noted that the memory space needed for the first pointer is equal to the length of the input data buffer.

The appellant has argued that the successive *contents* of the first pointer did not correspond to the *characters* of the first printing line, whereby reference was made to the arrangement process control described in column 12, line 14ff. The Board comments that, although this observation is correct, it is beside the point, since feature (v) should not be interpreted as expressing a relationship between the *contents* of pointers and the *contents* of printing lines.

Now turning to feature (iv), the issue is whether pointers should have been claimed together with the respective arrangement memories or can be claimed in their own right. The feature that the data arrangement means includes a plurality of pointers is a clear restriction. It implies that the tape printing device must comprise data arrangement means, which include memory locations for storing addresses. In claim 1 according to the main request, the data arrangement means are further specified in functional terms, viz. *in order to enable the printing of a plurality of printing lines of characters directly adjacent to each other across the tape width*, which feature was already

present in claim 1 as granted. This manner of claiming is perfectly acceptable; there is no need to give the details of the data arrangement *process* for achieving this aim in a *device* claim.

The block diagram of the RAM shown in Figure 3 admittedly shows not only the input data buffer and first and second pointers, it also shows first and second arrangement memories, a baseline change memory, a printing buffer and a flag memory. In the judgement of the Board, these various pieces of hardware can be individually claimed without contravening the requirements of Article 123(2) EPC. The absence of arrangement memories in the claim does not imply that by default the skilled person is taught by the claim that the pointers must interact with the only piece of memory recited in the claim, viz. the input data buffer. This would indeed constitute a new teaching for which there is no basis in the application as filed. To sum up, in the opinion of the Board, there is no need to define the arrangement memories in the claim for the purpose of Article 123(2) EPC. There is also no need to give further details of the data arrangement *process* over and above the functional feature recited above already present in the claim.

The Board is satisfied that the subject-matter of claim 1 is disclosed as a whole in the application as filed, cf. Article 123(2) EPC.

Since the above-mentioned features have been added, the scope of protection conferred by claim 1 is restricted with respect to claim 1 of the patent in suit as

granted. Claim 1 thus meets the requirements of Article 123(3) EPC as well.

2. *Support in the description and clarity (Article 84 EPC)*

The analysis given under point 1 above rebuts the objections of the appellant under Article 84 EPC to a large extent, since according to the appellant the alleged lack of support arises from a lack of disclosure.

Claim 1 requires that each of the pointers included in the data arrangement means corresponds one-to-one to a printing line. At the hardware level this is a clear statement. At the software level there is a more complicated relationship, since the address of a pointer is not fixed during the data arrangement process, it is incremented after each search cycle, cf. block S84 of the flowchart depicted in Figure 9A. The pointer corresponding to the *n*th printing line is in fact a set of pointers, each having a different address. The first of these pointers points to code data identifying the *n*th printing line ( $n \neq 1$ ), whereas the remaining pointers point to character data in the *n*th printing line (see e.g. Figure 13, wherein the code data for the second line is denoted by  $\Delta$ ). In the opinion of the Board there is, from the point of view of clarity, no need or necessity to specify the relationship between pointers and printing lines at the process level, in a feature pertaining to data arrangement means.



Summarizing, in the judgement of the Board the subject-matter of claim 1 is clear and supported by the description, cf. Article 84 EPC.

3. *Sufficiency of disclosure (Article 83 EPC)*

The main thrust of the appellant's argument is that there was no disclosure of carrying out the invention other than using arrangement memories for each printing line. In particular, it was alleged that the invention could not be performed with a *single* arrangement memory, or without arrangement memories at all, i.e. a mode of operation whereby the pointers would act on the input data buffer.

The appellant's argument on insufficiency of disclosure is a variation on the theme of intermediate generalization expounded on in point 1 above: subject-matter for which there is no disclosure in the application as filed not only contravenes Article 123(2) EPC, but must also contravene Article 83 EPC, since if the application as filed is silent about such subject-matter, it is *a fortiori* silent about how to carry out such subject-matter.

In the judgement of the Board, the patent in suit discloses the invention as *claimed* in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art, cf. Articles 83 and 100(b) EPC, for the following reasons.

The Board is satisfied that a person skilled in the art can carry out the invention as described in the preferred embodiment of the patent in suit (see

column 4, line 34ff). The aim of the data arrangement process is primarily to add space codes to the string of characters of the lower or upper printing line, such that both strings have the same length. As a result of this process, input characters are arranged in such a way that, in a subsequent printing operation, the characters of the lower line(s) are located directly below characters of the upper line.

Whether this aim could also be achieved by using a single arrangement memory, or by using the input data buffer itself, does not need to be answered, since such modes of operations are not explicitly claimed. The breadth of a claim should be assessed in accordance with the principles laid down in the Protocol on the Interpretation of Article 69 of the Convention. An invention cannot be considered to be irreproducible merely because a claim encompasses (a) hypothetical embodiment(s) laying outside the breadth of the claim as determined by said Protocol, which embodiment(s) cannot be reproduced. It is noted that the appellant has not convincingly shown that the claimed data arrangement cannot be achieved without arrangement memories, i.e. that this hypothetical embodiment is indeed irreproducible.

4. *Entitlement to priority (Article 87 EPC)*

The appellant has submitted that the amendments, that were allegedly inadmissible under Article 123(2) EPC, were not disclosed in the priority document and had the effect that claim 1 was not entitled to the claimed priority. Moreover, claim 1 of the priority document specified several essential hardware components, such

as a pattern data storing means, a printing buffer and data composing means, which were no longer present in the claim.

The application as filed is, apart from minor editorial changes, substantially identical to the priority document. In particular, the Board is satisfied that the features of claim 1 as granted and the passages in the application as filed forming a basis for the amendments (i) through (v) have counterparts in the priority document. The issue is not, however, whether individual features have been disclosed in the priority document, the key issue is whether the claimed combination of features of a claim as a whole is disclosed in the priority document. To this end, the second argument of the appellant must be addressed as well.

The second argument of the appellant is that features pertaining to hardware components relating to the printing process were no longer present in the claim. There was no basis in the priority document for the deletion of these features.

The Enlarged Board has decided in G 2/98 (OJ EPO 2000, 111) that if the subject-matter of a claim can be derived, directly and unambiguously, using common general knowledge, from the previous application as a whole, priority of a previous application in respect of a claim in a European patent application in accordance with Article 88 EPC is to be acknowledged. In Section 8.3 the Enlarged Board has warned against an approach, whereby a distinction is made between technical features which are related to the function and the

effect of the invention and technical features which are not. Priority cannot be acknowledged if a feature is modified or deleted, or a further feature is added.

It is important to note that a claim passes the priority test if its subject-matter can be derived from the previous application *as a whole* (emphasis added). It follows that comparing the claim with the corresponding claim of the previous application is not a valid approach to perform the "priority test". The priority test is basically a disclosure test, whereby the skilled reader may use common general knowledge. If, in the description of the previous application, a distinction is made between features that are essential for the performance of the invention, and features which are not, the latter can be deleted from the subject-matter of a claim without losing the right to priority.

The pattern data storing means, the printing buffer and the data composing means do not relate to the data arrangement process, they relate to the printing process. These hardware components are nowhere presented in the description of the priority document as being essential features. The skilled reader would not have any reason to assume that they are, merely because these hardware components are present in claim 1 of the priority document. It is true that there is also no explicit statement in the priority document that the printing hardware components can be dispensed with. However, for substantially the same reason as given in point 1 above, namely that claiming individual pieces of hardware shown in Figure 3 is allowable under Article 123(2) EPC, the same holds true for claiming

individual pieces of hardware without losing the right to priority.

In view of the above, the Board is satisfied that a tape printing device having all the features of claim 1 of the main request, is disclosed in the priority document.

It follows that claim 1 of the main request is entitled to the priority date of 28 March 1991 claimed by virtue of the Japanese patent application 91492/91.

Document D19 was made available to the public around July 1991, which is after the priority date of the patent in suit. This document therefore does not belong to the state of the art defined in Article 54(2), (3) EPC for claim 1 of the main request. The appellant no longer relied on document D19, neither for assessing novelty and/or inventive step of claim 1 of the main request, nor for the same assessment of claim 1 of the first auxiliary request.

5. *Novelty (Article 54 EPC)*

Claim 1 relates to a tape printing device for printing lines of characters at different positions across the width of a print medium tape, comprising *inter alia* a printing head for printing characters on said print medium tape.

A print medium tape is a printable medium, having a width which is substantially constant and having a length which is quasi endless. In a tape printer device, the tape is fed (direction A in Figure 4), or

manually drawn out (see column 15, line 59), in the machine direction, viz. in the longitudinal direction of the tape. The machine direction substantially coincides with the direction of the printing lines. The movement of the print head(s) is in the cross direction ("across the width of the tape").

The appellant has submitted that the subject-matter of claim 1 was not new with respect to the disclosure of document D1.

This document discloses a tape printing device comprising character and command input means (keyboard, see page 21), an input data buffer (edit mode, see page 34), a printing head (see page 8), printing setting means (see Typing and Printing, pages 34 to 35), data arrangement means (see example of printed text on page 34, point 9) and controlling means for controlling the printing head (implicitly disclosed in view of the example referred to above).

Document D1 does not disclose pointers in the sense of the definition "a memory location in the RAM which stores an address in a memory". The carriage returns (pressing the cut key) to end and enter a line of text cannot be considered pointers in the above sense. Consequently, claim 1 is new with respect to document D1.

Document D12 discloses a label printing device, whereby the labels are peelably adhered to a supporting tape. If one would consider, to the advantage of the appellant, that such a print medium, or a single label, constitutes a tape, the label printing device known

from document D12 could be called a tape printing device, if (i) the printing lines are in the machine direction *and* (ii) the actual printing is performed in the cross direction. There is however no direct and unambiguous disclosure in document D12 that this is the case.

The main thrust of the appellant's argument is that it is impossible to locate data in memory without using pointers. By applying this statement to the disclosure of document D12, the appellant concludes that the information in the memory blocks PT<sub>1</sub>-(1), PT<sub>1</sub>-(2) and PT<sub>1</sub>-(3) (see document D12, page 12, penultimate paragraph) was "pointed to", and that the reference positions ("printing positions") of the printing area stored in the format blocks of the print format table also constitute "pointers".

However, document D12 fails to disclose pointers within the meaning of the invention, viz. a memory location in RAM which stores an address in a memory. Consequently, claim 1 is new with respect to document D12.

None of the other cited documents disclose a tape printing device with all the features of claim 1. Since this was not disputed, there is no need for further substantiation of this matter.

The subject-matter of claim 1 is therefore novel within the meaning of Article 54 EPC.

6. *Inventive step (Article 56 EPC)*

Document D1 represents the closest state of the art. The subject-matter of claim 1 differs from the tape printing device known from this document in that the *data arrangement means includes a plurality of pointers, each of said plurality of pointers corresponding to one of said plurality of printing lines.*

In the judgement of the Board, it was obvious for the person skilled in the art, confronted with the problem of arranging data in an input data buffer with a view to enabling the printing of a plurality of printing lines of characters directly adjacent to each other across the tape width, to use pointers for this purpose, since the advantages of pointers in programming are well-known in the art, see for example document D17, wherein it is stated (see Chapter 3.1, last paragraph) that: *Pointers are needed when a data structure is dynamic, that is items are continually being added or deleted from the structure.*

The respondent has submitted that to use pointers was one step, to use one pointer per printing line was another leap. The Board cannot accept this for the following reason. Since the data has to be arranged such that input characters from different printing lines can be printed adjacent to each other across the width of the tape, it is a straightforward, natural choice for the skilled person to define a dedicated pointer for each printing line.



The subject-matter of claim 1 therefore lacks an inventive step in the meaning of Article 56 EPC and, consequently, the main request of the respondent is not allowable.

*First auxiliary request*

7. *Admissibility of the amendments*

Claim 1 according to the first auxiliary request differs from claim 1 according to the main request, which was found to meet the requirements of Articles 84 and 123 EPC, in that the following feature has been added: *and wherein said data arrangement means further includes a plurality of arrangement memories (32, 33), each having addresses, each of said plurality of arrangement memories corresponding to one of said plurality of printing lines, each pointer (34, 35) storing one of the addresses in the corresponding arrangement memory (32, 33).*

A basis for this feature is found in column 7, lines 14 to 31 (see also claim 6 and the data arrangement process described in column 12, line 14, to column 13, line 58).

The Board is satisfied that the subject-matter of claim 1 is disclosed as a whole in the application as filed, cf. Article 123(2) EPC. The subject-matter of claim 1 is also clear and supported by the description of the patent in suit, cf. Article 84 EPC.

Since the above-mentioned feature has been added, the scope of protection conferred by claim 1 is further restricted with respect to claim 1 of the main request and with respect to claim 1 of the patent in suit as granted. Claim 1 thus meets the requirements of Article 123(3) EPC as well.

8. *Novelty*

It is noted that the subject-matter of claim 1 of the main request was already found to be novel, see point 5 above. The subject-matter of claim 1 is hence also novel within the meaning of Article 54 EPC.

The additional feature with respect to claim 1 of the main request (see point 7 above) is not disclosed in any of the cited documents belonging to the state of the art.

9. *Inventive step*

A tape printing device comprising data arrangement means which includes a plurality of arrangement memories, one for each printing line, the addresses of which are stored in pointers, is neither known from nor suggested by the cited prior art. The arrangement memories and the pointers provide a means to arrange the characters from each printing line such that, in the multi-line mode, characters that are to be printed directly adjacent to each other across the width of the tape have *corresponding addresses* in the arrangement memories, which greatly facilitates reading out the contents of the arrangement memories with a view of

printing the characters of the lower printing lines underneath the characters of the upper printing line.

The appellant has submitted that data arrangement means which includes a plurality of arrangement memories, one for each printing line, were known from documents D7, D15 and D16. Consequently, no positive contribution to inventive step could be seen in providing the tape printing device known from document D1 with a plurality of arrangement memories as taught by documents D7, D15 or D16.

Document D7 relates to a thermal dot-matrix printer, which uses an inked ribbon. The problem the invention seeks to solve is to double the print speed for the case where print quality is of little importance, cf. page 1, lines 19 to 22. This problem is solved by simply reducing the height of the characters by a factor of at least two, so that two lines, or even more lines, can be printed simultaneously while using the standard ink ribbon for full-size printing. In order to achieve double-line printing, character data for the upper and lower line are stored in a first and second character line buffer, cf. page 8, lines 9 to 23.

In the opinion of the Board, the problem of reducing the size of the printed output is totally unrelated to the problem addressed by the patent in suit, which is *to provide a tape printing device capable of receiving characters (input characters) and printing the characters on a plurality of printing lines which are defined by dividing the printing area of the printing medium tape across its width, the input characters being printed in a plurality of desired printing lines*

so that characters of the lower line are located below characters of the upper line, thereby permitting the printing of many more characters along a predefined length of tape than was previously possible, cf. column 1, lines 49 to 58, of the patent in suit. Document D7 does not relate to a tape printing device. Not surprisingly, document D7 is silent about the use of pointers, because an arrangement of data in the sense of the invention is not required. To sum up, document D7 is not considered a relevant document for assessing inventive step of the subject-matter of claim 1.

Document D15 discloses a wire printing device, whereby the inclination of the writing ends of the wire relative to the writing direction is selectively variable from a first position in which the wires can write simultaneously at least two lines of writing, to a plurality of other positions in which the wires can write on one line only characters with variable definition dot matrices, cf. column 1, lines 49 to 58. In the first position the printing device shown in Figures 4 and 5 may write either simultaneously two lines of characters of standard height, or a single line of characters of double height. With respect to double-line printing, the printing device according to document D15 is very similar to the printing device known from document D7. For example, the character data of the upper and lower printing line are stored in two RAM memories (66, 67), cf. column 4, lines 54 to 60, and Figure 3. Also in document D15, double-line printing results in a speed doubling, see column 4, lines 49 to 54. Document D15 is thus not relevant for assessing inventive step for substantially the same

reasons given for document D7: document D15 does not relate to a tape printing device, it addresses a different problem than the invention of the patent in suit and it is silent about the use of pointers.

Document D16 relates to an index label for documents or the like. The index label has the same information printed on each side of its centerline, which defines a left and right printing line (or an upper and lower printing line). The printed index label is adhered to and folded around the edge of a sheet of paper such that the edge of the paper is between the folded halves of the index label. Depending on which printing style mode is selected, the text in the two printing lines is printed such that it is readable in the same direction (cf. Figure 5, where the text runs from the left to the right, or Figure 7, where the text is readable from top to bottom), or the text is printed such that the label must be turned by 180° to read the text in the upper line (cf. Figure 6). The gist of the invention according to document D16 is that both halves of the label, each carrying essentially the same text, is printed simultaneously. Apart from the order and orientation of the characters, the contents of the first and second printing line is the same. The dot pattern data corresponding to the characters stored in the input buffer (73) are transferred, and, depending on the selected printing mode style, rotated or reversed in parallel to two (upper and lower bit array) shift registers, from which the text is printed. An arrangement of data in the sense of the invention is therefore not necessary. Document D16 does not disclose pointers for storing the addresses of the shift registers. In the judgement of the Board, a person

skilled in the art would not have any incentive to consult document D16 if confronted with the problem of providing an alternative data arranging means for the tape printing device known from document D1.

Consequently, the subject-matter of independent claim 1 involves an inventive step.

The subject-matter of claims 2 to 12, which are appendant to the claim 1 similarly involves an inventive step.

Therefore, the request of the respondent that the patent be maintained in amended form on the basis of the documents filed as first auxiliary request is allowable.

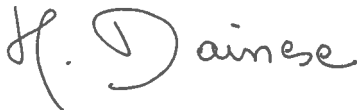
**Order**

**For these reasons it is decided that:**

1. The decision under appeal is set aside.
2. The case is remitted to the first instance with the order to maintain the patent on the basis of the following documents:

claims 1 to 12 filed as first auxiliary request during oral proceedings and description pages 2 to 9 filed during oral proceedings and drawings sheets 14 to 34 of the patent as published.

The Registrar:



M. Dainese

The Chairman:



P. E. Michel

