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(54) **Method for processing postal items**

(57) Method for processing postal items, during which these items are collected and distributed, and in which the service area is divided into geographically distinct areas, each having a regional sorting centre. The postal items from the service area of a regional sorting centre, as well as those from the other sorting centres and which are destined for the service area of the sorting centre concerned, are collected in said sorting centre and distributed therefrom within the own service area and over the other sorting centres. The invention relates to the co-operation between the regional sorting centres, both in the form of physical transport and in the form of information exchange.

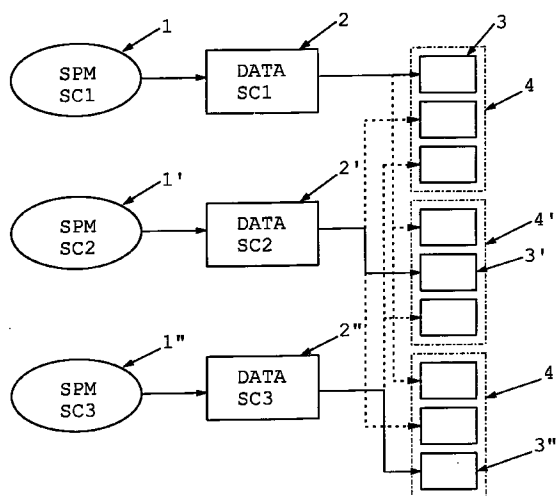


Fig. 1

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## Description

### A. Background of the invention

The invention relates to a method for processing postal items, during which these items are collected and distributed, comprising the following steps:

- deriving, with the aid of first means, destination information from the postal items to be processed;
- sorting postal items in a number of compartments of sorting machines, in dependency upon the destination information which is derived from the postal items, the sorting taking place in a number of consecutive sorting runs;
- storing the destination and control information in storage means and reading out this information at suitable points in time;
- assigning, with the aid of control means, couplings per sorting run according to data which are temporarily stored in the storage means, preferably in the form of tables, and with that are valid for a sorting run, between:
  - a. first means, sorting machines and storage means,
  - b. destinations or groups of destinations on the one hand, and compartments in sorting machines on the other hand,

in which the coupling is related to the exchange of information and to physical transport.

Such a method is known from EP 0 065 715 [Ref. 1].

In the method according to this prior art technique, use is made of tables for assigning compartments in sorting machines to destinations or groups of destinations, and also for assigning, at suitable points in time ("scheduling"), means, such as sorting machines and reading equipment, for performing separate tasks in the sorting process. This allocation occurs in dependency upon the phase of the sorting process and of the kind and quantity of the mail which is to be processed.

The prior art method is related to collectedly and distributively processing postal items in a sorting centre. In a postal system which is required to service an extensive area, such as a whole country, the mail will have to be processed in a relatively large number of such sorting centres. For the problem of the mutual co-operation between the various sorting centres, both in the form of physical transport and in the form of information exchange, no solution is provided in [1].

### B. Summary of the invention

With a method according to the invention, it is sought to eliminate the above-mentioned objections, namely by including therein the co-operation between a

number of sorting centres. A method according to the invention is thereto characterised in that [characteristic Claim 1].

- The first part of the characteristic is related to physical transport from and to the various sorting centres, and the second part to the information exchange associated therewith. The manner of information exchange according to the invention offers the following advantages:
  - the information stream between the sorting centres is restricted, since each sorting centre, besides inputting in its own storage means, need send to the other sorting centres only the data associated with its own service area;
  - the responsibility for implementing the necessary modifications in data, in the correct manner and at the suitable point in time, is uniquely determined, since each sorting centre performs these modifications independently for its own service area;
  - insofar modifications in data are concerned which have no effect across the borders of the various service areas, no co-ordinating organ is required which receives from each sorting centre the applicable modifications in data for the related service area, checks the data from other sorting centres for consistency, and distributes the resulting data collections over the various sorting centres;
  - the various sorting centres are no longer dependent upon each other when carrying out organisational modifications, such as changes in categorisations of end products.

In a preferred embodiment of the invention, the data for the assignment of couplings, as far as the destination information per intermediate product for the own service area of a sorting centre is concerned, is derived from the data related to the end products for said sorting centre. In other words, the list of data for the intermediate products destined for the own service area, the "own intermediate products", is compiled on the basis of the lists of data for the "own end products". Since a sorting centre is responsible for its own end products, the various sorting centres are independent of each other as far as the management of data is concerned, insofar modifications are concerned which do not cross the borders of the service areas.

### C. Reference

- [1] EP 0 065 715 Postal matter sorting method and system

### D. Short description of the diagram

The invention will be further explained by means of a description of an exemplary embodiment, where reference is made to a diagram in which the only figure is a schematical representation of the manner in which

information is exchanged between various sorting centres, for the benefit of the first sorting run, by a method according to the invention.

#### E. Description of an exemplary embodiment

The method according to the invention finds application in the processing of postal items, where "processing" is taken to mean: collecting in one of a number of regional sorting centres and therefrom, dependent upon the destination, distributing within the service area of such a sorting centre and over the other sorting centres.

The processing of postal items in general, and the processing of letter mail in particular, comprises the collection, for example from mail boxes on the street or in post offices, sorting according to destination, the transport and the distribution, mainly by delivery personnel, over delivery points such as home addresses. The processing of letter mail is directed towards sorting and transporting the mail in such a manner that said mail is available on time. "On time" is taken to mean that a portion of the daily mail stream having a common characteristic is always processed early enough in one of the successive processing stages to be ready for the next processing stage and finally arrives timely at the place of destination. Inter alia, characteristics of a portion of the mail stream can be:

- destined for delivery at delivery points, such as home addresses or office addresses, by delivery personnel on their daily delivery rounds;
- destined for post office boxes in post offices or postal agencies;
- destined for reply-paid numbers;
- destined for early or late delivery on one day;
- destined for far-off and/or difficult to reach destinations, so that long transport times, and possibly transport on a once-per-day-only basis, must be taken into account, or destined for destinations close by which can be serviced with mail several times a day.

One can refer to these as the logistic characteristics of the mail stream.

The daily processing of the mail stream starts with the collection in a regional sorting centre of the postal items from the own service area, together forming an initial product. From each postal item of this initial product the destination information is derived, either by machine recognition of the address or by the reading and coding of the address by operating personnel, or by machine reading of codes applied by the sender. On the basis of the destination information or of information supplied with an incoming portion of the mail stream, the initial product can be divided, dependent upon the logistic characteristics, into a number of intermediate products. If the intermediate products are to be obtained in one sorting run, the number of intermediate

products is determined by the number of hopper compartments of the sorting machines used. In the current situation in the Netherlands, this number is 200. The number of end products, where an end product can be taken to mean a delivery route, a post office box number or a reply-paid number, amounts to approximately 25,000, so that an intermediate product comprises 125 end products on average. The fact is emphasised that the categorisation in intermediate products takes place on the basis of logistic characteristics of the end products.

In the method for mail processing according to the invention, each of the regional sorting centres independently determines the logistic characteristics of the end products which are destined for the own service area, and also carries out modifications therein on its own. Such modifications can be the result of, for example, changing the number of delivery points in one or more delivery routes in connection with housing demolition or new housing, or of changes which are considered to be necessary in the organisational structure of a sorting centre. In a situation in which modifications within a service area of a sorting centre must be passed on to a central management organ and can only be effected after a modified and checked version of the total file of processing data, applicable for the entire country, has been received back, a sorting centre can not determine the time of implementation of the modifications on its own, and the responsibility for timely maintaining the file of processing data in the correct way is not clear. This plays a role inter alia when it is found that modifications which are foreseen can not be implemented, or can only be implemented at a later point in time. As a result of the way in which the file with processing data is managed, the method according to the invention does not have these drawbacks.

In the only figure, (1) is a Sorting Plan Management system (SPM) in sorting centre 1. In the exemplary embodiment, diagrammatically shown in the figure, three sorting centres are assumed: SC1, SC2 and SC3. Each sorting centre has at its disposal one SPM: (1) (1') or (1''). The, for the rest, known function of an SPM is to supply files (2), (2') and (2'') with data necessary for managing the means which the related sorting centre has at its disposal, such as the timely deployment of suitable sorting and transport means and the assignment of compartments to destinations. The files are created or modified respectively on the basis of data on the means which are present, the categorisation of destinations which is applicable, the transport and sorting times and so on, said data being valid for the related sorting centre and being entered there. The file (2) for sorting centre SC1 thus comprises:

- the data for the own intermediate products, the desired result of the first sorting run, carried out on the initial product and with destinations in the own service area;
- the data for the own end products, such as delivery

routes and series of post office boxes in the own service area;

- the postal codes of the own end product.

As already mentioned, the data for the own intermediate products are determined on the basis of the logistic characteristics of the own end products. That is to say that the number of end products, intended for destinations within the service area of the related sorting centre, is divided into the number of intermediate products which must become available as the result of the first sorting run; in the current situation in the Netherlands, this entails approximately 200 intermediate products. Each of said intermediate products has common logistic characteristics, such as the latest point in time at which the intermediate product must be available, or a frequency of discharge from the sorting centre (for example dependent upon the transport times to the final destinations and upon the volume of the mail stream to said final destinations).

In the figure, (4) is a diagrammatic representation of storage means for management purposes, in which the data for the assignment of means are stored. Each of the sorting centres SC1, SC2 and SC3 has such storage means (4), (4') and (4'') at its disposal. The portion (3) of the data for the first sorting run, which is related to destinations within the service area of SC1, is entered in the storage means (4) of SC1 from the SPM of SC1. These data reach the storage means via a network (Local Area Network, LAN) which is present in the sorting centre. The portions (3') and (3'') of the data for the first sorting run which are related to destinations within the service area of SC2 and SC3 respectively, are entered in the storage means (4) of SC1 from the SPM of SC2 and SC3 respectively. The last-mentioned data ((3') and (3'')) reach the storage means via a network (Wide Area Network, WAN) between the sorting centres. The storage means (4), (4') and (4'') are therefore not filled with data from one central point, but in mutually independent portions from various sorting centres.

In the exemplary embodiment described, three sorting centres are assumed. Of course a method according to the invention in which the processing of postal items takes place in a different number of sorting centres, is also possible.

## Claims

1. Method for processing postal items, during which these items are collected and distributed, comprising the following steps:
  - deriving destination information from the postal items to be processed with the aid of first means;
  - sorting postal items in a number of compartments of sorting machines, in dependency upon the destination information which is derived from the postal items, the sorting tak-

ing place in a number of consecutive sorting runs;

- storing the destination and control information in storage means and reading out this information at suitable points in time;
- assigning couplings per sorting run, with the aid of control means, according to data which is temporarily stored in memory, preferably in the form of tables, and with that is valid for a sorting run, between:
  - a. first means, sorting machines and memory means,
  - b. destinations or groups of destinations on the one hand, and compartments in sorting machines on the other hand,

in which the coupling is related to the exchange of information and to physical transport, characterised in that the processing takes place in at least two geographically separated sorting centres, and that the method further comprises:

- receiving postal items in sorting centres, in each of which a number of the said first means, sorting machines, storage means and control means are present, a sorting centre receiving the collection of postal items from the geographical service area associated with the related sorting centre, the own service area, said collection forming the initial product, and receiving from the other sorting centres the collection of postal items destined for the own service area, said collections forming the intermediate products from the other sorting centres,
- sorting, in a sorting centre, the initial product in a first sorting run into intermediate products for the own service area and into intermediate products for the other sorting centres,
- distributing, in a sorting centre, the intermediate products for the other sorting centres over said sorting centres for further processing there,
- sorting, in a second sorting run, the intermediate products for the own service area originating from the first sorting run in the related sorting centre and from the first sorting run in the other sorting centres, to end products destined for the own service area, for example for delivery routes, and further that the data for the assignment of couplings related to:
  - the intermediate products for the own service area of a sorting centre,
  - the end products for the own service area

of a sorting centre,

- the destination information per end product for the own service area of a sorting centre,

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are, in the related sorting centre, entered into the storage means there present, and that said data are distributed over the other sorting centres.

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2. Method according to Claim 1, characterised in that the data for assigning couplings, as far as the destination information per intermediate product for the own service area of a sorting centre is concerned, are derived from the data related to the end products for said sorting centre.

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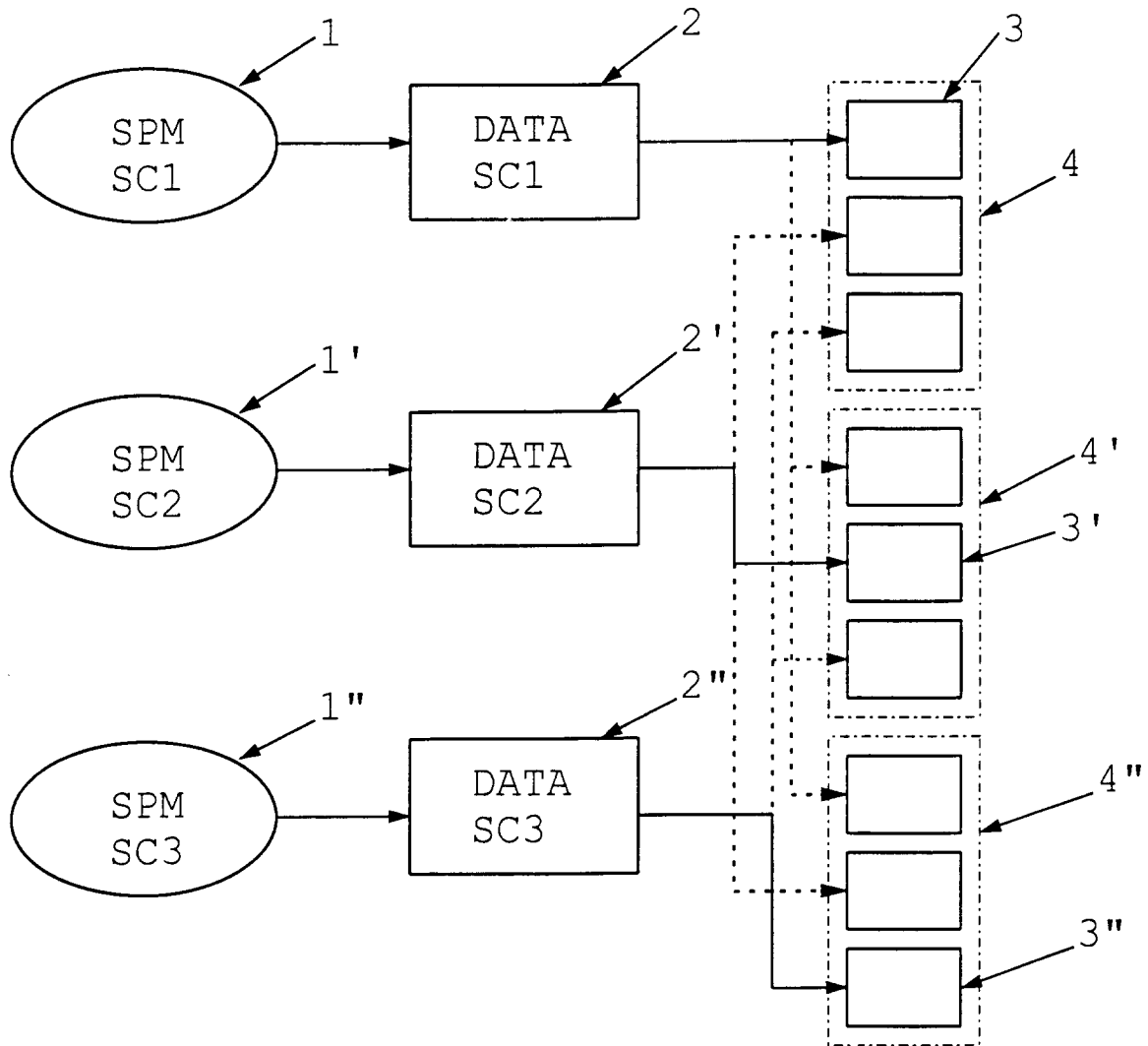


Fig. 1



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# EUROPEAN SEARCH REPORT

Application Number  
EP 96 20 3460

| DOCUMENTS CONSIDERED TO BE RELEVANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                    |                                  |                                              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|----------------------------------------------|
| Category                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Citation of document with indication, where appropriate, of relevant passages                                                                                                                                                      | Relevant to claim                | CLASSIFICATION OF THE APPLICATION (Int.Cl.6) |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | E&I ELEKTROTECHNIK UND INFORMATIONSTECHNIK, vol. 111, no. 2, 1994, WIEN, AT, pages 77-79, XP000439494<br>UNMÜSSIG ET AL: "Lokale und landesweite Informationssysteme automatisieren die Postbearbeitung"<br>* the whole document * | 1                                | B07C3/00                                     |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                    |                                  | B07C                                         |
| The present search report has been drawn up for all claims                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                    |                                  |                                              |
| Place of search                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                    | Date of completion of the search | Examiner                                     |
| THE HAGUE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                    | 14 March 1997                    | Forlen, G                                    |
| <p><b>CATEGORY OF CITED DOCUMENTS</b></p> <p>X : particularly relevant if taken alone<br/> Y : particularly relevant if combined with another document of the same category<br/> A : technological background<br/> O : non-written disclosure<br/> P : intermediate document</p> <p>T : theory or principle underlying the invention<br/> E : earlier patent document, but published on, or after the filing date<br/> D : document cited in the application<br/> L : document cited for other reasons<br/> &amp; : member of the same patent family, corresponding document</p> |                                                                                                                                                                                                                                    |                                  |                                              |

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