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**Datasheet for the decision
of 11 March 2022**

Case Number: T 1604/18 - 3.4.03

Application Number: 03754652.0

Publication Number: 1537506

IPC: G07F19/00

Language of the proceedings: EN

Title of invention:

PAPER JAM DETECTION APPARATUS AND METHOD FOR AUTOMATED BANKING
MACHINE

Applicant:

DIEBOLD, INCORPORATED

Headword:

Relevant legal provisions:

EPC Art. 52(1), 123(2)
EPC 1973 Art. 54, 56

Keyword:

Novelty - (yes)
Inventive step - (yes)
Amendments - added subject-matter (no)

Decisions cited:

Catchword:



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Chambres de recours

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Case Number: T 1604/18 - 3.4.03

D E C I S I O N
of Technical Board of Appeal 3.4.03
of 11 March 2022

Appellant: DIEBOLD, INCORPORATED
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Representative: Viering, Jentschura & Partner mbB
Patent- und Rechtsanwälte
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Decision under appeal: **Decision of the Examining Division of the
European Patent Office posted on 24 January 2018
refusing European patent application No.
03754652.0 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman T. Häusser
Members: S. Ward
E. Mille

Summary of Facts and Submissions

- I. The appeal is against the decision of the Examining Division refusing European patent application No. 03 754 652 on the grounds that the claimed subject-matter did not involve an inventive step within the meaning of Article 56 EPC 1973.
- II. The appellant requested in writing (see page 2, second paragraph, of the letter dated 4 January 2022) that the decision under appeal be set aside and that a patent be granted on the basis of:
- Claims 1 to 54 of the main request filed with the letter dated 4 January 2022;
 - Pages 3, 9, 10, 31 and 38 of the description filed with the letter dated 4 January 2022, and pages 1, 2, 4 to 8, 11 to 30 and 32 to 37 of the description as originally filed; and
 - Drawing sheets 1/7 to 7/7 as originally filed.

Alternatively the appellant requests that a patent be granted on the basis of one of the auxiliary requests 1, 2, 3, 3a, 4 or 4a filed with the letter dated 4 January 2022.

- III. The following document is referred to:

D4: US 5 879 092

- IV. Claim 1 of the main request reads as follows:

*"An apparatus comprising:
an automated banking machine including a paper take-up roll adapted to rotate to take up printed paper, a paper take-up roll drive adapted to rotate the paper*

take-up roll, a printer adapted to move paper therethrough and print thereon, a printer drive adapted to move paper relative to the printer, a paper testing arrangement, and a currency dispenser operative to dispense currency, wherein the paper testing arrangement is operative to test the ability of paper in the automated banking machine to be moved by the paper take-up roll drive responsive to both operation of the printer drive to move the paper and non-operation of the printer drive, wherein the automated banking machine is operative to generate a first fault signal responsive to the inability of the paper to be moved by the paper take-up roll drive despite operation of the printer drive, and a second fault signal responsive to the ability of the paper to be moved by the paper take-up roll drive despite non-operation of the printer drive."

Claim 32 of the main request reads as follows:

"A method for an automated banking machine including a paper take-up roll adapted to rotate to take up printed paper, a paper take-up roll drive adapted to rotate the take-up roll, a printer adapted to move paper therethrough and print thereon, a printer drive adapted to move paper relative to the printer, a paper testing arrangement, and a currency dispenser operative to dispense currency, the method comprising:

- (a) testing the ability of paper in the automated banking machine to be moved responsive to operation of the paper take-up roll drive coordinating in operation with the printer drive to move the paper,*
- (b) testing the ability of the paper to be moved by the paper take-up roll drive despite non-operation of the printer drive,*

(c) generating a first fault signal responsive to the paper take-up roll drive being unable to move the paper in (a) and generating a second fault signal responsive to the paper take-up roll drive being able to move the paper in (b)."

Claim 54 of the main request reads as follows:

"Computer readable medium having computer readable instructions embodied thereon, the computer readable instructions operative to cause at least one computer to carry out the method steps recited in claim 32."

Reasons for the Decision

1. The appeal is admissible.
2. *Article 123(2) EPC*
 - 2.1 Claim 1 of the main request is based on claims 1, 5 and 6 as originally filed; independent claim 32 is based on claim 35 as originally filed with the same amendments as made to claim 1; independent claim 54 is based on claim 58 as originally filed. Dependent claims 2 to 31 are based on claims 2, 3 and 7 to 34 as originally filed; dependent claims 33 to 53 are based on claims 36, 37 and 39 to 57 as originally filed, the dependent claims having being adapted to the amendments made to the independent claims where necessary. The description has been satisfactorily adapted to the amended claims.
 - 2.2 The main request therefore meets the requirements of *Article 123(2) EPC*.

3. *Claim 1 of the main request: Novelty over D4*

3.1 D4, the only document cited in the grounds of the contested decision (points 11 and 12), discloses a first embodiment (column 5, line 22 to column 9, line 47 and Figs. 1-6) and a second embodiment (column 9, line 48 to column 12, line 54 and Figs. 7-9) of an automated banking machine, each comprising paper take-up roll (18, 114), a paper take-up roll drive (column 5, lines 35-37; 116), a printer (12, 106), a printer drive (20; 108), a paper testing arrangement (70, 74; 124; 118; 134), and a currency dispenser operative to dispense currency (column 1, lines 16-27).

3.2 Both embodiments are said to function according to the flow-chart of Fig. 6 (see column 7, lines 51-57 and the subsequent passages, and column 12, lines 14-20). Fig. 6 defines three types of generated signal: a paper low signal at step 96, a paper out signal at step 102 and a paper jam signal at step 100. The paper low and paper out signals are generated by detectors 78 in Fig. 2 and 122 in Fig. 7 (see column 8, lines 24-38; column 8 line 63 to column 9, line 3 and column 10, lines 1-8).

The paper low and paper out signals are not, however, generated in the manner defined in claim 1 of the main request, i.e. responsive to the inability of the paper to be moved by the paper take-up roll drive despite operation of the printer drive, or responsive to the ability of the paper to be moved by the paper take-up roll drive despite non-operation of the printer drive. Hence, neither the paper low signal nor the paper out signal represents a "fault signal" as defined in claim 1 of the present main request.

3.3 It follows that, in both the first and second embodiment of D4, there is disclosed, at most, only one fault signal (the paper jam signal of step 100) which could, potentially, constitute a fault signal as defined in claim 1 of the main request. Claim 1, however, defines first and second fault signals generated in response to the recited conditions. For this reason alone, the subject-matter of claim 1 of the main request is new within the meaning of Article 52(1) EPC and Article 54 EPC 1973.

4. *Claim 1 of the main request: Inventive Step starting from the first embodiment of D4*

4.1 According to the first embodiment of D4 (see column 8, lines 12-62 and Figs. 2 and 6) it is determined whether a set number of lines have been printed (step 86), and if so, whether there has been a change in signal from detector 70, which is monitoring the spindle encoder on the supply roll (steps 88, 90), to determine whether it has rotated. If not, the non-movement of the spindle leads to the processor indicating a fault detection signal at step 100 representative of a paper jam or a comparable fault condition (unless paper is determined not to be present at step 98, in which case a "paper out" signal is generated at step 102). Although a paper jam signal is mentioned at step 100 in Fig. 6, the same signal would be generated in the case of a paper break (see column 8, lines 53-62).

4.2 Claim 1 therefore differs from the first embodiment of D4 as follows:

"wherein the paper testing arrangement is operative to test the ability of paper in the automated banking machine to be moved by the paper take-up roll drive

responsive to both operation of the printer drive to move the paper and non-operation of the printer drive, wherein the automated banking machine is operative to generate a first fault signal responsive to the inability of the paper to be moved by the paper take-up roll drive despite operation of the printer drive, and is operative to generate a second fault signal responsive to the ability of the paper to be moved by the paper take-up roll drive despite non-operation of the printer drive."

4.3 According to the appellant (statement of grounds of appeal, page 10, third paragraph), the technical effect of the invention is to allow a distinction to be made between two different fault conditions: paper jams (described in the present description from page 2, line 21 to page 3, line 5) and paper breaks. The technical problem may therefore be seen as providing a system for detecting faults in a journal printer mechanism of an automated banking machine which can discriminate between paper jams and paper breaks.

4.4 According to the invention defined by claim 1, the paper testing arrangement is operative to test the ability of paper to be moved by the paper take-up roll drive responsive to both operation and non-operation of the printer drive. This is illustrated by the embodiment shown in Fig. 2 of the present application, in which a fault detection signal is generated by a testing arrangement involving a sensor 70 monitoring an encoder on the spindle of the take-up roll 18 (and not the supply roll as in D4). If the sensor indicates that the spindle is not moving despite the printer being operational, this is indicative of a paper jam, or

similar fault; if the sensor indicates that the spindle is moving despite the printer being non-operational, this is indicative of a paper break. The Board is therefore satisfied that the invention represents a solution to the posed problem.

- 4.5 Although the first embodiment of D4 would appear to be capable of generating a signal responsive to a fault, which may be either a paper jam or a paper break, there is no disclosure that it would be capable of distinguishing between these two faults, nor would this appear to be technically possible.

The Board sees nothing in D4 which would direct the skilled person to any solution of the posed problem, and certainly not to the solution of the distinguishing features of present claim 1, nor do these features appear to be disclosed in the other prior art cited in the "Summary of Facts and Submissions" of the contested decision.

5. *Claim 1 of the main request: Inventive Step starting from the second embodiment of D4*

- 5.1 The apparatus of the second embodiment of D4 functions according to a cyclic sequence, as explained in column 10, lines 53-64:

"In the second embodiment the operations of the printer drive mechanism 108 and the take-up roll drive mechanism 116 are coordinated so they operate in sequence. Specifically, the drive mechanisms are operated so that the printer drive mechanism moves the paper toward the gap 126 and the take-up roll 114, while the take-up roll remains stationary. This results in slack in the paper between the area where the

printer drive mechanism engages the paper and the take-up roll [Fig. 8]. After the printer drive has moved the paper, the take-up roll drive mechanism 116 moves the take-up roll 114 to remove the slack from the paper in the area between the printer drive mechanism and the take-up roll [Fig. 9]".

Hence, according to the normal functioning of this embodiment, when the printer drive mechanism is operational the take-up roll drive is not, and vice versa. By contrast, according to claim 1 of the present application, the combination of an operational printer drive mechanism and a non-operational take-up roll drive represents a malfunction which would result in the generation of the first fault signal.

5.2 Moreover, after a set number of lines have been printed (i.e. when the printer has become non-operational) the output of the detector 124 is checked (steps 88, 90 of Fig. 6). When functioning normally a slack condition should be detected, indicating the ability of the paper to be moved by the paper take-up roll to take up the slack. If so, no fault signal is generated (Detector Condition Change = Yes in Fig. 6) and the counter is reset to print the next set of lines (Step 92) in the following cycle.

Again, this is precisely the opposite of what is required by claim 1 of the present invention, according to which, the ability of the paper to be moved by the paper take-up roll drive despite non-operation of the printer drive is not normal and results in the generation of the second fault signal.

5.3 The Board does not see any plausible way for the skilled person to arrive at the subject-matter of claim

1 of the main request starting from the second embodiment of D4, as the two approaches appear to be fundamentally incompatible.

6. *Conclusions*

6.1 For the reasons given above, the Board judges that the apparatus of claim 1 of the main request involves an inventive step within the meaning of Article 52(1) EPC and Article 56 EPC 1973.

6.2 The corresponding method of claim 32 of the main request is novel and involves an inventive step for the reasons set out above *mutatis mutandis*, and the same conclusion applies to the computer readable medium of claim 54 which has computer readable instructions embodied thereon operative to cause a computer to carry out the inventive method of claim 32.

6.3 In view of the above conclusions it is unnecessary for the Board to examine the auxiliary requests.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the department of first instance with the order to grant a patent in the following version:

Claims 1 to 54 of the main request as filed with the letter dated 4 January 2022;
Description: pages 3, 9, 10, 31 and 38 filed with the letter dated 4 January 2022, and pages 1, 2, 4 to 8, 11 to 30 and 32 to 37 of the description as originally filed; and
Drawings: sheets 1/7 - 7/7 as originally filed.

The Registrar:

The Chairman:



S. Sánchez Chiquero

T. Häusser

Decision electronically authenticated