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D E C I S I O N
of 8 March 1994

Case Number: T 0278/92 - 3.4.1

Application Number: 85107589.5

Publication Number: 0165601

IPC: G07B 17/00

Language of the proceedings: EN

Title of invention:

Thermal printer and postal meter having thermal printer

Patentee:

Pitney Bowes Inc.

Opponent:

OI) Alcatel Business Systems Ltd.

OII) Francotyp-Postalia GmbH

Headword:

-

Relevant legal norms:

EPC Art. 56

Keyword:

"Inventive step (confirmed) - non-obvious use of a known means"

Decisions cited:

T 0037/82

Headnote/Catchword:



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Boards of Appeal

Chambres de recours

Case Number: T 0278/92 - 3.4.1

D E C I S I O N
of the Technical Board of Appeal 3.4.1
of 8 March 1994

Appellant:
(Opponent 0I) Alcatel Business Systems Ltd.
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Other party:
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D-13362 Berlin (DE)

Representative: Schaumburg, Thoenes & Thurn
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Respondent:
(Proprietor of the patent) Pitney Bowes Inc.
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Decision under appeal: Decision of the Opposition Division of the
European Patent Office dated 24 January 1992
rejecting the opposition filed against European
patent No. 0 165 601 pursuant to Article 102(2)
EPC.

Composition of the Board:

Chairman: G.D. Paterson
Members: R.K. Shukla
H.J. Reich

Summary of Facts and Submissions

I. European Patent No. 0 165 601 was opposed by Alcatel Business Systems Ltd (OI) and Francotyp-Postalia GmbH (OII) on the ground that the subject-matter of the patent does not involve an inventive step having regard to, *inter alia*, the following prior art documents

D1: GB-A-2 102 740,

D2: PATENT ABSTRACTS OF JAPAN, Vol. 6, No. 224, M-170, November 9, 1982,

D3: US-A-3 453 648 and

D4: US-A-4 170 422.

The Opposition Division regarded D1 as the closest prior art document, and it rejected the oppositions pursuant to Article 102(2) EPC.

II. The only independent Claim 1 of the patent forming the basis of the above decision has the following wording:

"Thermal printing means for use in an electronic postage meter (10) of the type including accounting means (18) and means (22) for inputting postal data, for printing postal value along with other indicia, said printing means comprising:

a) a thermal print head (30) which includes a plurality of thermal heating elements operative to receive voltage pulses for heating thereof to a predetermined temperature;

b) a tape moving means (44, 46) for moving a tape past the individual elements of the print head for receiving an impression thereof, said tape moving means including rollers (42, 44, 68) and knife means (48, 50) for cutting the tape prior to printing of data; and

c) a thermal transfer ribbon transportation means (62, 66) for transporting a transfer ribbon having a meltable ink composition thereon, so that portions of said thermal transfer ribbon can be carried into juxtaposition between said thermal elements and said tape, whereby when said thermal elements are heated to said predetermined temperature the meltable composition adjacent said heated elements is transferable to the tape,

characterised in that said rollers (42, 44, 68) are movable during a print cycle between a first position wherein said rollers (42, 44, 68) are in pressure abutment with a tape disposed between said rollers (42, 44, 68) and a second position wherein said rollers (42, 44, 68) are disposed away from said tape for relieving the pressure thereon; and in that a reversible stepper motor is provided to move said rollers (42, 44, 68), rotation of the stepper motor in a first direction causing motion of said rollers (42, 44, 68) between said first and said second positions and rotation of said stepper motor in the opposite direction serving to drive the tape."

III. The Opponent OI filed an appeal against the above decision, and cited a further prior art document

D5: FR-A-2 508 258

in support of its request for the revocation of the patent.

IV. Oral proceedings were held on 8 March 1994. The arguments by the Appellant and the Opponent OII, who were both represented at the oral proceedings, can be summarised as follows:

- (a) The technical problem addressed by the present invention resides in preventing jamming of gummed paper tape which tends to occur on start up and during rotation of drive rollers. The recognition of the problem itself makes no contribution to inventive step, since a person skilled in the art would notice that the gummed paper tape sticks to the rollers. The solution of the above problem, namely, prevention of contact between the tape and the rollers when the contact is not absolutely necessary, is evident once the problem is recognised. A similar solution is proposed in document D2 wherein a thermal print head is separated from a paper during a phase when mutual contact is not required. Also, in document D5, a pressure roller is retracted from a paper when a printing ribbon is pulled across the paper. The use of an electromagnet in document D5 to this end is equivalent to the use of a reversible stepping motor provided for this purpose in the claimed invention.
- (b) In the patent in suit, there is no clear teaching of the solution to the problem set in the description. According to the description in column 4, lines 11 to 23, on rotation of camming surfaces in one direction, a pinch roller 68, impression roller 42 and upper exit roller 44 **are driven by springs** into pressure abutment against a feed roller, a thermal head and a lower exit roller **so as to drive a tape**. According to the wording of Claim 1 on the other hand, rotation of a stepper motor in a particular direction serves to drive the tape. Also, the wording of Claim 1, "rotation of the stepper motor in a first direction causing

motion of said rollers (42, 44, 68) **between said first and second positions**" does not provide a solution to the problem.

- (c) The feature of the claim requiring that the stepper motor serves to drive the tape does not contribute to the solution of the problem of the jamming of the tape. Following the Decision T 37/82 (OJ EPO 1984, 71) therefore, the use of a stepper motor for driving the tape as contemplated in Claim 1 should not be taken into consideration in assessing inventive step.

V. The Respondent (patent Proprietor) was also represented at the oral proceedings. He requested that the appeal be dismissed, and the patent maintained as granted (main request), or that the patent be maintained in amended form in accordance with first and second auxiliary requests which had not been formulated. He submitted essentially the following arguments in support of his main request:

- (a) If it is accepted that the problem of sticking of a gummed paper tape is of long standing in the art, as argued by the Appellant, then the fact that the problem has never been solved according to the cited prior art provides a strong indication that the solution proposed in the invention was not obvious to a person skilled in the art.
- (b) Since several factors, such as the material and the nature of the roller surface, the type of gum, the duration of contact between the roller surface and the tape, the magnitude of contact pressure etc., influence the sticking of a gummed tape to a

roller, it is contested that the mere recognition of the problem renders it obvious that contact between the tape and the rollers should be avoided.

(c) In document D2 wastage of ink is prevented by retracting a thermal print head and an ink film from a paper and a roller when printing is completed. Document D2 is thus not concerned with the problem addressed by the present invention. In document D5 a roller is moved away from a paper to permit the movement of a transfer tape. This is precisely the opposite of the situation in the present invention in which the roller is moved into contact with the tape to drive the same.

(d) None of the cited prior art discloses the use of a reversible stepper motor in the manner as set out in the claimed invention. In document D1 such a motor is used in a conventional manner, that is, the rotation of the motor in one direction advances a transfer printing tape and the rotation of the motor in the opposite direction moves the same tape backwards by a prescribed distance.

VI. At the conclusion of the oral proceedings the decision was announced that the appeal is dismissed and the patent maintained as granted.

Reasons for the Decision

1. The only issue which is to be considered in the present appeal is the question of inventive step.

1.1 In prior art document D1 which comes closest to the invention as claimed, there is described a printing apparatus comprising:

a) a heat-sensitive printing head (31) provided with heating wires which are selectively heated in accordance with instructions received from a control panel (15) (see page 2, lines 83 to 107; Figures 3 and 6);

b) a sheet-forwarding mechanism (151) having rollers (157a, 157b, 160a, 160b) for moving a band-shaped sheet (P') past the heat-sensitive printing head for receiving an impression thereof (see page 5, line 122 to page 6, line 21);

c) a cutter (161) for cutting the sheet prior to printing of data (see page 6, lines 21 to 37); and

d) a mechanism (74) for forwarding a transfer printing medium (F) to the heat-sensitive printing head so that an ink coated on the transfer medium is transferred onto the sheet (P') when the wires of the printing head are selectively heated (see page 2, line 108 to page 3, line 9; page 6, line 63 to page 6, line 71 and page 2, lines 94 to 107).

Although in document D1 the printing machine is disclosed specifically for issuing commutation tickets to passengers, nevertheless it is evidently suitable for use in an electronic postage meter. The apparatus

according to document D1 thus falls within the terms of the precharacterising part of Claim 1.

1.2 In view of the above, the thermal printing means according to the invention as claimed is distinguished from the closest prior art by the features as set out in the characterising part of Claim 1, that is, by the following features:

(a) rollers (42, 44, 68) are movable during a print cycle between a first position wherein the rollers are in pressure abutment with the tape and a second position wherein the rollers are disposed away from the tape for relieving the pressure thereon; and

(b) a reversible stepper motor is provided and rotation of the motor in a first direction causes motion of the rollers (42, 44, 68) **between** said first **and** second positions and rotation of the stepper motor in the opposite direction **serves** to drive the tape (emphasis added).

1.3 With regard to the Appellant's submission that the expression "between said first and second positions" in feature (b) of the claim does not provide a clear teaching of the solution of the problem addressed by the invention (see paragraph IV (b)), in the Board's view, the above expression, when interpreted with the help of the description (see column 4, lines 11 to 23 and 37 to 61; column 4, line 62 to column 5, line 11 and column 5, lines 15 to 21), is clearly intended to mean "from said first position to said second position". This direction of movement clearly provides a solution to the problem of jamming of the gummed tape. In this connection, according to the description, the rotation of the stepper motor in a first direction rotates camming surfaces (82) mounted on a shaft (84) thereby causing

movement of distal ends of arms (70,72 and 94). The movement of the distal ends in turn causes a pinch roller (68), an impression roller (42) and an upper exit roller (44) to move away from the tape to relieve the pressure thereon (second position). Also according to the above description these rollers are brought into pressure abutment with a feed roller (66), a thermal head (30) and a lower exit roller (46) (first position) **by the action of springs**, and that as the above rollers (68, 42 and 44) are driven by the springs into abutment, the camming surfaces rotate in a direction opposite to the previous one. Thus the roller movement from the second position to the first position is not caused by the stepper motor. When the stepper motor turns in the opposite direction, the motion is transmitted only through a belt drive carried by the shaft (84) (see the statement in column 4, lines 49 to 50), so as to drive a feed roller, the impression roller (42) and a lower exit roller, and when the rollers (68, 42 and 44) are in the first position, also the tape. Thus, the rotation of the stepper motion in a first direction causes the rollers 68, 42 and 44 to move **from** the first position **to** the second position and in the opposite direction **serves to drive the tape** as claimed in Claim 1.

- 1.4 As disclosed in the patent in suit (see column 2, lines 23 to 34 and column 3, line 64 to column 4, line 6), the present invention aims to provide a thermal printing means suitable for printing on gummed labels wherein jamming of the thermal printing means on start up and during rotation of drive rollers is avoided. As regards the measures which are required to avoid such jamming, it was argued by the Appellant that the feature of Claim 1 requiring that the stepper motor also serves to drive the tape does not form part of the solution of the problem of jamming of the tape and consequently should be left out of consideration in the assessment of

inventive step (see paragraph IV (c)). The Board, however, cannot share this view and agrees with the Respondent that the dual function of the stepper motor as set out in feature (b) represents a technically simplified solution to the problem of the jamming of the tape in that no extra driving mechanism is needed. In the Board's view, therefore, the present case is different from Decision T 37/82 cited by the Appellant, and the principle set out in Headnote II of the Decision is not applicable in the present case.

- 1.5 Document D2 describes a printer wherein wastage of an ink film (13) is avoided by lifting of the film and a heat sensitive printing head (11) away from a paper (1a). As would appear from the drawing, the film and the printing head are lifted away by the action of a spring (7) when a solenoid (4) is deenergised.

Similarly, in document D5 a roller (40) which presses a paper (20) to an ink ribbon (30) and a thermal head (10) during printing is retracted when an electromagnet (45) is deenergised, so as to relieve the pressure and allow the ribbon to be moved (see page 4, line 19 to page 5, line 3 and Figure 1).

Thus, although documents D2 and D5 disclose that either a thermal printing head or a roller can be retracted from a paper, the use of a reversible stepper motor, which also serves to drive the paper when it rotates in one direction, to retract the printing head or roller is not disclosed in these documents. Such a use also cannot be regarded as equivalent to the use of a solenoid as in document D2 or D5, contrary to the Appellant's submission. This is because whereas the solenoid either causes the thermal printing head or the roller to move to abut the paper or to retract it from the paper, the stepper motor according to the invention carries out two

entirely different functions, that is, when operated in one direction it serves to drive the tape and when operated in the other direction it causes the rollers to retract from the tape.

Also, in contrast to the above, in the printing apparatus according to document D1, a reversible motor (46) is used to drive a tape (F) backwards and forwards: when the motor (46) turns in the reverse direction the tape (F) is moved back by a fixed distance (see page 3, line 105 to page 4, line 6). In other words, the reversible motor in document D1 is used in a conventional manner for advancing and returning a tape.

2. For the foregoing reasons, in the Board's judgment, the use of a reversible stepper motor as set out in Claim 1 as granted was not obvious to a skilled person in the art, and such claim therefore involves an inventive step within the meaning of Article 56 EPC. Accordingly, the patent should be maintained as granted.
3. As indicated during the oral proceedings in relation to the auxiliary requests which were mentioned for the first time during such proceedings, the Board expects any auxiliary requests by a patent proprietor to be formulated and filed in good time prior to oral proceedings, and would normally only admit such requests if they were recognised as clearly allowable. In the event that the main request has been allowed, this matter is no longer relevant.

Order

For these reasons, it is decided that:

-- The appeal is dismissed .

The Registrar:

The Chairman:

M. Beer

G.D. Paterson