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(54) Improvement over electronic post process.

(57) The 'SIAMESE' Electronic Post Process is a method of achieving aesthetically superior enveloping without sacrificing any of the efficacy of the basic Electronic Post paradigm. SIAMESE Electronic Post can meanwhile produce mail pieces that are indistinguishable from professional correspondence initiated on a personal basis. This means that regular, non-window, high quality paper stock envelopes with aesthetic addressing are produced. The process consists in joining the envelope and content objects into one 'Siamese' object 100 when the Electronic Post mailing is being composed. When this Siamese object 100 goes through an AFP printer 200, the address is imprinted on an envelope sub-object 110 of the Siamese object 100 while concurrently the text is printed on a content sub-object 120. From printer 200, the Siamese object 100 enters a splitting stage 300 where the envelope sub-object and the content sub-object 120 are separated. The envelope sub-object 110 is automatically cut, folded, assembled integral to the splitting stage 300 and the content sub-object 120 inserted. The envelope is then sealed as a unit 400 and enters the inbound distribution phase.

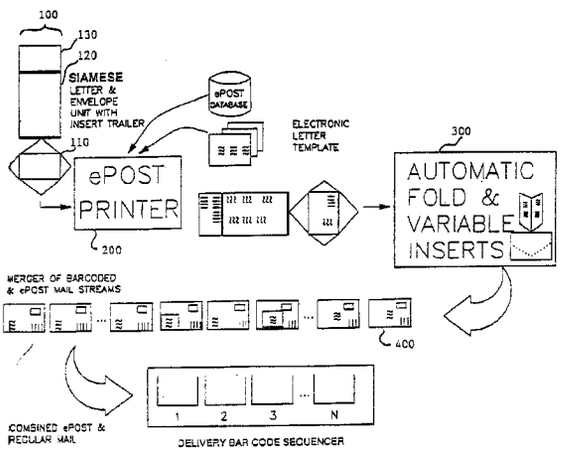

FIGURE 1

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The present invention relates to the art of electronic distribution of mail by creating a transmittal object that can be enveloped using the Electronic Post process while maintaining the degree of synchronization and having the material properties that allow fluorescent bar coding (bar/no-bar) with only the direct use of black ink (non-fluorescent) high-speed printing.

Every year, worldwide, approximately 300 billion mail pieces are processed. In revenue this creates a cash flow of about $150billion; yet nearly 80% of post offices run at a deficit. The missing piece of the economic equation is of course that mail processing is labor and transportation intensive - two expensive commodities. A mail piece can have as many as 5 sort passes and 4 transits before its delivery. If the sortation passes are performed by hand, each pass costs about $14/thousand envelopes. If automated, the cost drops to roughly $2/thousand envelopes.

Hence a very persuasive case exists for automation so envelopes can be machine sorted. This process is driven either by OCR devices that image scan the face of the envelope and intelligently determine sortation information, or via large volume mailers that print a sortation bar code which is machine readable on the face of an envelope when the address field is printed. This latter process is called pre-bar coding. In certain circumstances, pre-bar coding can make a major impact on mail flow. Such letters can be sent directly to the relatively inexpensive and numerous bar code sort machines instead of requiring OCR processing, which is a more limited and expensive resource.

The preceding makes no impact on travel time and transit cost. Most recently this vestige of mail processing cost (and delay) has been very effectively addressed by a new technology called Electronic Post.

The Electronic Post (see FIGURE 3) paradigm assumes receipt of an address list and text from a large volume mailer (LVM). Instead of the mailer printing out the text, enveloping and addressing the mailing; the LVM sends the machine readable text and address list to Electronic Post. Electronic Post electronically transmits the subject text and corresponding address list to the respective destination sort centers. At each destination, the mail pieces for delivery from that center are printed out, enveloped and addressed. By this means, the major travel time and cost factors in mail processing are eliminated.

While Electronic Post represents a revolutionary change in the dynamics of mail processing, the service has severe limitation when considering mailing in other than window envelopes.
Furthermore, Electronic Post envelopes cannot be pre-bar coded to take advantage of directly being processable by bar code sorters designated for inbound sort.

The object of the present invention is therefore to solve the two above-mentioned problems and provide additional improvements over the Electronic Post.

FIGURE 1 shows the SIAMESE Electronic Post mailing creation.

FIGURE 2 shows the fluorescent Bar code printing using high speed black-ink printers.

FIGURE 3 is a description of the Electronic Post paradigm.

The Electronic Post paradigm fundamentally changes the cost and service dynamics that have governed mail processing from the inception of governmental postal authorities about 400 years ago. Until the advent of Electronic Post, all facets of a mail piece's creation, transit, sortation and delivery have been labor intensive.

To comprehend the impact of Electronic Post and its potential to revamp traditional mail processing economics and service expectations, one needs to view Electronic Post as a tool for Work Flow Management of the sender/postal/addressee triad that is the core of modern mail processing.

Even at a cursory macro level it is apparent that Electronic Post radically changes the steps and dynamics by which a message is :

- put to paper
- enveloped
- addressed
- delivered to the Post Office
- send to its destination

Essentially, Electronic Post, when viewed from a Work Flow Management perspective, drives new economics and service goals by radically changing the precedence and merging previously discrete steps.

Reviewing the mail processing steps listed above, it is apparent that after delivery of message text and addressee list to Electronic Post in machine-readable form, all the above steps are done in almost the reverse of their current order. The Work Flow has changed and with it traditional transit costs and time.

Paradoxically, the current Electronic Post process stops its Work Flow restructuring when the mail pieces are printed at the destination sort center. Currently the Electronic Post enters the mail stream as non-bar coded "window envelopes". Although the database that drove the Electronic Post destination printout contained enough information and computer intelligence to generate a bar-code down to even delivery walk sequence ; - none is encoded on the envelope. Furthermore, although the destination Electronic Post printers are leading edge Advanced Function Printers (AFP) with sophisticated multi-font and multi-paper feed capabil-

ity, the end result is a window envelope that conveys the "Look and Feel" of B-class (3rd class) mail. In summary, and remarkable, whereas the greatest cost and time saving potential for Electronic Post Work Flow restructuring exists in the inbound sort and the major arena of economic battle is for first class volumes - the best postal contender: Electronic Post fails to compete in either arena.

Fortunately, the anomalous non-exploitation of Electronic Post potential highlighted above is not systemic. Rather, it reflects a state of the art electro-mechanical compromise that Electronic Post has made and can be addressed via the solutions to be discussed.

The problem evidenced in automating the Electronic Post inbound sort (or merge if Electronic Post is printed out in delivery sort sequence) and achieving 1st Class Mail "Touch and Feel", emanates from the need to maintain perfect synchronization between envelope and respective insert(s). If one terms an envelope and its contents as separate "objects", then one can view the creation of a mail piece as either predicated on its envelope object or upon its insert/contents object. The difference between which object drives mail creation is at the heart of the Electronic Post dilemma and promise.

Today, the need to perfectly synchronize contents and envelope is met by making the insert object primary and building the mailing around it.

Simply put, by using window enveloping, the insert object not only governs the contents but also the address of the envelope. Implicitly, synchronization is achieved, but at the cost of mandating window enveloping and making reliable pre-bar coding of the envelope technically very difficult if not impossible.

The present invention consists in a so-called 'SIAMESE' Electronic Post Process which is a method of achieving aesthetically superior enveloping without sacrificing any of the efficacy of the basic Electronic Post paradigm. SIAMESE Electronic Post can meanwhile produce mail pieces that are indistinguishable from professional correspondence initiated on a personal basis. This means that regular, non-window, high quality paper stock envelopes with aesthetic addressing are produced. For international Electronic Post, removal of the window envelope constraint makes compliance with national standards more natural than the present approach that requires a specially generated "address window cover sheet".

SIAMESE Electronic Post allows the marketing to customers of a service that has First Class "Touch and Feel" whether sending at B-Class or First Class rates. Large Volume Mailers (LVM) then have the added value of presenting to the addressee a mailpiece that has more "attention getting" likelihood of being opened (i.e. the greatest challenge in the LVM industry).

Siamese Electronic Post Object Processing drives the Electronic Post mailing via the envelope object. It will be recalled, to avoid the problem of synchronizing each envelope with its respective insert(s), the current Electronic Post is insert-object driven, thereby mandating window envelopes.

The Siamese approach is envelope-object driven with synchronization deterministically handled as shown in FIGURE 1.

Examining FIGURE 1, one sees that the Siamese name results from joining the envelope and content objects into one 'Siamese' object 100 when the Electronic Post mailing is being composed. When this Siamese object 100 goes through an AFP printer 200, the address is imprinted on an envelope sub-object 110 of the Siamese object 100 while concurrently the text is printed on a content sub-object 120.

From printer 200, the Siamese object 100 enters a splitting stage 300 where the envelope sub-object and the content sub-object 120 are separated. The envelope sub-object 110 is automatically cut, folded, assembled integral to the splitting stage 300 and the content sub-object 120 inserted. The envelope is then sealed as a unit 400 and enters the inbound distribution phase.

Since is maintained full deterministic control over the mailing from print through enveloping, it is possible to append a trailer sub-object 130 to the Siamese object that would have printed on it bar codes to signify directly which additional inserts, beyond the content sub-object 120 would be would be discretionary added to the mailing on an address/client basis. In this final splitting stage 300, when the Siamese object 100 is split for enveloping, the trailer 130 is read by an intelligent inserter device (part of process step 300, the appropriate selection of inserts are added to the envelope 400 and the trailer is discarded.

Given the format of Electronic Post creation, pre-bar coding of envelopes to automate the inbound sort becomes infeasible for two reasons :

1. The (window) envelope object has no address significance
2. The high speed Advance Function Printers print with black ink. Most European postal authorities require florescent bar, no-bar encoding. Hence an immediate problem of generating florescent bar codes remains - if some way could be found to overcome the synchronization problem.

Following down the path dictated by insert-object driven enveloping; Electronic Post is restricted to window envelope B-class mail appearance. Although technology does exist for printing

and scanning a barcode in the address area of a window envelope, this would not solve the general problem. The florescent problem still remains, special/expensive scanning upgrades would be needed on all postal barcode sorters and above all the Electronic Post aesthetic problem would only be accentuated.

Via the improvement previously described, one is able, amongst other enhancements to the state of art, to insure synchronization of an Electronic Post envelope and its content. Essentially, per the above, has been shown a method for creating Electronic Post where the envelope is deterministically tied to the address. In such a setting it becomes possible to print a bar code on the envelope so that the Electronic Post can be merged with the rest of the mail stream that has been OCRed or Video Coded. The main problem is that most European post offices require florescent bar/no-bar encoding, whereas the high-speed Electronic Post address printing is done with black ink AFP printers.

Encoding a fluorescent bar code using black ink printers is accomplished as shown in FIGURE 2. An envelope sub-object 500 in the Siamese Electronic Post process comes preprinted with a fluorescent strip 510. When the envelope 500 is being printed, an AFP printer 520 creates the bar/no-bar encoding by overprinting the florescent strip wherever a "no bar" should be. When scanned by a bar code reader 530, the effect of the opaqued areas between bars is the same as the traditional "no bar" blank area.

Claims

1. Improvement over Electronic Post process characterized in that it comprises:

- having an envelope sub-object (500) in an Electronic Post process come preprinted with a fluorescent strip (510), and
- having an AFP printer (520) create a bar/no-bar encoding by overprinting the florescent strip wherever a "no bar" should be, whereby when scanned by a bar code reader (530), the effect of the opaqued areas between bars is the same as the traditional "no bar" blank area.

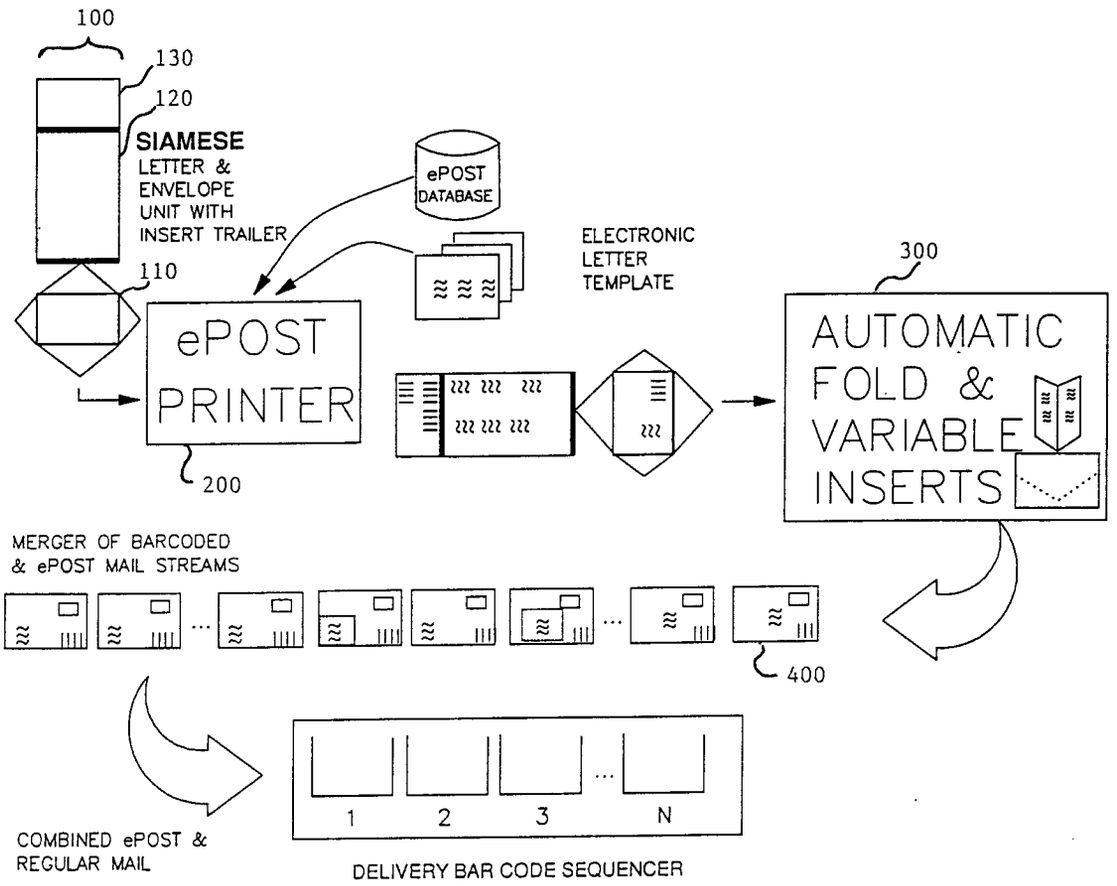
100
130
120
SIAMESE
LETTER &
ENVELOPE
UNIT WITH
INSERT TRAILER
110
ePOST
DATABASE
ELECTRONIC
LETTER
TEMPLATE
ePOST
PRINTER
200
300
AUTOMATIC
FOLD &
VARIABLE
INSERTS
MERGER OF BARCODED
& ePOST MAIL STREAMS
400
COMBINED ePOST &
REGULAR MAIL
1
2
3
N
DELIVERY BAR CODE SEQUENCER

FIGURE 1

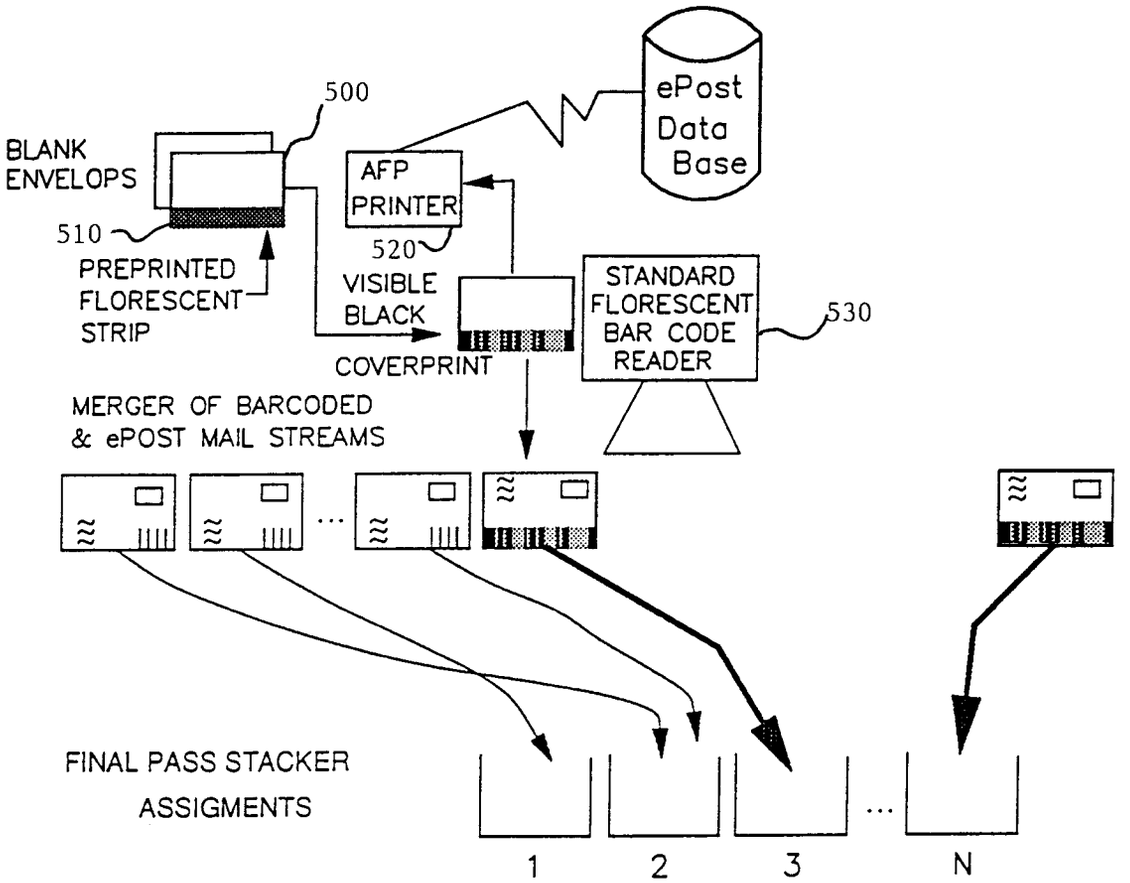
ePost
Data
Base
500
BLANK
ENVELOPS
AFP
PRINTER
510
520
PREPRINTED
FLORESCENT
STRIP
VISIBLE
BLACK
COVERPRINT
STANDARD
FLORESCENT
BAR CODE
READER
530
MERGER OF BARCODED
& ePOST MAIL STREAMS
FINAL PASS STACKER
ASSIGMENTS
1
2
3
N

FIGURE 2

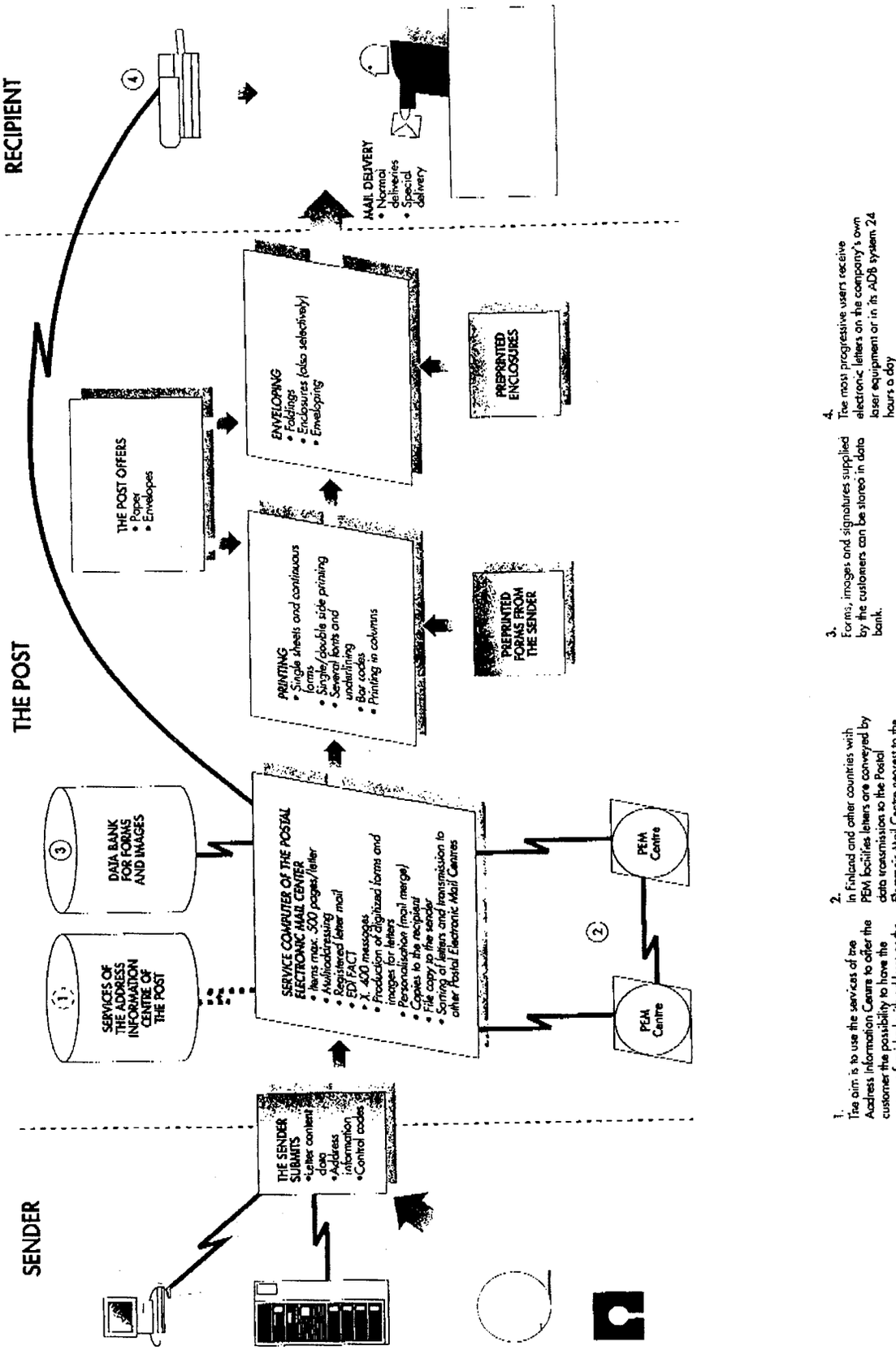
RECIPIENT
THE POST
SENDER
MAIL DELIVERY
• Normal deliveries
• Special delivery
THE POST OFFERS
• Paper
• Envelopes
ENVELOPING
• Foldings
• Enclosures (also selectively)
• Enveloping
PREPRINTED ENCLOSURES
PRINTING
• Single sheets and continuous forms
• Single/double side printing
• Several fonts and underlining
• Bar codes
• Printing in columns
PREPRINTED FORMS FROM THE SENDER
SERVICE COMPUTER OF THE POSTAL ELECTRONIC MAIL CENTER
• Items max. 500 pages/letter
• Multiaddressing
• Registered letter mail
• EDIFACT
• X. 400 messages
• Production of digitized forms and images for letters
• Personalisation (mail merge)
• Copies to the recipient
• File copy to the sender
• Sorting of letters and transmission to other Postal Electronic Mail Centres
DATA BANK FOR FORMS AND IMAGES
SERVICES OF THE ADDRESS INFORMATION CENTRE OF THE POST
PEM Centre
PEM Centre
THE SENDER SUBMITS
• Letter content data
• Address information
• Control codes
1. The aim is to use the services of the Address Information Centre to offer the customer the possibility to have the message furnished with address or the adress information of the recipient updated.
2. In Finland and other countries with PEM facilities letters are conveyed by data transmission to the Postal Electronic Mail Centre nearest to the recipient..
3. Forms, images and signatures supplied by the customers can be stored in data bank.
4. The most progressive users receive electronic letters on the company's own laser equipment or in its ADB system 24 hours a day

FIGURE 3

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 93 10 9446

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.5)
Y	FR-A-2 336 008 (RCA) * page 2, line 10 - page 3, line 12; figure 1 *	1	B07C3/18
Y	GB-A-1 331 082 (FARRUGIA) * page 2, line 104 - line 109 *	1	
Y	FR-A-2 158 636 (THOMSON) * page 1, line 1 - line 32; figure 1 *	1	
A	DE-A-26 50 054 (BRAUMANN) * page 3, paragraph 3 -last paragraph; figures 1,2 * * page 4, paragraph 3 *	1	
A	GB-A-1 294 784 (GAO) * page 3, line 112 - page 4, line 9; figure 3 *	1	

TECHNICAL FIELDS SEARCHED (Int.Cl.5)

B07C
G06K
H04N

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	17 January 1994	FORLEN, G

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
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T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

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