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D E C I S I O N
of 25 May 1994

Case Number: T 0357/92 - 3.2.4

Application Number: 89901701.6

Publication Number: 0348488

IPC: B65H 3/52, B65H 3/04

Language of the proceedings: EN

Title of invention:
Bottom scuff sheet separating device

Applicant:
Eastman Kodak Company

Opponent:
-

Headword:
-

Relevant legal norms:
EPC Art. 56

Keyword:
"Inventive step (yes)"

Decisions cited:
-

Catchword:
-

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Case Number: T 0357/92 - 3.2.4

D E C I S I O N
of the Technical Board of Appeal 3.2.4
of 25 May 1994

Appellant: Eastman Kodak Company
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Rochester
NY 14650 (US)

Representative: Blickle K. Werner, Dipl.-Ing.
Kodak Aktiengesellschaft
70323 Stuttgart (DE)

Decision under appeal: **Decision of the Examining Division 2.3.04.084 of the European Patent Office dated 5 December 1991 refusing European patent application No. 89 901 701.6 pursuant to Article 97(1) EPC.**

Composition of the Board:

Chairman: C. Andries
Members: S. Crane
J-P. Seitz

Summary of Facts and Submissions

I. European patent application No. 89 901 701.6 was refused by a decision of the Examining Division dated 5 December 1991.

II. The reason given for the decision was that the subject-matter of the claims then on file lacked inventive step with respect to the state of the art according to the following documents:

(D1) FR-A-2 432 461
(D2) GB-A-1 387 817.

III. An appeal against this decision was filed on 4 February 1992, the appeal fee being paid at the same time.

The Statement of Grounds of Appeal was filed on 6 April 1992. With this statement the Appellants submitted new Claims 1 and 2 for consideration by the Board.

IV. In a communication of the Board dated 8 February 1994 pursuant to Article 110(2) EPC it was indicated that these claims, subject to certain clarifying amendment, could form the basis for the grant of a patent.

V. In response to this communication the Appellants filed amended application documents on 19 March 1994. Further amendments to these documents were agreed in a telephone conversation with the rapporteur of the Board on 19 April 1994 (see Minutes).

Accordingly, the Appellants requested the grant of a patent on the basis of the following documents:

Claims: 1 filed on 19 March 1994, amended as agreed on 19 April 1994,
2 filed on 19 March 1994;

Description: pages 1 and 4 to 15 as originally filed,
pages 2 (with insert) and 3 filed on 19 March 1994, amended as agreed on 19 April 1994,
page 16 filed on 19 March 1994;

Drawings: sheets 1/8 and 3/8 to 8/8 as originally filed,
sheet 2/8 filed on 19 March 1994, amended as agreed on 19 April 1994.

Claim 1 is worded as follows:

"An original document handling mechanism for a document scanning or reproduction apparatus which scanner or reproduction apparatus has an exposure position and which document handling mechanism is capable of handling a variety of types and conditions of document sheets, said original document handling mechanism including;

feed means (43) located below and in frictional contact with the bottom of the received stack,

retard means (44, 45, 46, 47, 48, 49) positioned on top of said feed means at the leading edge of the stack to prevent double feeding along a path between said retard means and said feed means,

said retard means including at least one rotatable retard member (44, 45 or 46), which member is positioned to engage the edge of said received stack, and a brake (47, 48 or 49) for said retard member, which brake exerts a braking force upon rotation of the retard member (44, 45 or 46) sufficient to prevent rotation when two or more sheets are in said path, but permitting rotation when only one or no sheets are present in said path,

the coefficients of friction between the sheets to be fed and the feed means or the retard member, respectively, being greater than that between two adjacent such sheets,

characterized in that the feed means is a feed belt (43) and that the retard member (44, 45, 46) is supported by a rigid pivot arm (50, 51, 52), said pivot arm being pivotal about a pivot (54) located downstream of the retard member and spaced from the sheet path on the retard member side of said path by a distance greater than the spacing of the axis of rotation of the retard member from the sheet path."

Dependent Claim 2 relates to a preferred embodiment of the document handling mechanism according to Claim 1.

Reasons for the Decision

1. The appeal complies with the requirements of Articles 106 to 108 and Rule 64 EPC. It is therefore admissible.

2. *Formal allowability of the amended documents*

Present Claim 1 comprises in essence the features of original Claim 1 together with the features concerning the way in which the retard member is supported on a pivot arm, this arrangement being clearly described on pages 9 to 14 of the original application with particular reference to Figure 4 of the drawings.

Present Claim 2 corresponds in essence to a combination of the originally filed Claims 4 and 5.

The only amendments of substance to the description and drawings concern the evaluation of the closest state of the art.

There are therefore no objections to the amended documents under Article 123(2) EPC.

3. *State of the art*

3.1 Document D1 discloses a document handling mechanism for feeding document sheets from the bottom of a stack. The mechanism comprises a feed roller arranged below and in frictional contact with the bottom of the stack and a retard roller positioned at the leading edge of the stack for preventing double feeding of sheets between the feed roller and the retard roller. The coefficients of friction between the sheets to be fed and the feed roller or the retard roller, respectively, are greater

than the coefficient of friction between two such sheets and the retard roller is acted on by a brake which applies sufficient braking force to prevent rotation when two or more sheets are in the feed path, i.e. when the turning force transmitted to the retard roller from the feed roller is limited by the coefficient of friction between the sheets. The braking force is however less than that required to stop rotation of the brake roller when only one sheet is in the feed path.

3.2 Document D2 relates to a mechanism for feeding flat items, such as letters, from a stack whereby the stack is advanced by a feed belt towards a restraining roller positioned above the belt with its periphery just out of contact therewith. The restraining roller is mounted for rotation on support arms which are pivoted to a shaft located upstream of the roller, the support arms being acted on by a spring which urges the roller towards the belt. The bearing of the roller is filled with a high viscosity grease which restrains rotation of the roller. The roller therefore acts to retard all of the letters being fed but the retardation of the letter in contact with the belt is least so that this letter emerges first followed by the remainder of letters singly and in sequence. Since the high viscosity grease provides a negligible threshold level of static friction every letter passing between the roller and the belt imparts a small amount of low speed rotation to the roller, ensuring even wear of its surface.

3.3 The remaining documents cited in the Search Report and not referred to by the Examining Division in its decision are less relevant than documents D1 and D2 and need not be considered in detail.

4. *Novelty*

The subject-matter of present Claim 1 is distinguished from the closest state of the art disclosed in document D1 by the features specified in the characterising clause of the claim according to which the feed means comprises a feed belt and the rotatable retard member is mounted on a pivot arm in a particular manner.

In the document handling mechanism according to document D2 the rotatable retard member is not braked in the manner required by the preamble of present Claim 1 and the arrangement of the pivot arm on which the retard member is mounted does not correspond to that required by the characterising clause of the claim.

The subject-matter of Claim 1 is therefore novel.

5. *Inventive step*

The technical problem with which the present invention is concerned is the provision of a document handling mechanism which can reliably separate and feed single sheets from the bottom of a stack irrespective of the thickness and condition of those sheets.

It is generally known in the art, see for example page 13, second paragraph of the application, that belt feeds are more effective than roller feeds since they have a larger area of contact with the sheet to be fed. However, the presently claimed invention (in distinction to that considered by the Examining Division) does not reside merely in the replacement of the feed roller proposed in document D1 by a feed belt but in the combination of such a belt with a rotatable retard member which is pivotally mounted in a particular way. The arrangement of the pivot arm on which the retard

member is mounted is such that the force exerted on the retard member by sheets passing underneath it tends to pivot the pivot arm towards the feed belt, thus increasing the pressure of the retard member on the sheets and promoting its ability to retain the upper sheet in the event of a double feed. This effect is further enhanced in that the retard member will on pivoting depress the feed belt somewhat, this deflection of the belt increasing the area of contact between the uppermost sheet and the retard member.

There is nothing in the cited state of the art which could suggest to the person skilled in the art the combination of feed belt and pivotally mounted rotatable retard member as claimed. In document D1 the mounting of the retard member is not discussed in detail but would appear from the drawings to be by means of a guide which permits movement of the retard member along a line extending radially from the feed roller. In document D2 the retard member is indeed mounted on pivot arms, the pivot point of these arms is however upstream of the retard member and the line extending between the pivot point and the axis of rotation of the retard member would appear from the drawing to be parallel to the run of the feed belt.

Accordingly, the Board comes to the conclusion that the subject-matter of present Claim 1 cannot be derived in an obvious manner from the state of the art and therefore involves an inventive step (Article 56 EPC).

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 grant a patent on the basis of the documents specified in Section V above.

The Registrar: The Chairman:

N. Maslin C. Andries