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Datasheet for the decision of 3 December 2009

Case Number: T 0521/07 - 3.2.05

Application Number: 00913285.3

Publication Number: 1169571

IPC: B65H 3/04

Language of the proceedings: EN

Title of invention:
Sheet feeder apparatus and method with throughput control

Patentee:
BOWE BELL + HOWELL COMPANY

Opponent:
Pitney Bowes, Inc.

Headword:
-

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

Relevant legal provisions (EPC 1973):
-

Keyword:
"Extension of protection conferred by the claims - yes (main request, second to sixth auxiliary requests)"
"Extension beyond the content of the application as filed - no (first auxiliary request)"
"Novelty - yes"
"Inventive step - no"

Decisions cited:
G 0009/92

Catchword:
-

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Case Number: T 0521/07 **-** 3.2.05

D E C I S I O N
of the Technical Board of Appeal 3.2.05
of 3 December 2009

Appellant: (Opponent)
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Decision under appeal: **Interlocutory decision of the Opposition Division of the European Patent Office posted 5 February 2007 concerning maintenance of European patent No. 1169571 in amended form.**

Composition of the Board:

Chairman: W. Zellhuber
Members: H. Schram
M. J. Vogel

Summary of Facts and Submissions

I. The appellant (opponent) lodged an appeal against the decision of the Opposition Division posted on 5 February 2007 maintaining European patent No. 1 169 571 in amended form on the basis of the set of claims filed by the respondent (patent proprietor) on 18 January 2007.

The Opposition Division held that the grounds for opposition under Article 100(a) EPC (lack of novelty, Article 54 EPC, and lack of inventive step, Article 56 EPC), Article 100(b) EPC (insufficiency of disclosure, Article 83 EPC) and Article 100(c) EPC (subject-matter extending beyond the content of the application as filed, Article 123(2) EPC), and the objection raised by the appellant under Article 123(3) EPC (extension of the protection conferred by the European patent as granted) against the amended claims did not prejudice the maintenance of the patent in amended form.

II. Oral proceedings were held before the Board of Appeal on 3 December 2009.

III. The appellant requested that the decision under appeal be set aside and that the patent in suit be revoked.

The respondent requested as a main request that the appeal be dismissed, or, as an auxiliary measure, that the decision under appeal be set aside and that the patent in suit be maintained on the basis of any of the following documents filed during oral proceedings:

– first auxiliary request: claim 1 filed as second auxiliary request;

- second auxiliary request: claims 1 - 8 filed as third auxiliary request;
- third to sixth auxiliary requests: claims 1 - 7 filed as fourth to seventh auxiliary requests, respectively.

IV. Claims 1 and 2 as maintained by the Opposition Division read as follows:

"1. A method for feeding sheets comprising the steps of:

(a) providing a mixed supply of sheets;

(b) sequentially separating a sheet from said supply of sheets, wherein separating a sheet comprises feeding the sheet with a first speed for a period of time, and thereafter with a second speed, to create a gap between successive sheets, the first speed being lower than the second speed;

(c) determining the length of said separated sheet;

(d) feeding said separated sheet downstream;

(e) for the next sheet to be separated, providing a predetermined sheet gap size between the separated sheet and the next sheet to be separated dependent upon the length of said separated sheet, wherein providing the predetermined sheet gap size comprises adjusting the period of time during which the next sheet to be separated is fed with the first speed dependent upon the length of said separated sheet."

"2. A sheet feeder apparatus (1000) comprising:

(a) a magazine subassembly (100) for supporting a mixed supply of sheets (50) to be fed down a sheet

path and feeding said supply of sheets (50) towards said sheet path;

(b) a feed subassembly (300) positioned on one side of said sheet path and for separating the outermost sheet from said supply of sheets (50), wherein the feed subassembly (300) comprises a conveyor (335) selectively operable at a first speed and at a second speed, the first speed being lower than the second speed;

(c) a singulator subassembly (400), spaced across said sheet path from said feed subassembly (300), and for assuring that only the outermost sheet of said supply of sheets (50) is separated from said supply of sheets (50);

(d) a transport subassembly (700) for feeding said separated outermost sheet downstream for further processing; and

(e) a control system (600, C), which controls the feed subassembly (300) to operate the conveyor (335) at the first speed for a period of time, and thereafter with the second speed, to create a gap between successive sheets, wherein the control system (600, C) determines the length of the separated sheet and adjusts for a next sheet to be separated the period of time of operating the conveyor (335) of the feed subassembly (300) at the first speed to provide a predetermined sheet gap size between the separated sheet and the next sheet to be separated dependent upon the length of said separated sheet."

Claim 1 of the first auxiliary request (sole claim) reads as follows:

"1. A method for feeding sheets comprising the steps of:

(a) providing a mixed supply of sheets;

(b) sequentially separating a sheet from said supply of sheets, wherein separating a sheet comprises feeding the sheet with a first speed for a period of time, and thereafter with a second speed, to create a gap between successive sheets, the first speed being lower than the second speed;

(c) determining the length of said separated sheet;

(d) feeding said separated sheet downstream;

(e) controlling the size of the gap between sequential sheets based upon the length of said sheets by adjusting the speed at which the next sheet is fed based upon the length of the separated sheet,

characterised in that

adjusting the speed at which the next sheet is fed comprises switching between the first speed and the second speed; and

controlling the size of the gap comprises selecting a predetermined period of time during which the next sheet to be separated is fed with the first speed dependent from the length of the separated sheet."

Device claim 2 of the second auxiliary request differs from claim 2 as maintained in that the expression "*wherein the feed subassembly (300) comprises a conveyor (335) selectively operable at a first speed and at a second speed, the first speed being lower than the second speed*" in feature (b) has been replaced by the expression "*the feed subassembly (300) comprises a contiguous conveyor (335)*", in that feature (e) reads: "*a control system (600, C), which determines the size*

of the sheet separated from said magazine subassembly (100), the control system (600, C) adjusting the speed of the feed subassembly (300)," and in that the following feature is added at the end of the claim: "*characterised in that: the control system (600, C) adjusts the speed of the feed subassembly (300) by adjusting the speed at which the next sheet is fed comprises switching the contiguous conveyor (335) between a fixed lower speed and a fixed higher speed, and the control system (600, C) holds said speed at the fixed lower speed for a predetermined duration to provide a predetermined sheet gap size between the separated sheet and the next sheet to be separated dependent upon the length of said separated sheet.*"

Device claim 1 of the third auxiliary request is identical to claim 2 as maintained.

Device claim 1 of the fourth auxiliary request differs from claim 2 of the second auxiliary request in that the expressions "*the feed subassembly (300) comprises a contiguous conveyor (335)*" (cf. feature (b)) and "*switching the contiguous conveyor (335) between a fixed lower speed and a fixed higher speed*" have been replaced by the expressions "*wherein the feed subassembly (300) comprises a conveyor (335) selectively operable at a first speed and at a second speed, the first speed being lower than the second speed*" and "*switching between a first speed and a second speed, the first speed being lower than the second speed*", respectively.

The claims of the fourth and fifth auxiliary requests are identical.

Device claim 1 of the sixth auxiliary request is identical to claim 2 of the second auxiliary request.

V. The following documents in particular were referred to in the appeal proceedings:

D1 US-A 5,813,327

D7 US-A 4,541,624

VI. The arguments of the appellant, in writing and during the oral proceedings, can be summarized as follows:

Claims as maintained

In step (e) of claim 1 as maintained the provision of the predetermined gap size between the separated sheet and the next sheet was achieved by "adjusting the period of time" (similarly in step (e) of claim 2 as maintained: "adjusts ... the period of time"). There was no support in the application as filed for the feature that the period of time was adjusted. It was only disclosed that a predetermined period of time was selectable, see the paragraph bridging pages 14 and 15 of the application as filed (published version). Claims 1 and 2 as maintained thus contravened the requirements of Article 123(2) EPC.

The teaching of claim 1 as granted to control the gap size by adjusting the speed was replaced by an entirely different concept, namely to control the gap size by providing a variable dwell time in the feeder. The corresponding amendment (the expression "adjusting the speed" was replaced by the expression "adjusting the

period of time") was therefore unallowable under Article 123(3) EPC. The replacement of the expression "adjusts ... the speed" in claim 2 as granted by the expression "adjusts ... the period of time" was likewise unallowable under Article 123(3) EPC. With respect to claim 2 as granted there was an additional issue under Article 123(3) EPC. According to claim 2 as granted, providing a predetermined sheet gap size was achieved by the feature "the control system (600, C) adjusts the speed of the feed subassembly (300) and holds said speed for a predetermined duration". Whilst that way of operating the sheet feeder was a viable way to achieve a desired predetermined sheet gap size, it had no proper support in the application as filed. Claim 2 as maintained however claimed an entirely different way of operating the sheet feeder than the one claimed in claim 2 as granted, namely operating the conveyor (335) at the first speed for a period of time, and thereafter with the second speed, wherein the control system (600, C) adjusts that period of time (which was described on page 16, lines 14 to 20, of the application as filed (published version)). Evidently, adjusting the period of time for operating the conveyor at a first speed and thereafter switching said first speed to a second speed was not the same as adjusting ("setting") the speed of the conveyor for a predetermined duration. Amending in claim 2 as granted the way of providing a predetermined gap size between successive sheets was contrary to Article 123(3) EPC.

Claim 1 of the first auxiliary request

Document D1 disclosed a method for feeding sheets whereby the gap between mail pieces was controlled by sensing the length of a mail piece and adjusting the

speed at which the next sheet was fed. The adjustment of the speed was obtained by initially slowing down the sheet to 36 ips and then returning the speed to 40 ips. It was noticed that claim 1 of the first auxiliary request was not restricted to fixed first and second speeds, ie the first and second speed were taken from speed ranges and variable within said ranges. Hence there was no difference between the adjustment of the speed known from document D1 and the adjustment of the speed claimed in claim 1 of the first auxiliary request. The subject-matter of claim 1 of the first auxiliary request was therefore not novel with respect to document D1, Article 54 EPC.

Document D1 did not explicitly state that a constant velocity was maintained. A person skilled in the art would assume that slowing down the speed meant slowing down to a specific velocity and holding this velocity for a specific time, since this was the most straightforward method of achieving the desired result. Switching between a first and a second speed was also known from document D7, (see column 6, lines 10 to 20), which was cited in column 2, lines 6 to 19, of document D1. It followed that the subject-matter of claim 1 of the first auxiliary request did not involve an inventive step, Article 56 EPC.

Device claims of the second to sixth auxiliary requests

The objection raised against claim 2 as maintained, namely that the way claimed in claim 2 as granted of providing a predetermined gap size between successive sheets could not be replaced by a different technique for creating a gap between successive sheets, pertained to all requests which included a device claim.

VII. The respondent's arguments, in writing and during the oral proceedings, can be summarized as follows:

Claims as maintained

Claims 1 and 2 as maintained met the requirements of Article 123(2) EPC. A basis for the feature "adjusting the period of time" was page 15, lines 4 to 6, of the application as filed (published version), which showed that the controller applied an appropriate time adjustment depending on the size of the sheet. The feature "adjusting the speed at which the next sheet is fed based upon the length of the separated sheet" was still present in claim 1 as maintained, see features (b) and (e), where "adjusting the speed" was concretized as "feeding the sheet with a first speed for a period of time, and thereafter with a second speed". This also held for claim 2 as maintained.

Both claims met the requirements of Article 123(3) EPC. The feature "adjusting the speed of said feed subassembly (300) and holding said speed for a predetermined duration" in claim 2 as granted described how the next sheet was "held" for a selectable predetermined period of time to create a controlled gap between that sheet and the preceding sheet prior to "releasing" it into the transport stream. Claim 2 as maintained merely concretized the releasing step, in line with Article 123(3) EPC.

Claim 1 of the first auxiliary request

Document D1 did not disclose that separating a sheet comprised "feeding the sheet with a first speed for a period of time, and thereafter with a second speed, to

create a gap between successive sheets" and that adjusting the speed at which the next sheet is fed comprised "switching between the first speed and the second speed". The subject-matter of claim 1 of the first auxiliary request was thus new, Article 54 EPC.

The subject-matter of claim 1 of the first auxiliary request also involved an inventive step, Article 56 EPC. Selecting a predetermined period of time—during which the next sheet is fed with the fixed lower speed—allowed a more reliable and more simplified control of the gap between successive sheets than the direct speed control of the feeder assembly as known from document D1. The velocity control proposed in document D7 was based on slowing down and accelerating mail pieces, ie ramping, whereby the deceleration and acceleration rates had to be minimized, see column 7, lines 28 to 30, and lines 55 to 51. In document D1 it was stated that these fixed pitch systems, ie those described in document D7, suffer from disadvantages and drawbacks, see column 2, lines 13 to 14. The person skilled in the art would not combine the teachings of documents D1 and D7.

Device claims of the second to sixth auxiliary requests

The characterising portion of claim 2 of the second auxiliary request, which reads "the control system (600, C) adjusts the speed of the feed subassembly (300) by adjusting the speed at which the next sheet is fed comprises switching the contiguous conveyor (335) between a fixed lower speed and a fixed higher speed, and the control system (600, C) holds said speed at the fixed lower speed for a predetermined duration" comprises all the features of claim 2 as granted. The

additional features (underlined) merely defined the subject-matter of the claim in greater detail. Since no features of claim 2 as granted had been deleted, the requirements of Article 123(3) EPC were met. This applied also to the device claims of the third to sixth auxiliary requests.

Reasons for the Decision

MAIN REQUEST, SECOND TO SIXTH AUXILIARY REQUESTS

1. *Allowability of the amendments, Article 123(3) EPC*

Claim 1 as granted is directed to a method for feeding sheets. Its characterising part reads "*adjusting the speed at which the next sheet is fed based upon the length of the separated sheet.*"

Claim 2 as granted is directed to a sheet feeder apparatus comprising inter alia a feeder ("feed") subassembly and a singulator subassembly, which work together to separate sheets from a supply of sheets, and singulate the separated sheets by providing a predetermined sheet gap size between the separated sheet and the next sheet.

Since the path between the feeder- and singulator-subassemblies, and the sheet to be separated, have a certain length, the expression "the speed at which the next sheet is fed" in claim 1 as granted must be interpreted in the light of the disclosure of the patent as a whole, as the speed of the sheet while it runs through the feed- and singulator-subassemblies, ie

the speed v is a function of time, v(t), and not necessarily a constant speed. Indeed, in the exemplary embodiment of a sheet feeder according to the invention shown in Figures 1A to 4A and 1B to 4B and described in paragraphs [0011] to [0046] of the patent in suit, the operation of the sheet feeder is as follows: A sheet entering the feeder assembly 300 is "held" by the controller C, ie it is transported at a lower speed for a selectable predetermined duration, and then "released", ie the sheet is transported at a higher speed, cf. in particular paragraph [0036] of the patent in suit. The expression "adjusting the speed at which the next sheet is fed" in claim 1 as granted must therefore be interpreted as adjusting the speed profile v(t) at which the next sheet is fed".

The characterising part of claim 2 as granted reads "*the control system (600, C) adjusts the speed of the feed subassembly (300) and holds said speed for a predetermined duration to provide a predetermined sheet gap size ...*". The verb "adjusts [the speed of the feed subassembly]" in claim 2 as granted cannot be interpreted as "adjusting the speed profile of the feed subassembly" in view of the additional feature "and holds said speed". The control system thus adjusts (ie sets) the speed of the feed subassembly and holds that appropriately adjusted (now constant) speed for a predetermined duration. It is thus the speed that is adjusted rather than the period of time during which the sheet is conveyed (at a fixed speed).

Device claim 2 as maintained however comprises the feature "a control system (600, C), which controls the feed subassembly (300) to operate the conveyor (335) at

the first speed for a period of time, and thereafter with the second speed, to create a gap between successive sheets, wherein the control system (600, C) determines the length of the separated sheet and adjusts for a next sheet to be separated the period of time of operating the conveyor (335) of the feed subassembly (300) at the first speed ". According to that claim it is the period of time which is adjusted rather than the speed.

The expressions "at the first speed" and "at the second speed" refer to constant (fixed) speeds, whereby the ***first speed is lower than the second speed***, cf. feature (b) of claim 2 as maintained. Whilst the first and second speeds can be chosen in the range from 20 to 70 ips (inch per second) and from 110 to 120 ips (see paragraph [0036] of the patent in suit), respectively, this is not to say that the conveyor is operated with variable first and second speeds within the lower and higher speed ranges, respectively.

In the judgment of the Board, replacing the concept of providing a predetermined sheet gap size in claim 2 as granted, viz. "[***the control system (600, C)***] ***adjusts the speed of the feed subassembly (300) and holds said speed***" by another concept of providing a predetermined sheet gap size, viz. "[***the control system (600, C)***] ***controls ... to operate the conveyor (335) at the first speed for a period of time, and thereafter with the second speed, ..., wherein the control system (600, C) ... and adjusts ... the period of time of operating the conveyor (335) ... at the first speed***" (cf. claim 2 as maintained) extends the protection conferred by claim 2 as granted, contrary to Article 123(3) EPC.

The main request of the respondent is therefore not allowable.

In device claim 2 of the second auxiliary request and in device claim 1 of the third to sixth auxiliary requests an attempt is made to change the meaning of the expression "*adjusts the speed ... and holds said speed*" and give that expression the meaning given in claim 2 as maintained.

However, in the judgement of the Board, and as explained above, the concepts in claim 2 as granted and in claim 2 as maintained are entirely different. Any attempt to replace the concept of providing a predetermined sheet gap size in claim 2 as granted by a different concept extends the protection conferred by claim 2 as granted.

The second to sixth auxiliary requests of the respondent are therefore not allowable, Article 123(3) EPC.

FIRST AUXILIARY REQUEST

2. *Allowability of the amendments, Article 123 EPC*

Feature (b) of claim 1 of the first auxiliary request differs from feature (b) of claim 1 as granted in that the following feature has been added: "*, wherein separating a sheet comprises feeding the sheet with a first speed for a period of time, and thereafter with a second speed, to create a gap between successive sheets, the first speed being lower than the second*

speed". Feature (e) of claim 1 of the first auxiliary request includes features (e) and (f) of claim 1 as granted. The new characterising part of claim 1 of the first auxiliary request specifies that "*adjusting the speed at which the next sheet is fed comprises switching between the first speed and the second speed*" and that "*controlling the size of the gap comprises selecting a predetermined period of time during which the next sheet to be separated is fed with the first speed dependent from the length of the separated sheet*". A basis for these feature is the passage on page 16, lines 14 to 21, of the application as filed (published version). It may be noticed that the step in the characterising portion of claim 1 of the first auxiliary request "*adjusting the speed at which the next sheet is fed*" is still "*based upon the length of the separated sheet*", cf. new feature (e) of said claim 1.

Claim 1 of the first auxiliary request thus meets the requirements of Article 123(2) EPC.

Claim 1 of the first auxiliary request also meets the requirements of Article 123(3) EPC, since no features of claim 1 as granted have been deleted.

3. *Reformatio in peius*

Claim 1 of the first auxiliary request is not broader in scope than claim 1 as maintained by the Opposition Division. This claim does therefore not put the appellant in a worse situation than if it had not appealed (prohibition of *reformatio in peius*), see the

decision of the Enlarged Board of Appeal G 9/92 (= G 4/93), OJ EPO 1994, 875, point 2 of the Order.

4. *Objection of lack of novelty, Article 54 EPC*

Document D1 discloses (see Figure 1) a mailing apparatus 10 and method for transporting a mail piece comprising a conveyor apparatus 200, a singulator assembly 400, a feeder assembly 410 and a sensor assembly 500 for determining the length of a mail piece and the gap between said mail piece and the next mail piece. The mailing apparatus 10 can be operated in fixed pitch mode, fixed gap mode or straight (run) through mode, depending on the size of the mail piece and the length of the gap immediately following the mail piece (see Figure 2, and column 6, line 18, to column 7, line 27). In the fixed pitch mode, the envelope is slowed down and then returned to a speed of 40 ips (inch per second) before feeding the envelope into the conveyor apparatus while establishing the desired gap.
In contrast, claim 1 of the first auxiliary request requires "***feeding the sheet with a first speed for a period of time, and thereafter with a second speed, to create a gap between successive sheets, the first speed being lower than the second speed***", whereby the first and second speeds are fixed speeds, see point 1 above.

The subject-matter of claim 1 of the first auxiliary request is therefore new vis-à-vis document D1.

5. *Objection of lack of inventive step, Article 56 EPC*

Document D1 represents the closest prior art. This document discloses a method for feeding sheets, which are fed downstream with a fixed pitch, cf. the sequences E1 and E2 shown in Figure 3.

Claim 1 of the first auxiliary request relates to a method for feeding sheets, which may be of different lengths, and are fed downstream, whereby the gap between one sheet and the next sheet is based on the length of the sheet. Since a larger gap is introduced for a short sheet (cf. the last sentence of paragraph [0017] of the patent in suit), this opens up the possibility to feed the sheets with a fixed pitch (cf. the last sentence of paragraph [0039] of the patent in suit), although claim 1 is not restricted to that.

The subject-matter of claim 1 of the first auxiliary request differs from the method for transporting a mail piece known from document D1 operated in the fixed pitch mode (and assuming that the measured gap is smaller than the desired gap) in that the way the speed at which the next sheet is fed is adjusted involves switching—after a predetermined period of time—the conveyor speed from a fixed lower speed to a fixed higher speed (rather than slowing down the conveyor and then returning to full speed with a view of establishing the desired gap as taught in column 7, lines 51 to 56, of document D1).

Whilst document D1 teaches that the envelope must be slowed down and then speeded up, ie returned to a speed of 40 ips before feeding the envelope into the conveyor

apparatus, the actual timing that is needed to achieve a desired gap between successive mail pieces is not disclosed in document D1.

The person skilled in the art trying to carry out the invention described in document D1 is hence confronted with the problem of how to create a fixed pitch (or how to create the desired gap) using the variable speed of the conveyor belt of the feeding assembly relative to the speed of the transport assembly. An obvious—because simple—possibility is to operate the conveyor belt at a lower speed for a certain period of time and then at a higher speed, in order to achieve the desired gap. This mode of operation has in fact been described for the same purpose in the prior art, see document D7, column 6, lines 10 to 20.

In the judgment of the Board, the person skilled in the art starting from the method for feeding sheets known from document D1 and seeking to create a desired gap between successive sheets would apply the teaching known from document D7 and thereby arrive at the claimed invention.

Consequently, the subject-matter of claim 1 of the first auxiliary request does not involve an inventive step, Article 56 EPC.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The patent is revoked.

The Registrar: The Chairman:

D. Meyfarth W. Zellhuber