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D E C I S I O N
of 7 November 1996

Case Number: T 0081/94 - 3.4.1

Application Number: 83112358.3

Publication Number: 0111316

IPC: G07B 17/02

Language of the proceedings: EN

Title of invention:
Apparatus and methods for controlling firmware branch points in an electronic postage meter

Patentee:
PITNEY BOWES INC.

Opponent:
Francotyp-Postalia Aktiengesellschaft & Co.

Headword:
-

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

Keyword:
"Support from application as filed (yes)"
"Inventive step (no)"

Decisions cited:
-

Catchword:
-

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Case Number: T 0081/94 - 3.4.1

D E C I S I O N
of the Technical Board of Appeal 3.4.1
of 7 November 1996

Appellant: (Opponent)
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Decision under appeal: **Interlocutory decision of the Opposition Division of the European Patent Office posted 30 November 1993 concerning maintenance of European patent No. 0 111 316 in amended form.**

Composition of the Board:

Chairman: G. D. Paterson
Members: Y. J. F. Van Henden
U. G. O. Himmler

Summary of Facts and Submissions

I. European patent No. 0 111 316 was granted to the Respondent. This patent comprises fourteen claims, those numbered 1 and 7 being independent claims and the remaining claims 2 to 6 and 8 to 14 being respectively appended to claim 1 and to claim 7.

II. The Appellant filed an opposition to the European patent on the grounds mentioned in Article 100(a) EPC, taking the view that, having regard to the disclosure in documents

D1: US-A-4 286 325,
D2: R. Münchrath: "Tendenzen der Minicomputer-Entwicklung", Electronik 1973/10, pages 345 to 352, and
D3: US-A-4 053 735,

the patented subject-matter lacked both novelty and inventiveness. In later submissions, the Opponent (Appellant) also referred *inter alia* to the documents

D4: Lexikon der Mikroelektronik, IWT Verlag, Munich 1978, pages 36, 37, 96, 97, and
D5: R.-D. Klein: "V24-Interface", Die Mikrocomputer Zeitschrift, 1981/4 (November-December), pages 34 to 38.

III. At the conclusion of oral proceedings held on 11 November 1993, the Opposition Division decided to maintain the European patent in amended form with new independent claims 1 and 7 filed during said proceedings and forming the basis of an auxiliary request, the remaining claims of the patent being unchanged.

Said independent claims 1 and 7, read as follows:

1. A method of controlling firmware branch points in an electronic postage meter, comprising the steps of:

storing a program in ROM means (14) for operation of the electronic postage meter; the program including at least one firmware branch point and being such that a different part of the program is accessed in accordance with each branch from the or each branch point;

providing a non-volatile memory means (24), for storing critical accounting data during said operation; and

storing in the non-volatile memory means at least one data bit external to the stored program, characterized in that the or each said data bit corresponds to selection of a particular branch of the program at a particular branch point; and

said particular branch of the program is selected for use in operation of the meter in accordance with the relevant data bit, so that the program is configured thereby.

7. Apparatus for carrying out the method of claim 1 comprising:

ROM means (14) storing a program for operation of the electronic postage meter,

said program including at least one firmware branch point and being such that a different part of the program is accessed in accordance with each branch from the branch point; and

non-volatile memory means (24) having addresses therein for storage of information including critical accounting data;

characterised by:

at least one data bit for reconfiguring the program stored in a specified address of said non-volatile memory means (24), the or each data bit corresponding to a particular branch of the program at a particular branch point; and

means (10, 12) interconnecting said ROM means (14) and said non-volatile memory means (24) for providing communication therebetween to control the or each firmware branch point to cause access to the branch of the program selected in accordance with the associated data bit present in said non-volatile memory means (24).

IV. The Opponent lodged an appeal against the decision of the Opposition Division, requesting that said decision be set aside and that the European patent be revoked.

V. In a communication accompanying a summons to attend oral proceedings, the Rapporteur of the Board informed the parties that, according to his preliminary view, the independent claims 1 and 7 of the European patent as amended during the oral proceedings of 11 November 1993 did not involve an inventive step.

VI. In a letter dated 27 September 1996, the Respondent requested that the appeal be dismissed and that the decision of the Opposition Division be upheld or, subsidiarily, that the European patent be maintained on the basis of an auxiliary set of fourteen claims filed with said letter.

With respect to claim 1 according to the Respondent's main request, the first claim of the auxiliary set is distinguished in that the definition of the second step restricts the non-volatile memory means (24) to a "rewritable semiconductor" non-volatile memory means (24), and in that the complement "to satisfy the requirements of a particular postal system" has been added at the end. Claim 7 of the auxiliary set is distinguished over claim 7 according to the main request in that "rewritable, semiconductor" has been inserted at the beginning of the clause defining the non-volatile memory means (24), and in that the complement "and to configure the program to satisfy the requirements of a particular postal system" has been added at the end. The remaining claims 2 to 6 and 8 to 14 of the auxiliary set are identical to those of the European patent as granted.

VII. During oral proceedings held on 7 November 1996, the parties maintained their requests.

VIII. In support of its request, the Appellant argued in substance as follows:

The subject-matter of claim 1 according to either requests of the Patentee lacks disclosure in the patent application as filed. In the latter, it is indeed nowhere stated that the external data bit should be stored in the non-volatile memory containing the critical accounting data and, in claim 1, the reference (24) was inserted later. An assessment of inventive step based on the consideration of such a feature not originally disclosed may not be accepted. Likewise, the argument that only the manufacturer would have the possibility of reconfiguring the program does not find support in the application as filed. It is indeed not stated there that the memory in which a special bit is stored would be the non-volatile memory

containing critical accounting data during operation. This is actually the reason why, in its reply to the Examining Division's first action, the Patentee submitted that "the operating program of the meter can be modified by external agency such as an operator replacing or reprogramming the non-volatile memory chip". Anyway, the advantage of addressing thereby more customers is also afforded by the means disclosed in document (D5).

As regards inventiveness, the closest prior art is known from document (D1), in which the features recited in the pre-characterising part of claim 1 are disclosed in combination. In column 2 of that patent specification, lines 55 to 59, the opportunity of adapting franking machines to national regulations is clearly mentioned. Considering that the proposed versions of claim 1 do not state up to which point the program should be modified, document (D1) thus reveals the purpose to be achieved by the invention and so, its relevance is not questionable. Furthermore, the possibility of choosing between branches of a program is disclosed in column 10, lines 3 to 35. According to document (D5), such purpose can be achieved by means of a switch, whereby only one branch of the generic program is selected at a time. Each position of that switch may thus be considered as a data bit corresponding to the selection of a particular branch of program at a branch point. Finally, no inventive step can be perceived in storing both the reconfiguration bit and the critical accounting data in the same non-volatile memory, nor in the last clause of claim 1, for it repeats the preceding clause. Since postage meters exist, it is indeed common practice to enclose in a sealed envelope all parts of relevance for fraud prevention, and furthermore, there is no reason to increase the number of non-volatile memories in the present case.

IX. The Respondent's argumentation may be summarized as follows:

According to prior art, the firmware program of a postage meter is stored in a PROM by burning cells thereof. To satisfy different postal regulations, a respective PROM should be provided for each separate country. As a matter of fact, it had never been recognised that a single generic operating program could be used for all countries. In embodiments of the invention, an extensive standardised program comprising selectable sub-routines may be provided, any of said sub-routines satisfying the peculiar postage regulations of a related country. As a result, no new PROM has to be burnt for each country and, furthermore, it becomes possible to configure franking machines at the final stage of their production. This and other advantages of a generic program had previously not been recognised.

The invention actually involves two steps, namely: (i) causing the CPU to fetch one or more bits from the non-volatile memory and (ii) programming the latter to store the selected bit(s) identifying the sub-routine to which the basic program must branch. Storing the identifying bit(s) in the non-volatile memory ensures security, since the user has no access to that memory. The external data bit causes the program to follow a particular branch, so that portions of the stored program will be used only when said bit is present in the non-volatile memory. This technique cannot be derived from document (D1). It cannot be derived from document (D2) either, for it is not stated there that the status flip-flop storing a bit external to the program should be non-volatile, nor from document (D5). Besides, no selection of a particular branch of a program in accordance with a relevant data bit is possible. The Appellant also argued that the branching

operation carried out in response to an external data bit would be no more than a conditional jump command. In the prior art, however, such jumps are always conditional upon parameters which may be changed either by the program or by external events during operation of the program. No suggestion to permanently reconfigure a program by using such a jump command is consequently given. Furthermore, the Appellant did not supply evidence that, for a skilled person, it would be matter of routine to alter the configuration of a program by testing a bit stored in an external non-volatile memory. The invention is based on the recognition of new technical problems and, without previous knowledge of its basic concept as outlined above, a skilled person starting from the teachings of documents (D1, D2 and D4) would not arrive at it in an obvious manner.

As regards the Appellant's objection under Article 123(2) EPC, the specification as originally filed clearly indicates that only one non-volatile memory is provided. In fact, the block (104) of Figure 2b only contains control logic for the non-volatile memory (24a). Moreover, it is stated there that the memory (24) stores critical postage data when the postage meter is not energized. Likewise, the part of the description relating to Figure 3 shows that only the non-volatile memory (24) is meant.

X. At the conclusion of the oral proceedings, it was announced that the decision of the Opposition Division is set aside and that the European patent is revoked.

Reasons for the Decision

1. The Board agrees with the Appellant that the description as originally filed does not disclose unambiguously that, in the non-volatile memory (24) provided for storing critical accounting data during operation of the postage meter, at least one data bit external to the program stored in a ROM for operation of the meter is stored for selection of a particular branch of said program. Nevertheless, this feature is explicitly mentioned in claim 9 as originally filed. Therefore, at the filing date of the patent application corresponding to the patent in suit, any skilled person reading the application would have understood that said feature belongs to the invention.

   The Board consequently shares the respondent's view that the requirements of Article 123(2) EPC do not form a bar to the allowability of claim 1 according to the main and auxiliary request.

2. Document (D1) discloses a system and a method for computing domestic -i.e. US- and international postage- see the title. According to said method, an electronic postage meter is operated following a program -see column 5, lines 22 to 26; note also that, in the sentence bridging columns 3 and 4, Figures 18 through 21 are said to be a flow chart of the postage computation routine which is employed in calculating both domestic and international postage accounts. The processor (10) of the postage meter comprises memories (154, 162, 168, 172) which all are said to be "ROM/RAM/IO devices". Nevertheless, in lines 64 to 66 of column 13, it is stated that the data defining the various rate chart structures is stored in major blocks of the programmable ROM of the system processor. The method disclosed in document (D1) thus comprises the

step of storing a program in ROM means for operation of the electronic postage meter. Besides, from the further statement that Figures 28 through 30 taken together are a flow chart of the routine for selecting the appropriate rate chart during computation of international postage amounts -see column 4, lines 19 to 22- it can be inferred that said program includes at least one firmware branch point and is such that "a different part of the program is accessed in accordance with each branch from the or each branch point", whereby "the program is configured to satisfy the requirements of a particular postal system".

One of the peripheral devices (24) controlled by the system processor (10) of the postage meter is a floppy disk unit or a magnetic tape unit "for providing magnetic record storage of the system transactions" - see the sentence bridging columns 4 and 5. Such a device is a "rewritable non-volatile memory means" and it is used for storing critical accounting data during operation of the postage meter. Thereby, data bits external to the program stored in the ROMs (154, 162, 168, 172) are stored in said non-volatile memory means.

In the Board's view, therefore, the features mentioned in the pre-characterising part of claim 1 according to the Respondent's main requests are disclosed in combination in document (D1). The same conclusion applies to claim 1 according to the Respondent's auxiliary request, except that document (D1) does not teach to use semiconductor non-volatile memory means.

The parties did not contest that.

3. Having now regard to the second characterising clause of claim 1 according to the Respondent's main request, it is obvious that, if bits stored in a memory correspond to the selection of related branches of a

program, no possibility is offered to select said branches of the program otherwise than in accordance with the relevant data bit. Considering furthermore that the selection of a particular branch of the program at a particular branch point necessarily results in a particular configuration of the program, the Board consequently agrees with the Appellant that the second characterising clause of the claim is implicitly contained in the preceding clause.

4. Therefore, the Board takes the view that the method according to the Respondent's main requests is novel in that (i) the data external to the stored program and corresponding to the selection of a particular branch of the program at a particular branch point is a data bit and in that (ii) said data bit is stored in that non-volatile memory where, during operation of the franking apparatus, the critical accounting data are stored.

With respect thereto, claim 1 according to the Respondent's auxiliary request furthermore involves the additional features that (iii) the non-volatile memory means is a semiconductor memory. (It may indeed not be contested that, when carrying out the method derivable from document (D1), the selection of a particular branch of the program and the resulting configuration of the program satisfy the requirements of a particular postal system.)

5. Postage meters have to be adapted to the needs of their users. In particular, they have to provide the possibility of franking letters and parcels to be sent to various destinations, whereby account shall be taken of the weight and dimensions of such objects and, furthermore, of the place of destination. It is thus clear that the sequence of elementary operations to be made while calculating postage fees is liable to vary

from one case to the other. As a matter of fact, the existence of such differences is implicitly evidenced by the title of document (D1). A system for computing **domestic** and **international** postage, hence having to fulfil at least two separate tasks, would indeed be superfluous if international postage fees were to be calculated exactly in the same way as domestic postage fees.

In addition to the preceding, a permanent concern of manufacturers is to open up new markets, hence to design their products such that they can be sold in as many countries as possible. In the case of postage meters, this entails the need to provide for easy adaption of the programs to, *inter alia*, the particular currency unit on the basis of which postage fees have to be calculated. Anyone knows that considerable differences in purchasing power exist between the various currencies -there being accordingly rates of exchange- and, at least up to a quite recent period, there have been countries where currency units were not subdivided according to the decimal system. (As a matter of fact, if it had not yet been known -e.g. from document (D1) -that programs comprising branch points were used for computing postage fees, these considerations would have made obvious to the skilled person that providing the possibility to select appropriate branches of program was desirable.)

6. The Respondent submitted that, in order to make a postage meter suitable for use in any one of a plurality of countries from which letters and/or parcels have to be mailed, a skilled person would have stored in separate ROMs as many programs as there are such countries. In that case, however, any of said programs would constitute a particular branch of a general program comprising all of them. Furthermore, no

skilled person would have contemplated such an uneconomic solution, and the less so as storing a single general program by burning cells of a programable ROM is cheaper than storing in a plurality of chips programs exhibiting minor differences. Besides, the claimed advantage of configuring franking machines at the final stage of their production is not necessarily offered, for postal regulations are liable to be changed at any time.

While elaborating a general program to be stored in a ROM of a postage meter, however, a skilled person would readily have been aware that, because of the differences in purchasing power of the various currencies, the possibility of frauding could eventually be offered to the users. For instance, if no appropriate measure were taken to prevent that, a user might select a wrong branch of the program in order that the fees he has to pay be calculated on the basis of a currency having a higher rate of exchange than that of his own country. Such a fraudulent operation could also be performed by error. Therefore, if the microprocessor of a postage meter already comprises a non-volatile memory to which the user has no access, especially the non-volatile memory in which critical accounting data are stored during operation of the postage meter, any person skilled in the art of making and programming such devices would consider as obviously relevant to store in that memory the data external to the stored program and corresponding to the selection, at particular branches points, of particular branches of the program that the user is not authorized to select by himself. Finally, from document (D5), it is clear that any such data could reduce to a simple data bit, for any of the two positions of the commutator represented there in Figure 2 is such a date bit -see also page 34, lines 28 to 38 of the right hand column.

7. In the Board's judgment, therefore, a method of controlling firmware branch points in an electronic postage meter as defined by claim 1 according to the Respondent's main request lacks an inventive step. The same conclusion applies to the subject-matter of claim 7 according to that request, for the apparatus covered by said claim only comprises the specific means needed to carry out the steps of said method.

8. Therefore claims 1 and 7 according to the Respondent's main requests are not allowable -EPC, Article 52(1) in conjunction with Article 56 -and said request has to be rejected.

9. The Respondent did not suggest any reason why a skilled person would not envisage the use of a semiconductor non-volatile memory in a postage meter, or that the provision of such a memory would achieve unexpected effects. In the Board's judgment, therefore, the provision of a semi-conductor non-volatile memory in an apparatus for carrying out the claimed method is merely a choice between equivalent components and does not involve any inventive step.

10. Therefore, claims 1 and 7 according to the Respondent's auxiliary request also lack an inventive step. They consequently are not allowable and said auxiliary request has to be rejected -EPC, Article 52(1) in conjunction with Article 56.

Order

For these reasons it is decided that:

1. The decision of the Opposition Division is set aside.

2. The European patent is revoked.

The Registrar: The Chairman:

M. Beer G. D. Paterson