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D E C I S I O N
of 25 September 2002

Case Number: T 0195/99 - 3.2.5

Application Number: 92304621.3

Publication Number: 0517401

IPC: B41J 13/00

Language of the proceedings: EN

Title of invention:
Printing machine

Patentee:
SEIKO EPSON CORPORATION

Opponent:
Canon Kabushiki Kaisha

Headword:
-

Relevant legal provisions:
EPC Art. 84, 54, 56, 123(2)(3)

Keyword:
"Clarity (yes)"
"Novelty and inventive step (yes)"

Decisions cited:
-

Catchword:
-



Case Number: T 0195/99 - 3.25

D E C I S I O N
of the Technical Board of Appeal 3.2.5
of 25 September 2002

Appellant: SEIKO EPSON CORPORATION
(Proprietor of the patent) 4-1, Nishishinjuku 2-chome
Shinjuku-ku
Tokyo-to (JP)

Representative: Sturt, Clifford Mark
Miller Sturt Kenyon
9 John Street
London WC1N 2ES (GB)

Respondent: Canon Kabushiki Kaisha
(Opponent) 30-2, 3-chome, Shimomaruko
Ohta-ku, Tokyo 146 (JP)

Representative: Beresford, Keith Denis Lewis
BERESFORD & Co.
2-5 Warwick Court
High Holborn
London WC1R 5DJ (GB)

Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 7 December 1998
revoking European patent No. 0 517 401 pursuant
to Article 102(1) EPC.

Composition of the Board:

Chairman: W. Moser
Members: P. E. Michel
W. R. Zellhuber

Summary of Facts and Submissions

- I. The appellant (patentee) lodged an appeal against the decision of the Opposition Division revoking patent No. 0 517 401. Opposition was filed against the patent as a whole based on Article 100(a) and (b) EPC.

During oral proceedings before the Opposition Division an amended set of claims were filed and made the subject of the sole request of the appellant. The Opposition Division held that the subject-matter of claim 1 of these claims lacked clarity.

- II. The appellant requests that the decision under appeal be set aside and that the patent in suit be maintained on the basis of claims 1 to 5, filed with the statement setting out the grounds of appeal.

The respondent (opponent) did not reply to the appeal.

- III. The claims include a single independent claim reading as follows:

"1. A printing machine capable of conveying a printing sheet in both forward and reverse feed directions and comprising:
sheet conveying means (101, 103, 104; 105, 106; 109) provided upstream of a printing position (a) with respect to the forward feed direction;
sheet discharging means (107, 108) provided downstream of the printing position (a) with respect to the forward feed direction;
a drive motor (201) for driving said sheet conveying means and said sheet discharging means

to convey the printing sheet in the forward feed direction with the speed of said sheet discharging means higher than that of said sheet conveying means; characterised in that:

the drive motor (201) is capable of driving said sheet conveying means to move the printing sheet in the reverse feed direction by a predetermined distance (D4) for overprinting a printed area just printed thereon by the printing machine, the printing sheet being driven in the reverse direction while gripped by both the sheet conveying means and the sheet discharging means; the amount of play (b2) of a first power transmission system (202, 203, 204, 208, 209) for transmitting power between said drive motor and said sheet discharging means is larger than the amount of play (b1) of a second power transmission system (202, 203, 204, 205; 202, 203, 204, 205, 206, 207; 202, 203, 210, 211; 202, 401, 402, 403; 202, 401, 404, 405) for transmitting power between said drive motor and said sheet conveying means; and driving of said sheet conveying means to move the printing sheet in the reverse feed direction by the predetermined distance (D4) is less than that required to take up the difference in play between the two power transmission systems."

- IV. The appellant argues that the amended claims are clearly based on the disclosure of the application as filed and that claim 1 is of more limited scope than claim 1 as granted. The expression resulting in revocation of the patent by the Opposition Division is not included in the amended claims.

V. The following documents are referred to in the present decision:

D1 JP-A-62 257 871
D8 EP-A-0 404 538

Reasons for the Decision

1. *Allowability of the amended claims*

The features introduced into claim 1 are disclosed in Figure 4 and the description relating thereto in the application as filed.

The amendments involve a restriction in the protection conferred by claim 1 as compared with the claim as granted. It may be noted that the feature "a desired maximum amount of reverse conveyance", present in claim 1 as considered by the Opposition Division and which has been deleted from the claim, was not present in claim 1 as granted.

The amended claims thus satisfy the requirements of Article 123(2) and (3) EPC.

2. *Clarity*

The expression "a desired maximum amount of reverse conveyance", considered by the Opposition Division to lack clarity, is no longer present in claim 1. Instead, it is now specified in the claim that

- (i) the drive motor (201) is capable of driving said sheet conveying means to move the printing sheet

in the reverse feed direction by a predetermined distance (D4) for overprinting a printed area just printed thereon by the printing machine,

- (ii) the printing sheet is driven in the reverse direction while gripped by both the sheet conveying means and the sheet discharging means,
- (iii) the predetermined distance (D4) is less than that required to take up the difference in play between the two power transmission systems.

The predetermined distance is thus clearly defined in the claim as being the distance required for overprinting a printed area just printed thereon by the printing machine.

Claim 1 is thus clear.

3. *Novelty*

None of the cited prior art discloses a printing machine in which the sheet conveying means is driven to move the printing sheet in the reverse feed direction by a predetermined distance less than that required to take up the difference in play between forward and reverse power transmission systems.

The subject-matter of claim 1 is thus novel.

4. *Inventive step*

The patent in suit is directed to a printing machine sheet having conveying or sheet feeding means provided upstream of a printing position with respect to the

forward feed direction; sheet discharging means provided downstream of the printing position with respect to the forward feed direction; and a drive motor for driving said sheet conveying means and said sheet discharging means to convey the printing sheet in the forward feed direction with the speed of said sheet discharging means higher than that of said sheet conveying means. This difference in sheet conveying speed is necessary in order to keep the paper taut during printing.

In such machines, it is desirable to provide only a limited memory capacity in order to reduce cost, but nevertheless have the capability of printing graphics in addition to characters. In order to achieve this, it is necessary to print the same area of a sheet more than once, so that after a forward movement of the sheet during which printing is carried out, the sheet is moved in the reverse direction in order to enable the same area of the sheet to be printed again. A problem which arises in such machines is that, owing to the difference in sheet conveying speeds, slackening of the sheet arises during the reverse movement, since the higher speed sheet discharging means is now feeding the sheet.

This is described in the patent in suit with reference to Figures 10 and 11, the amount of slack being represented in Figure 11 as (S2). This results in disadvantages, including the print being shifted in position relative to the previous printing during overprinting and jamming of the sheet.

Such a machine is known from document D1.

According to the invention, this problem is overcome by driving the sheet conveying means to move the printing sheet in the reverse feed direction by a predetermined distance less than that required to take up the difference in play between the forward and reverse power transmission systems. In this way, the sheet conveying means can move the sheet for the second printing operation before the discharge rollers start to drive the sheet in the reverse direction, owing to the play in the power transmission systems not having been taken up. In other words, play or backlash is utilised to provide lost motion during reverse motion.

This feature is not suggested by the cited prior art. More generally, none of the prior art regards play as something which can be utilised in an advantageous manner. Thus, for example, document D8 treats backlash in the transmission as a problem which must be compensated for in the drive circuit (300) which controls a first drive motor.

The subject-matter of claim 1 thus involves an inventive step. Claims 2 to 5 are appendant to claim 1 and relate to preferred embodiments of the printing machine of claim 1. These claims thus similarly involve an inventive step.

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:

- (i) description: pages 2 and 4 to 8 as granted, page 3 and Insert A as filed on 16 September 2002;
- (ii) claims 1 to 5 as filed on 7 April 1999; and
- (iii) drawings; Figures 1 to 4, 5a, 5b, 6 to 11, as granted.

The Registrar:

The Chairman:

M. Dainese

W. Moser