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**Datasheet for the decision
of 26 July 2006**

Case Number: T 1291/04 - 3.5.02

Application Number: 89312470.1

Publication Number: 0376496

IPC: B07C 1/00

Language of the proceedings: EN

Title of invention:

Mail thickness measuring apparatus

Patentee:

Pitney Bowes, Inc.

Opponent:

Neopost Ltd

Headword:

-

Relevant legal provisions:

EPC Art. 56, 100(b)

Keyword:

"Disclosure - enabling (yes) "

"Inventive step (yes) "

Decisions cited:

-

Catchword:

-



Case Number: T 1291/04 - 3.5.02

D E C I S I O N
of the Technical Board of Appeal 3.5.02
of 26 July 2006

Appellant: Neopost Ltd
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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 9 September 2004
rejecting the opposition filed against European
patent No. 0376496 pursuant to Article 102(2)
EPC.

Composition of the Board:

Chairman: M. Rognoni
Members: M. Ruggiu
C. Holtz

Summary of Facts and Submissions

I. This is an appeal of the opponent against the decision of the opposition division to reject the opposition against European patent No. 0 376 496.

II. The following documents of the state of the art played a role in the appeal proceedings:

D1: EP-A-0 225 288 and

D5: EP-A-0 227 998.

III. Oral proceedings before the board took place on 26 July 2006.

The appellant (opponent) requested that the decision under appeal be set aside and that the European patent No. 0 376 496 be revoked.

The respondent (patent proprietor) requested that the appeal be dismissed.

IV. Claim 1 of the patent in suit as granted reads as follows:

"Apparatus for processing mail pieces comprising means (30) for supplying multiple mail pieces, a singulator (35) for separating individual mail pieces, means (32) for transporting mail pieces from the supplying means to the singulator, and means (8, 20) operatively connected to the singulator for measuring the thickness of mail pieces singulated thereby, characterised by means (48, 49) downstream of the singulator (35) for

transporting the single mail pieces to further processing, and means for varying the velocity of the transporting means (48, 49) downstream of the singulator (35) in accordance with the measured thickness of each mail piece processed."

Claims 2 to 8 are dependent on claim 1.

V. The appellant argued essentially as follows:

Claim 1 of the patent in suit clearly concerned an apparatus in which a plurality of mail pieces were transported at different velocities and the velocity of each mail piece was determined by its own thickness. The transporting means described in the patent in suit were not subdivided, so that the patent did not describe how to achieve different velocities for sequentially processed mail pieces. Furthermore, transporting a plurality of mail pieces at different velocities would necessarily result in collisions between them, unless provisions were made to increase the spacings between the mail pieces, which would slow down the apparatus and tend to reduce its performance, or to ensure that faster mail pieces waited until the processing of slower mail pieces was completed. The patent in suit did not propose any solution to this problem. The simultaneous processing of a plurality of mail pieces required a common velocity in order to avoid collisions. In particular, the velocity could not be controlled in accordance with the thickness of each mail piece, but rather had to be controlled in accordance with the thickness of the thickest mail piece in the apparatus. However, this was excluded by claim 1 of the patent in suit, which required varying

the velocity in accordance with the measured thickness of each mail piece processed. The proprietor submitted that the skilled person would exclude collisions between mail pieces by taking into account other parameters. However, these other parameters, which would replace the thickness of each mail piece in controlling the velocity of the mail pieces, were not disclosed in the patent in suit. Replacing an essential feature of claim 1 of the patent in suit by an undisclosed feature could not lie within the abilities of the skilled person. It was therefore apparent that claim 1 of the patent in suit contained features that prevented the apparatus from working properly, and that the skilled person was not in a position to carry out the claimed invention (Article 100(b) EPC).

The contested decision considered that the only new element of claim 1 of the patent in suit was the means for varying the velocity of the transporting means downstream of the singulator in accordance with the measured thickness of each mail piece processed. Document D1, in particular its abstract, disclosed an important part of that feature in addition to the other features of claim 1 of the patent, namely to control various machine functions in accordance with the thickness of mail pieces. The patent in suit itself admitted at column 1, lines 17 to 19, that it was known that heavier mail had to be processed more slowly than lighter mail and that the processing speed was an important parameter in a mail handling machine. It was also known to measure the thickness instead of the weight of a mail piece. It was obvious to the skilled person to apply the teaching of D1 to the transporting means, which clearly fulfilled an important function in

the apparatus. The skilled person would of course consider controlling the velocity of the transporting means so as to optimise it, because the velocity directly affected the performance, which was a parameter of paramount importance in marketing the apparatus. Therefore, the subject-matter of claim 1 of the patent was obvious to a skilled person in view of document D1. The situation was similar with respect to document D5. In the apparatus of D5, the thicknesses of mail pieces were measured at a singulating station and the spacings between the mail pieces adjusted in accordance with the measured thicknesses to avoid collisions between the mail pieces. The adjustment of the spacings between the mail pieces optimised the performance of the mail processing apparatus of D5. It appeared from page 18, lines 19 to 23 of D5 that performance could further be optimised by adjusting the velocity of the transporting means to the highest possible value at which no malfunction, such as tearing of the mail pieces, occurred. It was true that D5 indicated that the velocity of the transporting means did not vary after it had been adjusted to its optimum value. However, D5 taught to take the highest possible value of the velocity, independently of whether the spacings between the mail pieces were optimised. Therefore, the subject-matter of claim 1 of the patent in suit was obvious to the skilled person in view of D5 alone, or in view of D5 in combination with D1. Thus, the subject-matter of claim 1 of the patent in suit did not involve an inventive step in the sense of Article 56 EPC.

VI. The arguments of the respondent can be summarised as follows:

Claim 1 of the patent in suit actually defined an apparatus with a singulator, means connected to the singulator to measure the thickness of mail pieces and transporting means downstream of the singulator. Figure 4 of the patent showed an apparatus with these elements in which the velocity of a roller 48 acting on a mail piece could be controlled to vary in accordance with the measured thickness of the mail piece. The invention did not concern itself with the simultaneous processing of a plurality of mail pieces. Indeed, the description of the patent in suit referred at column 4, lines 14 to 20, to the processing of a single mail piece at a time. Thus, in the described embodiment, there was no possibility of collision between mail pieces. It was not necessary to consider a more complex case. However, the skilled person knew how to operate the machine properly in a more complicated environment. In particular, the description of the patent hinted at column 2, lines 48 to 56, at what might be done in a more complicated machine: the measured thickness might be used to select an appropriate flow velocity sequence or profile for the measured mail piece in its subsequent processing through the machine. Of course, the skilled person would attempt to avoid collisions and might make provisions for selecting different velocity profiles when a lighter piece followed a heavier one and when a heavier mail piece followed a lighter one. Therefore, the person skilled in the art had no difficulty in implementing the invention of the patent in suit.

Claim 1 of the patent in suit covered making any sensible variation of the velocity of means transporting a mail piece in accordance with its measured thickness. The prior art did not hint at having means for varying the velocity of the transporting means downstream of the singulator in accordance with the measured thickness of each mail piece processed. This feature of claim 1 of the patent in suit was therefore new. Column 1 of the patent in suit referred at line 6 to state-of-the-art machines. However, the statement that followed at column 1, line 9, was not a statement of prior art. It described something the inventors had realised in developing the apparatus of the invention. In particular, realising that heavier mail had typically to be processed more slowly than lighter mail in a high speed processing environment was part of the inventive insight. The inventors realised it was necessary to know the weight of the mail piece early and recognised that the thickness was a crude measure of the weight of a mail piece that was sufficiently good for the purpose of determining the velocity of the transporting means. It was clear that in document D1 the thickness of a mail piece was measured with a view to determining the content of the mail piece. D1 sorted the mail pieces in accordance with their thicknesses. Thus, in D1 the thickness was measured for determining the content of the mail pieces or sorting them, i.e. for a completely different purpose from the one of the invention of the patent in suit. Therefore, any thought that D1 suggested controlling the velocity of transporting means in accordance with the measured thickness was based on an *ex post facto* analysis of D1. Document D5 described a mail sorting machine in which the spacing

between mail pieces was varied in accordance with the measured thickness of a mail piece. The velocity v of the transporting means was constant. The passage at page 18, lines 19 to 23 of D5 suggested to make this velocity v as high as possible. However, this passage also taught that the velocity of the mail pieces could only be increased by a limited extent, so that this was not an effective way to improve the performance of the machine. Furthermore, D5 did not place the control of a mail piece in relation to its thickness. Rather, in D5, the thickness of a mail piece controlled the spacing to the following mail piece. The purpose of this was to have a spacing between mail pieces such that sufficient time was available to sort the mail pieces. Since D5 already suggested measuring the thickness of the mail piece in order to adjust the spacing, further reliance on D1 would be considered by a person skilled in the art only as far as this document related to a particular way of measuring the thickness of a mail piece. Thus, there was no documentary evidence in the prior art that the thickness of a mail piece could be measured to obtain an indication of its weight and no suggestion to vary the velocity of means for transporting a mail piece in accordance with the thickness of the mail piece. Therefore, the subject-matter of claim 1 of the patent involved an inventive step.

Reasons for the Decision

1. The appeal is admissible.
2. *Sufficiency of disclosure*

The patent in suit describes a singulator mechanism which functions to ensure that only a single piece of mail from a hopper receiving a stack of mail pieces will thereafter be processed at a time by a mail handling machine. The singulator mechanism includes a follower positioned on top of the singulated mail piece and connected to a sensor responsive to the follower's position. A thickness measuring sensor is thus associated with the singulator mechanism, whereby a thickness measurement is taken nearly simultaneously with the singulating action. Column 2, lines 33 to 40 of the patent in suit indicate that the measured thickness of a mail piece can be processed by a computer to control the velocity of the measured mail piece as it flows through the machine for subsequent sealing, weighing, stamping and sorting if desired. Column 2, lines 40 to 56 of the patent in suit indicate that in a preferred embodiment a binary number representing the measured thickness of a mail piece can be used to index into a lookup table for selecting an appropriate flow velocity sequence or profile for the measured mail piece in its subsequent processing through an automatic mail handling machine.

It is not contested that the means for supplying multiple mail pieces, the singulator and the means for measuring the thickness of the mail pieces singulated thereby, which are mentioned in claim 1 of the patent

in suit, are sufficiently described in the patent in suit for them to be carried out by a person skilled in the art. Furthermore, it is well known that means transporting mail pieces in a mail handling machine can be driven by electric motors and the skilled person is well aware of how to control the velocity of electric motors. Therefore, when a single mail piece is transported at any time in the machine, varying the velocity of the transporting means in accordance with the measured thickness of the mail piece does not entail any difficulty for the skilled person. When a plurality of mail pieces are simultaneously processed in the machine, the mail pieces can each be transported by a different transporting means to their respective further processing. There appears to be no difficulty to vary the velocity of at least some transporting means in accordance with the thickness of the single, individual mail piece it is transporting. Furthermore, it is immediately apparent to the skilled person that interferences between sequentially processed mail pieces should be avoided and the skilled person would take this into account when selecting the velocity of the means for transporting the single mail pieces to the further processing. As pointed out above, the patent in suit foresees the possibility of using a lookup table for selecting an appropriate flow velocity sequence or profile for the measured mail piece. The skilled person realises that the appropriate velocity sequence or profile for a particular mail piece might depend not only on the measured thickness of that particular mail piece but also on the velocity at which the preceding mail piece is transported and processed in the mail handling machine and thus on the thickness of that preceding mail piece. In such a case the

skilled person would have no difficulty to define the appropriate velocity profile, which could be included in the lookup table proposed in the patent in suit. In fact, this would be consistent with claim 1 of the patent in suit, which requires that the velocity of the transporting means be varied in accordance with the measured thickness of each (individual) mail piece processed. The board is therefore of the opinion that the patent in suit discloses the invention defined in claim 1 of the patent in suit in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art (Article 100(b) EPC).

3. *Novelty and inventive step*

- 3.1 Document D1 describes an apparatus comprising all the features of the pre-characterising portion of claim 1 of the patent in suit. The thickness of each individual mail piece is monitored and D1 indicates in its abstract, at column 3, lines 9 to 13, and at column 6, line 60 to column 7, line 2, that various machine functions are controlled in accordance with the monitored thickness. According to D1 these functions can include mechanical functions of the mail extraction process (see in particular column 8, lines 9 to 14 of D1) or a deflector, which is part of an envelope sorting apparatus and whose position is regulated in accordance with the monitored thickness of an envelope (see in particular column 5, lines 11 to 20 and column 8, lines 14 to 22 of D1). It is therefore apparent that the apparatus of D1 includes means downstream of the singulator for transporting the singled mail pieces to further processing. However, there is no mention in D1 of a relationship between the

monitored thickness of a mail piece and the velocity at which a mail piece is transported.

3.2 Thus, the subject-matter of claim 1 of the patent in suit differs from the prior art disclosed in D1 in that means are provided for varying the velocity of transporting means downstream of the singulator in accordance with the measured thickness of each mail piece processed. Thereby, the velocity of the means for transporting the single mail pieces to further processing can be adapted to a crude estimation of the weight of each mail piece, based on the thickness of the mail piece, which can increase the performance of a mail handling machine including an apparatus as claimed.

3.3 Document D5 concerns an arrangement for the successive delivery of singled mail pieces differing in their lengths, heights, thicknesses, weights and stiffness from e.g. a stack to a conveyor to achieve the greatest possible throughput, i.e. to transport as great a number of singled mail pieces as possible from a withdrawing device to a conveyor in a given time interval. The singled mail pieces are all transported on the conveyor at a constant speed v to the target location (see page 7, lines 4 to 6 of D5). D5 further indicates at page 18, lines 19 to 23 that the mechanical stress on the mail pieces makes a higher throughput through increasing the transport velocity v possible only to a limited degree. To increase the throughput at constant transport velocity v , the spacing between a mail piece and the preceding mail piece on the conveyor is varied in particular in accordance with the measured thickness of the preceding mail piece. According to D5 (see page 5, line 29 to

page 6, line 11), if the preceding mail piece is very long, high, and very thin (air cushion), its stacking time into a compartment is very long as compared to a thick, stiff and short shipment, which means that in this case a relatively large spacing should be selected so that the next mail piece going into the same compartment will not interfere with the proper stacking of the preceding mail piece. On the other hand, a smaller spacing may be selected if the preceding mail piece is short and stiff.

3.4 Thus, D5 discloses an apparatus having the features specified in the pre-characterising portion of claim 1 of the patent in suit and further comprising means downstream of the singulator for transporting the mail pieces to further processing. Although D5 teaches to adjust at the highest possible value the velocity v of means downstream of the singulator transporting simultaneously a plurality of mail pieces, it does not disclose to vary the velocity of the transporting means in accordance with the thickness of each (individual) mail piece processed.

3.5 The introductory portion of the patent in suit, at column 1, lines 6 to 23, states the following:
"State-of-the-art mailing machines can perform such automatic functions as handling mail of different sizes and thicknesses, envelope sealing, mail weighing, mail stamping, and mail sorting. In developing machines with such functions, capable of processing mail at high speeds of, for example, four or more pieces per second, it becomes important if not essential that the mail thickness is determined as soon as possible after the mail begins its flow sequence. Knowing the thickness

early is important because there usually is a relationship between mail thickness and mail weight, i.e., the thicker the mail, the more it weighs. Typically, heavier mail must be processed slower than lighter mail in a high speed processing environment. Hence, the weight of the mail allows the computer which is controlling the machine to slow the transport mechanisms when carrying heavy mail and speed up the transport mechanisms when carrying lighter mail." Thus, the indications that knowing the thickness is important because there is a relationship between mail thickness and mail weight and that the transport mechanisms should be slowed down when carrying heavy mail and sped up when carrying lighter mail are provided in the patent in suit in the context of the development of machines with certain functions capable of processing mail at high speed. From the statement in the patent in suit, there is therefore no reason to believe that these indications had been made available to the public before the date of priority of the patent in suit. Similar indications are also not contained in any of the cited prior art documents. In the absence of any convincing evidence that such information had been made available to the public before the priority date of the patent in suit, the board takes the view that it is not part of the state of the art in the sense of Article 54(2) EPC.

- 3.6 In summary, the state of the art does not contain any suggestion to increase the performance of an apparatus for processing mail pieces by varying the velocity of the means for transporting the single mail pieces to further processing in accordance with the measured thickness of each (individual) mail piece. Thus, the

board concludes that, having regard to the cited state of the art, the invention defined in claim 1 of the patent in suit, which includes this feature, is not obvious to a person skilled in the art. The subject-matter of claim 1 is therefore considered to be new in the sense of Article 54(1) EPC and as involving an inventive step in the sense of Article 56 EPC.

The subject-matter of claims 2 to 8, which depend on claim 1, is thereby also considered to be new and as involving an inventive step.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

U. Bultmann

M. Rognoni