



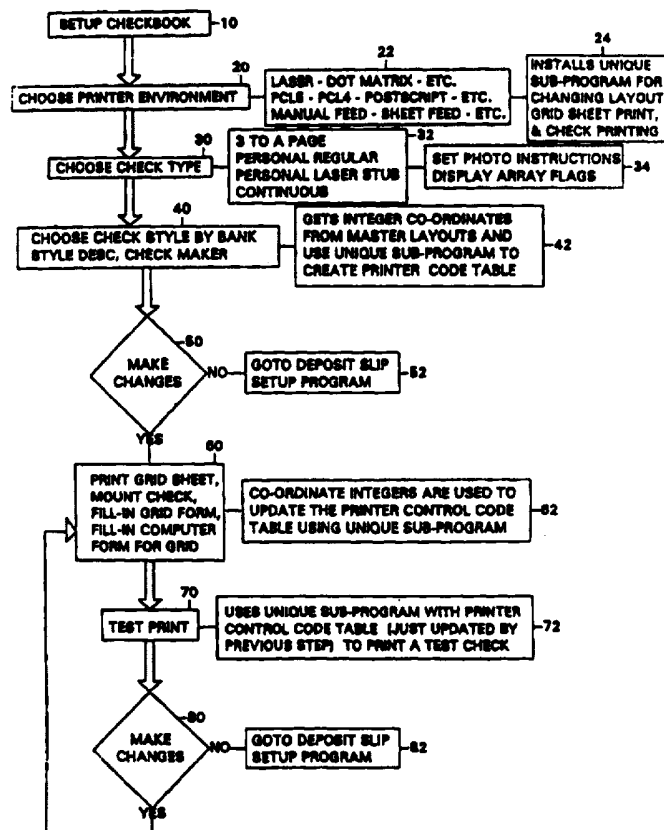
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(54) Title: SYSTEM AND METHOD FOR GENERATING AND PRINTING PRINTOUTS AND FOR DETECTING AND PREVENTING ALTERATION OF BANK INSTRUMENT

(57) Abstract

A method for computerizing any existing checkbooks, personal checks, deposit slips, and bank statements (30, 32, 34, 40, 42), so that the end user can keep using their current existing banking instruments. A grid sheet (60) is used to tailor the computer software to the feature of a user's check. In addition, security shadow printing on a check's dollar and payee areas (610) to prevent fraudulent alteration of the check is also implemented. Moreover, a bank statement reconciliation process which prints monthly check lists in the same line spacing as the end user's bank statement to help spot any differences at a glance (320) is implemented. Furthermore, a software rental system to allow unlimited free initial distribution (940) is implemented.



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SYSTEM AND METHOD FOR GENERATING AND PRINTING PRINTOUTS AND
FOR DETECTING AND PREVENTING ALTERATION OF BANK INSTRUMENT

BACKGROUND OF THE INVENTION

1. FIELD OF THE INVENTION

The present invention relates generally to improvements in bank-related processing, such as check writing, making deposits, managing collections, payroll processing, and statement reconciliation, and, more particularly, to a system for laser printing information on existing forms, such as checks and deposit slips.

2. DESCRIPTION OF THE RELATED ART

In the past, computers and laser printers have been used to print information on specially-made forms particularly tailored for the computer, computer program, and printer in use. For example, in patents such as U.S. Patent Nos. 4,403,301 and 4,658,366, printing information on pre-printed forms is disclosed.

However, such computerized systems, which rely on special forms made particularly for the computer system, suffer from serious disadvantages. In particular, computers may malfunction, such that a user would be unable to control their bank funds. Moreover, there are many individuals who are not fully computer literate. Accordingly, errors, in view of a user's lack of experience and/or lack of knowledge, contribute to difficulties associated with the use of pre-printed special forms and computer banking systems. Moreover, in view of the fact that many bank customers, being fearful of computer technology, likely avoid such computer systems. Therefore, because such individuals are accustomed to a certain way of controlling their funds, they are likely to continue using their existing checkbooks, deposit slips, and other bank instruments.

Moreover, many users are concerned that computer malfunctions may hinder their ability to control funds. In particular, computer malfunctions can cause a user to lose a significant amount or all of their data. Accordingly, it is important to maintain a hard copy of

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all bank transactions. However, few individuals make and/or retain usable paper backups or even media backups to sufficiently protect against such computer malfunctions.

Therefore, there is clearly a need for a system which facilitates printing on existing bank instruments rather than relying on specially-made forms which are particularly configured to the software and computer hardware in use.

Such a need is particularly prevalent with regard to small businesses. Government regulations are applying increasing pressure to maintain complex bookkeeping systems. However, there are insufficient individuals having the technical knowledge and ability to manage such systems. Accordingly, there is a clear need for computerized systems which are capable of maintaining continuity with existing manual systems.

Additional problems facing business today must also be addressed in this regard. Among these problems are problems associated with collections and payroll processing. With regard to collections, there is clear need for systems which allow an individual or business to easily record essential data concerning other businesses and individuals with whom business is being conducted. In particular, there is a clear need for services which maintain bank routing numbers and bank account numbers, as well as computer links, to alleviate problems associated with delinquent customers. Therefore, there is a clear need for systems having the ability to generate and track request letters, collection request forms, locating effective legal counsel to enforce such collection requests, etc., in this regard.

With regard to payroll management, while there is a clear need to maintain interaction with accountants so as to oversee changes in tax laws and tax rates, accountants having insufficient computer literacy are

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unable to adequately address problems associated with payroll management today. Therefore, there is a clear need for both a manual and a computerized approach to accounting and payroll management problems. In the past, central services such as ADP printed and delivered payroll checks to a user's office. Such systems are both inefficient and costly. Such central services often take the gross amount of the paycheck directly from the bank account of a business before the checks are even delivered. The net amount of such checks is only about 70% of the gross amount, creating a difference of about 30%. This 30% differential would not have to be paid to the government for up to 90 days. Such an early outlay of cashflow is a significant destructive force that undermines cost-effective payroll management systems today.

There is another basic method used with regard to payroll in addition to the aforementioned central service systems. This system is often referred to as a local method which requires the user to undertake significant computer setup. Such a method requires significant dependency upon the computer and accounting skills of the user. Accordingly, it is clear that a more effective system would greatly enhance payroll management today.

In addition, there is a clear necessity for the ability to laser print information on existing checks, which have been heretofore not particularly configured for laser printing. Specifically, there is a clear need to find a simple and effective solution to the dimensional problems associated with feeding a standard check into a laser printer. Laser printing information on checks, in general, also creates difficulties. In particular, laser printing ink can be readily erased. Accordingly, the potential for fraud with regard to laser-printed information on checks is readily apparent. Therefore,

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there is a clear need for maintaining security with regard to information that is laser printed on checks.

Relatedly, many of the software programs in use today have internal clock and date printing features.

However, these features limit the date capacity of the system to the year 1999. Accordingly, there is a clear need to provide post-20th century date capability in such software.

Moreover, there are numerous problems associated with bank statement reconciliation. In fact, the existence of such problems often leaves many individuals and small businesses to overlook bank statement errors. Accordingly, there is a clear need for enhancing bank statement reconciliation so as to provide individuals and businesses with an effective and inexpensive system to ensure bank statement reconciliation.

In the past, there has also been a significant problem associated with an individual's or businesses' inability to acquire new software in view of the excessive cost associated therewith. Moreover, the ability of individuals and businesses to cost effectively rent software packages have been traditionally prohibited in view of various difficulties associated with software rental systems. Accordingly, there is a clear need for a cost-effective and efficient software rental system.

OBJECTS OF THE INVENTION

In view of the aforementioned difficulties and needs associated with the related art, the instant invention is directed to a variety of features associated with computer processing.

It is an object of the present invention to provide an improved method for printing information on preexisting forms with computers.

It is another object of the present invention to provide a simple and cost-effective manner to print on preexisting forms using a grid sheet and/or simple

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computer form.

It is an object of the present invention to provide an improved method for check, deposit slip, and bank statement processing and printing.

It is another object of this invention to provide an improved bill collection system, and an improved payroll processing system.

It is still another object of this invention to provide an improved method of date management which greatly extends the useful life of software.

It is still another object to provide an improved method to protect laser-printed documents against unwanted erasures.

It is still another object to provide a unique method to rent software.

It is still another object of the present invention to provide a size expander so that a laser printer may adequately receive and print information upon existing bank instruments.

SUMMARY OF THE INVENTION

In accordance with the aforementioned objects of the present invention, the instant invention is directed to, inter alia, a method of generating custom computer printouts tailored to a preexisting form, including the steps of: generating a grid sheet comprising a first coordinate ruler and a second coordinate ruler, the second coordinate ruler disposed in an orthogonal relationship with the first ruler, generating a master table corresponding to the first coordinate ruler and the second coordinate ruler of the grid sheet, determining first and second coordinates of information printed on the preexisting form by aligning the first coordinate ruler and the second coordinate ruler of the grid sheet with the previous existing form, editing the master table to conform the first and second coordinates of information

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printed on the previous existing form, generating instruction signals to print alphanumeric characters on the preexisting form in coordination with the master table and the edits to the master table, and printing alphanumeric characters on the preexisting form in response to the instruction signals.

The present invention may also include the steps of generating a forms table containing vertical and horizontal coordinates from a plurality of forms, and selecting one of the plurality forms to serve as the master table. Moreover, the method of the present invention may also include the step of security shading select portions surrounding the alphanumeric characters on the preexisting form.

Moreover, the present invention may also include the following steps: expanding the size of the preexisting form to enable printing of alphanumeric characters on the preexisting form, printing a date comprising a year within a range of 2,000 to 9,999 on the preexisting form in response to the instruction signal, maintaining collection service data from information contained in the instruction signal, printing payment request letters containing financial information from the collection service data, collecting payroll data from a plurality of employees, printing table data on a plurality of preexisting forms in coordination with the first and second coordinates of the edited master table, calculating time from an installation date of the method, suspending use of the method upon the expiration of a rental due date, and reinitializing the method upon payment of a rental fee.

In addition to the aforementioned method, the present invention is also directed to a computer-based layout grid system, including a grid sheet, memory means, and processing means which generates custom computer printouts tailored to a preexisting form. The memory

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means comprises a plurality of memory cell locations, the memory cell locations storing master table signals comprising signals corresponding to a first coordinate ruler and a second coordinate ruler, and input table
5 signals comprising instruction signals inputted by a user for editing the master table signals in accordance with the first and second coordinates of information printed on a pre-existing form.

10 These, together with particular features and advantages which will be subsequently apparent, reside in the details of construction and operation as more fully hereinafter described and claimed, with reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like elements throughout.

15 In accordance with these and other objects which will become apparent hereinafter, this invention will now be described with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

20 Figure 1 is a schematic flow diagram of the setup of a preferred embodiment for configuring a printing layout for checks or checkbook pages of the present invention.

25 Figure 2 is an example of the printing layout grid co-ordinate sheet for checks, checkbook pages, or other documents of the present invention.

Figure 3 is a schematic flow diagram of a preferred embodiment of the setup of a printing layout for deposit slips of the present invention.

30 Figure 4 is an example of the printing layout grid coordinate sheet for deposit slips of the present invention.

Figure 5A is a schematic flow diagram of a preferred embodiment of the setup of a printing layout for bank statement reviews of the present invention.

35 Figure 5B is a schematic flow diagram of a preferred embodiment of the bank statement reconciliation

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method of the present invention.

Figure 5C is an example of a monthly bank statement.

Figure 5D is an example of a printing layout arranged in a similar line spacing with the bank statement of Figure 5C for check reconciliation.

Figure 6 is a diagram of a preferred embodiment of a personal checkbook with optional laser-stub tear-off of the present invention.

Figure 7 is a diagram of a preferred embodiment of a special post-it to be used as a personal check laser printer leader carrier of the present invention.

Figure 8 is a diagram of method for using standard 4" x 6" post-it note for personal check laser printer leader carrier of the present invention.

Figure 9A is a photo diagram of a preferred embodiment of the present invention of a method for printing 3 to a page checkbook checks in a laser printer.

Figure 9B is a photo diagram of a preferred embodiment of the present invention of a method for printing on a check.

Figure 10A is a diagram of a preferred embodiment of a device for printing on a 3 to page checkbook page (with checks missing) in a laser printer of the present invention.

Figure 10B is a diagram of a preferred embodiment of a method for using standard 4" x 6" post-it notes for printing on a 3 to a page checkbook page (with checks missing).

Figure 11 is an example of a three check to a page laser-printer ready form.

Figure 12A is a diagram of a preferred embodiment of a shadow printing check security device for any check of the present invention.

Figure 12B is a diagram of shadow printing check security device of the present invention.

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Figure 13A is a schematic flow diagram of a preferred embodiment of a deposit entry and bank information recording system of the present invention.

Figure 13B is a schematic flow diagram of a preferred embodiment of a nationwide electronic collection service springing from deposit system of the present invention.

Figure 14 is a schematic flow diagram of a preferred embodiment of a nationwide electronic payroll service springing from checkbook system of the present invention.

Figure 15 is a schematic flow diagram of the logic used for a date entry scheme of the present invention which will function until the year 9999.

Figure 16 is a schematic flow diagram of a preferred embodiment of a software rental renewal method of the system of the present invention.

Figure 17 is a block diagram which depicts the computer architecture for use in the preferred embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS OF THE PRESENT INVENTION

With continuing reference to the attached drawings, preferred embodiments of the present invention will now be described in detail.

Referring to Figure 1, a schematic flow diagram of the setup of a preferred embodiment for configuring a printing layout for checks or checkbook pages of the present invention is shown. The flowchart of Figure 1 utilizes the printing layout grid coordinate sheet of Figure 2 to facilitate custom printing which is tailored to a pre-existing document.

The process, as illustrated in Figure 1, is initiated by first setting-up the checkbook or other suitable document at step 10 and then choosing a printing environment at step 20. The printing environment includes

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5 selections including the type of printer (such as a laser or dot matrix printer), the type of feed system used (such as manual or sheet), and other selection choices at step 22. This approach results in a situation in which, for example, ten environment choices can cover literally thousands of various printers. Each environment choice references a subprogram at step 24 that is written specifically for that printer type. This subprogram is utilized for changing layout, grid sheet print and check printing, among possible other functions.

10 From step 20, the user chooses the check type at step 30. Among the check types to be selected are the three-to-a-page format (which is described in greater detail later in the application), personal regular checks, personal laser stub checks, continuous form-fed checks,
15 among others. Various photo instructions and array flags may be displayed to assist the user in this regard at step 34.

20 From the selection of the check type at step 30, the user then selects the check style by bank style description, check maker, and/or other indicia at step 40. Accordingly, the system retrieves integer coordinates from the master layout and uses the unique subprogram to create a printer code table at step 42.

25 At step 50, the user decides whether or not to make changes to the system. If no changes are desired, then the program may move on into a deposit slip set-up program at step 52 (which will also be described in greater detail later in this application). If changes are desired, then a grid sheet is printed at step 60 for use
30 in making the changes. An example of such a grid sheet is shown in Figure 2.

35 With reference to Figure 2, a grid sheet 100 is shown for use in the flowchart of Figure 1. The grid sheet has a first coordinate ruler, represented by the x-coordinate frame, and a second coordinate ruler,

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represented by the y-coordinate frame.

At step 60 of the flowchart of Figure 1, a user simply mounts the check on this coordinate frame, fills in the grid form to create coordinate integers which are used to update a printer control code table using the unique subprogram at step 62. Specific instructions for filling out the example grid sheet as shown in Figure 2 are provided on that sheet itself. Specifically, the user need only fill-in various x-y coordinates (i.e. column # and row #) on the grid sheet relating to various portions of a check instrument. For example, if the payee area of a user's check is at row no. 45 and column no. 140, the user simply enters 45 and 140, respectively, for the payee row and column prompts on the grid sheet 100. Thereafter, the user simply enters these coordinates on a computer form (on the computer itself) which is similar to the grid sheet of Figure 2.

From step 60, a test print is generated at step 70 using the unique subprogram with a printer control code table which was updated by the step at 62 to print a test check at step 72. The user may then determine whether or not changes need to be made at step 80 by continuing the test check with the check on which information is to be printed. If no changes are required, the program simply directs the user to the deposit slip set-up at step 82. However, if changes are desired, then the program leads the user back to step 60 to iterate a proper configuration of the check.

Generally, therefore, the system uses three tables to store data to accomplish customized printing: a master table, an input table and a printer control code (instruction) table. The master layout table consists of integers representing horizontal and vertical coordinate positioning as measured by the grid sheet of each data field to be printed on the instrument. This master table can contain many records that are set-up for popular

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instrument layouts which can be fine-tuned by the user. In effect, therefore, the overall master table may consist of a second master table including records that are set-up for proper instrument layouts.

5 The input table also contains integers and is generally the same as the master table except that a single record is related to a single system, for example a single checkbook. This input table is updated with the integers from the chosen startoff master table record. The master record is chosen by style or maker
10 identification and is posted to the input table. The user can modify the integers in the input table to fine tune the layout. The user mounts their instrument (check, deposit slip, etc.) to the grid sheet at the 0,90 axis of Figure 2 to easily align the print fields on the
15 instrument to the integer coordinates used by the system. The user enters these integers into a computer form (on the computer) that serves the input table.

 A subprogram is then used to update a printer control code table which is formed by concatenating
20 printer control codes that are built into the subprogram with the integer numbers from the input table. This printer control code table can now be referenced, whenever the instrument is printed, such that any specific data field being printed is concatenated with the vertical and
25 horizontal placing printer control codes from the printer control code table to place that data field exactly at the vertical and horizontal coordinates that were entered into the input table. Accordingly, data can be placed at any specific point. Moreover, pitch, font, and line spacing,
30 among other features, can be computed from entries made into the input table. Therefore, the subprogram is suitable for any specified printer type. In other words, the printer control code table may contain printer control codes which are quite complex, but the end-user only sees
35 and edits the form serving the input table, which itself

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is mostly already filled-in for the user because of the initial selection from the master layout table.

As an alternative to the aforementioned system which utilizes three tables to accomplish customized printing, the system may be configured such that it utilizes only a single integer table which the user addresses. The integer table stores coordinates entered by the user and the system creates printer control codes from this table. Accordingly, this alternative system utilizes a user-addressable printer control code table. As with the system using three tables, this alternative system is integrally linked with the grid sheet system of the present invention.

The subprogram itself contains synchronized processes to control the master layout table selection, the grid sheet printout, the input table updating, the printer control code table updating, test printing, actual printing, and the display of photo demonstration instructions.

In the preferred embodiment of Figures 1 and 2, a check is preferably used for printing information thereon. However, other pre-existing instruments having a wide variety of designs may be incorporated into a single computer program, thereby facilitating printing on such a wide variety of instruments. Moreover, such a system allows any instrument to be filled-out by hand or by the computer's printer.

With reference to Figures 3 and 4, a flowchart and grid sheet, respectively, are shown for use in facilitating custom printouts on bank deposit slips. The flowchart of Figure 3 is quite similar to the flowchart of Figure 1 in this regard. First, the deposit slips are set-up at step 150 to be followed by the selection of the printer environment at step 160. Selection of the printer environment includes selection of the type of laser printer (laser, dot matrix, etc.), among other selections,

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at step 162 and the installation of a unique subprogram for changing layout, grid sheet print, photo instructions, and deposit slip printing at step 164.

The user then chooses the deposit slip style at step 170 which includes retrieving integer coordinates from the master layouts and using the unique subprogram to create the printer control code table at step 172. At step 180, the user decides whether or not to make changes, thereby either leading to the bank statement viewer set-up program at step 182 or the printing and use of the grid sheet at step 190. At step 190, the user mounts the deposit slip to the grid sheet, fills in the grid form, and fills in the computer form for the grid so that, at step 192, coordinate integers are used to update the printer control code table using the unique subprogram. At step 200, a test print is generated using unique subprogram with the printer control table to print the test deposit slip at step 202. The user then decides at step 210 whether or not to make changes, thereby either leading to the bank statement view setup program at step 212 or a reiteration of the measuring of the deposit slip spacing at step 190.

With continuing reference to Figure 4, a grid sheet for use with a deposit slip is shown. The implementation of this grid sheet provides for customized spacing by taking the vertical coordinate of line 1 and the vertical coordinate of the last line and a total number of lines into account. The difference between line 1 and the last line is divided by the total number of lines. This is the line spacing in whatever unit measure the grid is printed. The line spacing printer control code is created by concatenating the printer control codes for line spacing with this computed line spacing number, and is stored in the printer control code table. This implementation also provides for rotated print placement if the printer being used has this feature. Moreover, the

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master layout table preferably has two records for each
preformatted deposit slip, one for rotated and one for
unrotated. If the printer does not have rotated print,
then the rotated print items are preferably placed
5 somewhere on the slip, out of the way, and/or they can be
manually copied after printing. The deposit slip form is
separated into three sheets and fed one at a time into
manual input trays of a laser printer, or printed in one
pass on an impact printer.

10 As with the check printing system of Figures 1
and 2, the deposit slip printing system of Figures 3 and 4
may utilize either the three table format or the single
integer table format, previously discussed.

15 The use of the grid sheet systems of Figures 1-4
is central for use in facilitating bill collections, which
will be described in greater detail below, as well as
facilitating payroll processing which will also be
described in greater detail below.

20 With reference to Figure 5A, a schematic flow
diagram of a preferred embodiment of the set-up of a
printing layout for bank statement reviews of the present
invention is shown and described. In particular, at step
270, a user sets-up the bank statement viewer and then
chooses the printer environment at step 280. Choosing the
25 printer environment includes the selection of the type of
printer (laser, dot matrix, etc.), the type of feed
(manual, sheet, etc.), among other selections, at step 282
which leads to the installation of a unique subprogram for
changing the layout and bank statement viewer printing at
step 284. The user then measures the input line spacing
30 at step 290 which leads to the creation of a printer
control code table using the unique subprogram at step
292. A test print is then created at step 300 which leads
to a decision at step 310 as to whether changes are
required. If changes are not required, the program
35 continues the administrative information and preferences

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program (a main menu) at step 312. If changes are desired, an iterative step leads the user back to the measuring and inputting of the line spacing step of 290.

To reconcile the bank statement, a user begins at step 320 in the reconciliation process of Figure 5B by first marking checks on the statement by check number at step 330 and then printing a bank statement check list viewer at step 340. The user then holds the bank statement viewer side by side with the bank statement to quickly see any differences between the two at step 350.

Figure 5A therefore shows a typical setup method using the above grid sheet method to allow a custom printout report for bank statement reconciliation. This implementation allows the listing of all check numbers and check amounts to be printed on the same line spacing as the bank statement itself. This proves a quick way to see any discrepancies between the computer records and the bank statement. By holding the printout listing next to the bank statement listing, lined-up side by side, the user may quickly and easily see any differences. Therefore, the printout of only the checks flagged for reconciliation must be lined-up perfectly with the bank statement. The same line spacing method as used above is used to compute and store line spacing printer control codes for this report.

With reference to Figure 5C and 5D, an example of, respectively, a bank statement and a listing of check numbers printed in the same line spacing as the bank statement is shown. As can be seen from aligning Figures 5C and 5D side-by-side, printing the check numbers in the same line spacing as the bank statement itself facilitates checkbook-bank statement reconciliation.

With reference to Figures 6, 7 and 8, various embodiments and methods to expand the size of personal checks so that they may be printed in a standard laser printer are shown and described. In general, a standard

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laser printer has a minimum paper width requirement of 3.0-3.5". A personal check, however, when inserted sideways is only about 2.75" wide.

In this regard, Figure 6 demonstrates a new personal checkbook 400 for use in a laser printer. The checkbook has a top bound side 410 and a perforation 415 connecting the top bound side 410 to an extra top stub 420 which is approximately 3.75" wide and ends at a bottom perforation 425. This stub 420 can be removed after the check is printed. To manually write a check, the check can be torn out of the personal checkbook along the bottom perforation 425. To print a check in a standard laser printer, the check can be torn out of the checkbook along the top perforation 415. Check 430, in general, has the dimensions of a standard 2.75" check. Although a 0.75" stub 420 is shown and described, it is to be understood that other dimensioned stubs may also be used to facilitate printing on standard checks.

With reference to Figure 7, a new post-it note design is demonstrated which allows for a personal check to be applied to it so as to provide the check instrument a width of 3.0-3.5". The post-it 480 is approximately 3.5" wide by about 6" long and contains a glue portion 490 which is approximately 2.5" high by approximately 1" wide. When the check 470 is applied to the post-it 480, the entire glue portion 490 is covered by the check 470. Once applied to the check, only the top portion 460 of the post-it 480 protrudes from behind the check. The entire check and post-it combination is shown as reference numeral 450. Post-it 480 can be applied, removed and reapplied to numerous checks several times over.

With reference to Figure 8, a unique technique to use a standard 4x6" post-it note to achieve an expansion of a check 530 is also shown and described. The 4x6" post-it is shown generally as reference numeral 500 and contains a non-glued portion 510 and a glued portion

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520. The top portion of the post-it may be folded over approximately 0.75" for placement behind a standard check 530. The folded sheet is approximately 3.25" wide by 6" long. The check is applied sideways along the left side and down about 0.25" to provide a total instrument width of 3.5".

The three embodiments of Figures 6, 7 and 8 serve to expand the size of a check for insertion into the manual input tray in a standard laser printer.

With reference to Figures 9A and 10A, diagrams showing embodiments and methods to allow standard three to a page check and stubs to be printed in a standard laser printer are shown and described. Figure 9A is a photo diagram that is displayed by the software program of the preferred embodiment of the instant invention. It shows the proper way to fold a checkbook page to print in a particular laser printer. The layout is made of multiple pictures, and is controlled by a subprogram which is unique to the printer type chosen by the original installation set-up. Therefore, this is only one embodiment, or an example, tailored for a particular laser printer. In this example, the top, middle, and bottom checks, all have a specific folding method. The manual input tray insertion is also shown. The checks could also be inserted into a sheet feeder of a dot matrix printer and be printed all at once. The system could store the check number of any top check, and be able to calculate the check position from thereon by taking the current check number and comparing that number to the modulus of the established top check number. An emulation program for dot matrix printers can provide a post-script printer environment that allows for rotated print such that the checkbook pages can be fed into a dot matrix sideways. As an alternative, the data itself can be output to the printer as a graphic image, to allow the checkbook page to be fed into a dot matrix printer sideways.

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With continuing reference to Figure 9A, instructions are provided on how to print a check if the top or middle check has already been removed from the checkbook page. As discussed in greater detail below, the user takes the second checkbook page and overlays it underneath the checkbook page to be printed. The user then folds as shown, and secures the stub edge using any post-it note, placed underneath with the glue side folded just over the top side of the stub. Accordingly, this will satisfy the minimum 3.0-3.5" width requirement of the standard laser printer.

Figure 9B is a photo diagram that is displayed by the software program of the preferred embodiment of the present invention. Figure 9B illustrates the technique of utilizing a 4" x 6" post-it note, as also shown in Figure 8.

With reference to Figure 10A, a checkbook page laser printer carrier sleeve for providing the minimum 3.0-3.5" width requirement is also shown. As previously discussed, the width of a check is less than 3.0". Therefore, if fed through a laser printer, the feed mechanism of the printer will detect an out-of-paper status and therefore will not print on the entire document. The carrier sleeve, shown generally at 550, includes a top sealed portion 560, an open side 562, a folded side 564, and another open side 566. This sleeve is for use in providing a 3.0-3.5" width to the entire length of a checkbook page when the top or middle check has been detached from the checkbook page itself. By inserting the top stub 574 into the sleeve before placing the checkbook page into a manual input tray of a laser printer allows the stub 572 and check 570 to print. If the checkbook page was fed into a standard laser printer without the sleeve, the stub would print, but the check clearly would not, because current popular laser printers generally have a minimum width of at least 3.0-3.5 inches.

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With reference to Figure 10B, a checkbook page laser printer post-it sleeve is shown. The post-it sleeve is made-up of a first 4"x6" post-it 575 and a second 4"x6" post-it 576, containing glued portions 575a, 576a respectively. This sleeve is for use in providing a 3.0-3.5" width to a checkbook page when the top or middle check has been detached from the checkbook page. By joining post-its 575 and 576 via glued portion 576a, the post-its 575 and 576 may be used to facilitate printing on a check 577 and stub 578. In particular, post-its 575 and 576, once attached to stub 579 via glued portion 575a, provides the 3.0-3.5" width required for printing to take place on check 577.

With reference to Figure 11, a three-on-a-page check format is shown for use in a laser printer. The three-on-a-page format, shown generally as reference numeral 580 comprises a first check 582, a second check 584, and a third check 586, each of which having a check stub for record purposes. The use of the three-on-a-page check format of Figure 11 is envisioned as a useful transition from a user's initial use of personal checks with the present invention to the use of computerized checks with the present invention. While the size of a checkbook page as shown in Figure 11 is 8½" x 13", the checks themselves are 17 line checks which can fit onto an 8½" x 11" space. These checkbook pages may be either manually (i.e. a user may hand-write information on the check) or with the computerized printing techniques of the present invention. Previously used 3-to-a-page checkpages are 9" in length and therefore cannot be used in a laser printer.

Accordingly, with the 3-to-a-page check configuration of Figure 11, a user may place multiple sheets of checks in a laser printer paper cartridge for printing without needing to fold the checks in the manner shown in Figure 9A.

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As such, the use of the check configuration of Figure 11 in conjunction with the printing system of the present invention (with the master table having this 3-to-a-page format set-up as a popular instrument layout) provides true automatic loading, feeding and printing of checks. Moreover, the checks of Figure 11 can be dimensioned to fit into a windowed envelope and further provide for the performance of tape calculations directly on the check. Therefore, even though the individual signing a check does not have the stub attached for reference, the individual nevertheless is provided with sufficient information to execute the instrument.

With continuing reference to Figure 11, an 8½ by 13" checkpage is preferably used. However, an 8½ by 14" checkpage with a 1" perforated stub on the side of the page may also be used. Such checkpages are designed to fit into standard ring binder checkbooks, and also into standard laser printer cassettes or trays. Such checkpages are similar in width to a standard 3 to a page manual checks but the height of the checks is 8½" divided by 3 or 2.8333 inches (17 lines at 6 lines per inch).

In use, the system of the present invention utilizes checkpages, such as that shown in Figure 11, and the check number of any of the checkpages top of page check. The system uses this recorded number to calculate the check position (i.e., top, middle, or bottom) when printing checks and to thereby properly adjust the vertical print positioning of the printout to facilitate printing on the correct check automatically.

Preferably, the method for calculating the check position utilizes a function to compare the recorded top of the page check number with the current check number which the user has requested to print information on. For example, a function in which the check number is divided by 3 may be utilized for this purpose. Three consecutive check numbers, when divided by three, will leave

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consistent post-decimal point (i.e., fractional) values of .3333, .6666 and 0. For example, check numbers 10, 11 and 12, when divided by three, yield 3.3333, 3.6666 and 4.0, respectively. As such, assuming that one determines that the top check is, for example, divisible by 3 to yield a post-decimal value of .3333, one can determine that the current check to print is a middle check if it yields a post-decimal value of .6666 when divided by 3, or a bottom check if it yields a post-decimal value of 0 when divided by 3. Similarly, check positioning may be achieved by using a modulus of 3 function on the top of page recorded check number, or other mathematical process. For example, if the check position is equal to (modulus ((any recorded top of page check number + current check number requested to print), 3)), then positioning may be determined as follows.

(1) If (check position) equals 2 then set vertical print positioning to print top check.

(2) If (check position) equals 0 then set vertical print positioning to print middle check.

(3) If (check position) equals 1 then set vertical print positioning to print bottom check.

With reference to Figures 12A and 12B, a method for check shade security printing is shown and described. These methods protect laser-printed instruments or documents against unwanted erasures. With continuing reference to Figure 12A, a check is demonstrated with an erasable shadow background design preprinted over the crucial instrument areas. Any erasure to the final printing will also erase the background design, thereby facilitating inspection of the instrument to detect unwanted erasures. In particular, to protect against any changes to the check payee or amounts of the check 600, there is a shade design 610 printed in these areas using erasable ink. Since laser printer ink is readily erasable, unwanted changes could be made, but the shaded

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design will also be removed thereby increasing noticeability of the unwanted erasure. The design 610 is preferably difficult to duplicate thereby further facilitating security of the check. Moreover, the design area 610 could be printed in a magnetic ink which could be quickly scanned for any interruptions to indicate that an unwanted change was made, thereby possibly triggering an alarm signal. Moreover, blank checks could be preprinted with a shade design for use with any laser printer check printing system by using the aforementioned system to preprint the full areas 610.

With reference to Figure 12B, it is demonstrated that the system that prints the checks can also provide the shadow background design as it prints the data. In one example, the data can be printed using a 12 pitch bold font, and the shadow character can be printed using a 17 pitch light font. The background characters are given 17\12 more spaces than the data, thereby providing a more discrete background design.

To achieve such security shading, the computer system of the present invention determines an area to be shaded surrounding such key areas such as the payee and amount areas to create a security table having coordinates (rows and columns) of the areas to be shaded. This security table is used to determine and forward printer control codes for a printer to properly shade the document in question.

Another possible variation of the present invention would be to simply use the above coordinate grid sheet system in a software program to print only the shadow background design on any existing instrument. When used in conjunction with the magnetic ink scanner, the system provides a secure shading system for detecting check alteration.

Standard OCR toner cartridges for laser printers, or OCR ribbon inks for other printers, could

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also be used as well as any indelible erasable ink which can make it rather difficult to erase the design without being readily detectable.

With reference to Figures 13A and 13B, two flowcharts for a nationwide electronic collection service are shown and described. In general, all checks have a nine digit number which refer to the specific bank on which the check is drawn. The deposit system provides a key recording point for these numbers. Since check payor records are entered and accessed using this deposit system, one may maintain bank routing numbers on file for all entities doing business with a particular company. The end user enters the first few letters of the payor name and moves to that payor as a menu choice at step 630. The listing for that payor shows the payor name and bank account number at step 640. A user may easily glance at the account number on the check and see if it is the same as the one on the screen. If it is, the user may select the payor and enter an amount at step 650. If it is not, then the additional payor record can be added to the system at step 660 and the amount of the payment may be entered at step 670. The new payor record need only contain the payor name, the bank routing number and the bank account number to fully update the system. This short cycle could lead the end user back to the bank of the payor, should that payor ever become delinquent on future payments. Collections agencies and collection attorneys can utilize such key data in a collection proceeding.

Although most companies do not copy and file all checks received, a new bank routing number look-up service can be provided to greatly facilitate collection recovery. For example, in step 680, when a bill is left unpaid for thirty days, a series of payment request letters may be sent over a thirty day period in step 690. Thereafter, if the bill remains unpaid for a sixty day period as in step

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700, the system user calls a 900 service which looks up the bank location and phone number based on the bank routing number and a deposit record for the delinquent payor in step 710. If an attorney is required, as
5 determined at step 720, the 900 service can be called to look-up an attorney located nearby the delinquent payor to facilitate collection at step 730. A report containing a collection service table of information can be faxed to the attorney that will include all the information needed
10 by the attorney to expedite the collection process. Accordingly, this system can allow the end user to initiate a collection process in record time, with less time and effort than previously required.

With reference to Figure 14, a nationwide
15 electronic payroll service will now be shown and described. Because complex checks can be printed right at the end users location, a unique way to process payroll is now possible. A second 8-1/2 x 11 sheet maybe printed to a printer of choice whenever a check is printed. This
20 page serves as a mailing page, or as an employee payroll receipt. Preferably, the second page contains the address of the payee at a position so as to be visible in a standard number 10 window envelope.

The service begins at step 750 in which an
25 accountant registers the end user with a service, who provides all the necessary information to process payroll on a form which is synchronized with the central system and the end users system. At step 760, the form is approved by the central system and the end user is faxed a
30 setup format to enter into their system. Next, the end user prints and faxes back a report which validates correct setup format at step 770. At step 780, the central system calls the end user with the password that locks the setup format in place. At this point, no
35 changes can be made and the system can now be used. In use, the end user calls or faxes the central system every

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° payroll period and states ID number, hours, or pay rate changes by employee ID number at step 790. The central system faxes data to the end user such as gross, net, FICA, State, City, etc. by employee ID number in step 800. In response, the end user enters and prints payroll checks using an existing checkbook in step 810 and the central service can provide detailed periodic reports via a payroll service table of data, or the end user can print summations of any payroll data (also via a payroll service table of data) at step 820.

10 This service eliminates the need for checks to be delivered by courier service. Moreover, an end user may receive complex computations done by professional service. Computations can be done by the professional service at a central location, thereby freeing the end user of the very complicated tasks of payroll programming. The payroll details can be transmitted to the end user, who can then simply enter only these basic amounts and print payroll checks at their location very quickly. The payroll details also can be loaded directly to the system by modem, to further expedite the process. An accountant can be involved in the setup and, in fact, needs no computer experience. The software can also be configured to provide simple summation reports, and the complete audit trail and check stubs, as well as the ability to provide a central service having more extensive reporting services if necessary. In the event of an equipment failure, the checks can be nevertheless written manually and entered into the computer at a later point.

30 With reference to Figure 15, a date entry scheme for a computer system is shown and described. Most existing software will fail to function in the year 2000. This is a function of the fact that they only use two digits for the year. On the contrary, the system preferably utilizes a four digit year system and therefore the method used by the system will function until the year

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9999. The system will allow the end user to enter only two digits for the years 1980 to 2079. In the preferred embodiment of the present invention, the user must enter four digits for the year before 1980 and after 2079.

Moreover, the month, day, and year are entered as three separate integers. The month is verified to be between 1 and 12, while the day is verified to be between 1 and 31, while the year is verified to be between 0 and 99 or greater than 9999. If the year is between 80 and 99, then 1900 is added to the year. If the year is between 0 and 80, then 2000 is added to the year. Moreover, no three digit year entries would be allowed.

In use, the user sets the date at step 830, using a two digit integer for the month at step 840, and an analysis is done at step 850 to determine whether the month is less than zero, the month is greater than 12, the month is not equal to an integer, or the month fails. If any of these conditions occur, the user must refill in the two digit integer for the month at step 840. If these conditions do not occur, the user fills in a two digit integer for the day at step 860 and another analysis is performed at step 870 to determine whether the day is less than zero, the day is greater than 31, the day is not equal to an integer or the day fails. Upon failure, the system returns to the step at 860 requiring the user to fill in the two digit integer for the day. At step 880, the user fills in a four digit integer for the year and another analysis is performed at step 900 to determine whether the year is less than zero, the year is between 100 and 999, the year is not equal to an integer or the year fails. If failure occurs, then the user must enter a four digit integer for the year at step 880. In step 910, the system determines whether the year is greater than 80 or less than 99. If so, 1900 is added to the year at step 912. Otherwise, the determination is made as to whether the year is less than 80 at step 920. If so, 2000 is added to

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the year at step 922. If not, the system combines the month, day, year to form the complete date at step 930. If the date fails at step 932, the user must return to step 860 and begin again. Otherwise, the system completes its functions at step 934.

With reference now to Figure 16, a software rental method will now be shown and described. The system is directed to a method to distribute software in which the software can be securely rented thereby decreasing the operating cost associated with the software. Moreover, an increase in total distribution may be achieved in such a manner.

In general, on initial installation, the end user verifies the system clock date. This date is stored as the install date. The program subtracts the install date from the current block date. If the difference is less than 12 months, then the program will run normally. If the difference is between 11 and 12 months, then the program will ask the user to verify the clock date, and warn them that they must renew soon. The amount of time left to renew will be computed as the install date plus 365 minus the current clock date that is displayed. The program will then run as normal. If the difference is greater than 12 months, the program will inform the user that they must call now to renew before the program will run. The program both verifies the clock date and displays a serial number, rental rate, and phone number to call. The program waits for a renewal password to be entered.

Upon entry, the program updates the install date with the following formula: current clock date plus 365, or install date plus 365 minus the current clock date, whichever is later. In the preferred embodiment, the renewal will be at least one year. Should an end user renew early however, the end user will receive the one year plus any extra time that would have been left over on

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the current year's rental. If the end user refuses to enter the correct password, the program will simply exit to the operating system. In the preferred embodiment, the correct password will be a computed a variance of the serial number and the current clock date. Therefore, the password will be different each day, and will be different for each serial number, but the formula necessary to compute the correct password will always be the same. Accordingly, this formula will be in the end users program, and will also be available to the renewal service program.

In a preferred embodiment, this renewal service can be administered by a computer connected to a 900 number phone service, for maximum efficiency. While the password formula can be quite complex, it is computed on both sides by a computer. The end user will only enter their serial number into the phone, the password will be audibly revealed to the user, and the user will in turn enter the password into the computer. This entire package can be controlled by a 900 number phone service.

With particular reference to Figure 16, on initial installation, the current date is stored as the install date and the computer clock date is verified at step 940. At step 950, the program is started and the install date is subtracted from the clock date. At step 960, a determination is made as to whether the difference is less than 11 months. If so, the program is run at step 962. Otherwise, a determination is made at step 970 as to whether the difference is greater than 11 months and less than 12 months. If so, the user is warned that they must renew within the install date plus one year minus current date in step 972 and the program is run at step 974. Otherwise, the user is informed that they must call now to get a password to renew their software rental period so as to allow the program to run at step 980. Moreover, in step 980, the serial number and 900 number and rate are

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displayed. At step 982, a password is determined as a variance of the current date and the serial number. At step 990, if the user does not call then the program exits at step 992. Otherwise, the 900 number service uses the serial number and the current date to compute the password needed to renew at step 995. The user then enters the correct password at step 996 to update the install date with the current date in step 997 and to run the program at step 998. If the end user does not enter the correct password, the program again exits at step 1000.

With reference to Figure 17, a block diagram which depicts the computer architecture for use in the preferred embodiment of the present invention is shown and described. In general, the grid sheet is used at step 1010 to extract information regarding the bank instrument so that a user may input the information using a keyboard at step 1020 to generate data signals 1021. A computer processor at step 1030 receives the information from the user via data signals 1021 and manipulates the information to achieve the benefits of the present invention. In a preferred embodiment of the instant invention, the processor is preferably an Intel® 486 Processor, although it is to be understood that other suitable processors such as a 386, Pentium, etc. may be used in its place. Moreover, RBASE® by Microrim® is preferably used to instruct the processor, although languages such as C, Fortran, etc., may also be used. Processor 1030 communicates with a memory 1040 having a series of memory cell locations. The memory 1040 comprises a series of master table signals 1041 corresponding to the master table of the present invention, second master table signals 1042 corresponding to the second master table of the present invention, input table signals 1043 corresponding to the input table of the present invention, printer control code signals 1044 corresponding to the printer control code table of the present invention,

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security table signals 1045 corresponding to the security table of the present invention, collection service table signals 1046 corresponding to the collection service table of the present invention and payroll service table signals 1047 corresponding to the payroll service table of the present invention. Processor 1030 and memory 1040 may also create, receive and transfer all types of signals corresponding to any of the functions of the present invention. Processor 1030 also communicates with a printer 1050 using printer control signals 1051 from the processor to the printer. Moreover, the processor 1030 may communicate with a display device 1060 through display signals 1061 forwarded from the processor 1030 to the display device 1060. Moreover, the processor 1030 may receive information via data signals 1081 from the rental period clock 1080 for use throughout the invention. Finally, the system may also include a scanner 1070 which scans a printed document with security shading 1069 generated by the printer 1050.

While the present invention has been shown and described herein in what is conceived to be the most practical and preferred embodiment, it is recognized that departures may be made therefrom within the scope of the invention, which is therefore not to be limited to the details disclosed herein but is to be accorded the full scope of the claims so as to embrace any and all equivalent apparatus and articles.

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What is claimed is:

1. A method of generating custom computer printouts tailored to a preexisting form having information thereon, comprising the steps of:

5 providing a grid sheet comprising a first coordinate ruler and a second coordinate ruler, said second coordinate ruler being disposed in an orthogonal relationship with said first coordinate ruler;

10 providing a master table having coordinate values corresponding to said first coordinate ruler and said second coordinate ruler of said grid sheet;

15 determining first and second orthogonal coordinates of said information by aligning said first coordinate ruler and said second coordinate ruler of said grid sheet with said preexisting form;

20 conforming said coordinate values of said master table to said first and second coordinates of said information; and

25 utilizing the conformed master table to generate instruction signals to control the location of the printing of alphanumeric characters on said form in coordination with said master table.

2. The method of claim 1 further comprising the steps of:

30 generating a forms table containing vertical and horizontal coordinates from a plurality of forms; and

selecting one of said plurality of forms to serve as said master table.

- 35 3. The method of claim 1 further comprising the

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step of:

security shading select portions
surrounding said alphanumeric characters on said
preexisting form.

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4. The method of claim 1 further comprising the
step of:

expanding the size of said preexisting form
to enable said printing of alphanumeric
characters on said preexisting form.

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5. The method of claim 1 further comprising the
steps of:

printing a date comprising a year within
the range of 2000 to 9999 on said preexisting
form in response to said instruction signals.

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6. The method of claim 1 further comprising the
steps of:

maintaining collection service data from
information contained in said instruction
signals; and

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printing payment request letters containing
financial information from said collection
service data.

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7. The method of claim 1 further comprising the
steps of:

collecting payroll data from a plurality of
employees; and

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printing said payroll data on a plurality
of preexisting forms in coordination with said
first and second coordinates of said edited
master table.

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8. The method of claim 1 further comprising the

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steps of:

calculating time from an installation date
of said method; and

suspending use of said method upon
expiration of a rental due date.

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9. The method of claim 8 further comprising the
steps of:

reinitializing said method upon payment of
a rental fee.

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10. A computer-based layout grid coordinate system
for generating custom computer printouts
tailored to a preexisting form, comprising:

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a grid sheet, said grid sheet having a
first coordinate ruler and a second coordinate
ruler, said second coordinate ruler disposed in
an orthogonal relationship with said first
ruler;

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memory means comprising a plurality of
memory cell locations, said memory cell
locations storing master table signals
comprising signals corresponding to said first
coordinate ruler and said second coordinate
ruler and input table signals comprising
instruction signals inputted by a user for
editing said master table signals in accordance
with first and second coordinates of information
printed on said preexisting form; and

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processor means in communication with said
memory means for processing printer control
signals from said master table signals and said
input table signals to print information on said
preexisting form in coordination with said input
table signals and master table signals.

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11. The computer-based layout grid coordinate system of claim 10, wherein said memory means further stores:
- second master table signals comprising vertical and horizontal coordinate signals from a plurality of forms; and
- wherein said input table signals comprises instruction signals inputted by a user to replace said master table signals with vertical and horizontal coordinate signals from a selected form of said plurality of forms corresponding to said second master table signals.
12. The computer-based layout grid coordinate system of claim 11 wherein said first coordinate ruler is a vertical coordinate ruler and said second coordinate ruler is a horizontal coordinate ruler, said vertical and horizontal coordinate rulers being configured for a bank instrument.
13. The computer-based layout grid coordinate system of claim 10 wherein:
- said memory further stores printer control signals to security shade portions of said preexisting form; and
- said processor means generates printer signals corresponding to said security shading in coordination with said input table signals on said preexisting form.
14. The computer-based layout grid system of claim 10, further comprising:
- means for expanding the size of a preexisting form to enable printing on said preexisting form.

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15. The computer-based layout grid system of claim 10, wherein said processor means generates printer signals corresponding to a date from said second input table signals, said date comprising a year within the range of 2000 to 9999.

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16. The computer-based layout grid system of claim 10 wherein:

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said memory means further stores collection service table signals comprising financial information signals from said instruction signals of said second input table signals; and

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wherein said processor means generates printer signals to create payment request letters containing financial information from said collection service table signals.

17. The computer-based layout grid system of claim 10 wherein:

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said memory means further stores payroll service table signals containing financial information signals from said instruction signals of said input table signals; and

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said processor means generates printer signals to print financial information from said payroll service table signals on said preexisting form in coordination with said first and second coordinates of said input table signals.

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18. The computer-based layout grid system of claim 10 further comprising:

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clock means disposed in communication with said memory and said processor for calculating time from an installation date to a rental

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- payment due date, wherein access to said memory is prevented when said clock means calculates time at said rental payment due date.
- 5 19. The computer-based layout grid system of claim 18 wherein said clock means is configured to reinitialize upon entry of a password to said processor.
- 10 20. A method of detecting alteration of a bank instrument, comprising:
- printing alphanumeric characters on said bank instrument;
- selecting portions surrounding said alphanumeric characters on said bank instrument for alteration detection;
- 15 security shading said select portions surrounding said alphanumeric characters on said bank instrument; and
- 20 analyzing said alphanumeric characters and said security shaded areas of said bank instrument to detect alteration of said alphanumeric characters and said security shaded portions.
- 25 21. The method of claim 20 wherein said alphanumeric characters and said security shaded portions surrounding said alphanumeric characters are printed with erasable ink and further wherein
- 30 said step of analyzing said alphanumeric characters and said security shaded areas comprises the step of detecting erased portions of said erasable ink.
- 35 22. The method of claim 20 wherein said alphanumeric characters and said security shaded portions

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surrounding said alphanumeric characters are printed with magnetic ink and further wherein said step of analyzing said alphanumeric characters and said security shaded areas comprises the step of detecting an interruption in said magnetic ink.

23. The method of claim 20 wherein said printing and security shading steps utilize a different pitch.

24. The method of claim 23 wherein the pitch of said printing step is less than the pitch of said security step.

25. A computer-based security shading system for detecting unauthorized alteration to a document, comprising:

memory means comprising a plurality of memory cell locations, said memory cell locations storing input table signals comprising instruction signals inputted by a user for printing alphanumeric characters on said document, printer control code table signals containing printer control signals corresponding to at least said alphanumeric characters, and security table signals comprising signals corresponding to select portions of said document for security shading; and

processor means in communication with said memory means for generating said security table signals from said instruction signals and for transmitting printer control signals from said printer control code table signals to a printer to print said alphanumeric characters and said security shading on said document.

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26. The system of claim 25 further comprising:
a printer in communication with said
processor configured to print said alphanumeric
characters and said security shading on said
document with erasable ink.

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27. The system of claim 25 further comprising:
a printer in communication with said
processor configured to print said alphanumeric
characters and said security shading on said
document with a magnetic ink; and
a scanner arranged to detect interruptions
in said security shaded portions of said
document.

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28. The system of claim 25 wherein said processor
means transmits printer control signals to print
said security shading in a different pitch from
said alphanumeric characters.

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29. A method of laser printing information on a
document having insufficient dimensions for
insertion into a laser printer, comprising the
steps of:

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placing an expander in communication with
said document such that said expander increases
the dimension of said document to a dimension
sufficient for insertion into said laser
printer;

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feeding said expander and said document
into said laser printer;

laser printing information on said
document; and

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separating said expander from said document
having said laser printed information printed
thereon.

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30. The method of claim 29 wherein said step of placing an expander in communication with said document comprises the step of:
- 5 sliding a portion of said document into a printer carrier sleeve dimensioned to expand the size of said document for insertion into a laser printer.
31. The method of claim 30 wherein said document comprises a bank check having a first check stub attached to said bank check and a second check stub attached to said first check stub, and wherein said step of placing an expander in communication with said document comprises the step of inserting at least a portion of said
- 10 second check stub into said expander.
32. The method of claim 31 wherein said printer carrier sleeve comprises a first plate and a second plate defining a receiving space
- 20 therebetween, said receiving space dimensioned to receive said portion of said second check stub, said first plate being fixed to said second plate along at least a portion of said plates, wherein said step of placing an expander in communication with said document comprises the step of:
- 25 sliding at least a portion of said second stub into said receiving space so that at least a portion of said second stub abuts said fixed portion of said plates.
- 30
33. The method of claim 29 wherein said step of placing an expander in communication with said document comprises the step of:
- 35 adhering at least a portion of said

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expander to said document.

34. The method of claim 29 wherein said step of placing an expander in communication with said document comprises the step of:

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attaching a stub to said document; and
perforating the expander to facilitate detachment of said stub from said document.

10 35. A checkbook containing an enhanced check arrangement to facilitate laser printing on checks, comprising:

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a plurality of checks, each of said plurality of checks having a width less than $3\frac{1}{2}$ inches;

a binding disposed along at least a portion of each of said plurality of checks; and

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a plurality of stubs disposed between said binding and said plurality of checks; wherein each stub is (1) attached in a perforated arrangement to one of said plurality of checks and (2) attached in a perforated arrangement with said binding, wherein the combined width of each check and stub is at least $3\frac{1}{2}$ inches.

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36. The checkbook of claim 35 wherein each of said plurality of checks contains a security shaded dollar amount area.

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37. A check-carrier sleeve for facilitating laser printing on a check, comprising:
a first plate; and
a second plate having a portion fixed to at least a portion of said first plate, said first plate and said second plate being arranged to define a receiving space therebetween, said

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receiving space being dimensioned to receive at least a portion of a check stub, wherein the combined surface area of said first plate and a check associated with said check stub, as said check stub is disposed within said check carrier sleeve in a contiguous relationship with said fixed portions of said first and second plates, are sufficient for a laser printer to engage and print information on said check.

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38. The check-carrier sleeve of claim 37 wherein the combined width of said first plate and said check is greater than, or equal to, 3.5 inches.

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39. A checkpage for use in a printing system, said checkpage comprising three checks, said three checks being perforatedly connected, said three checks being arranged on said checkpage to provide the checkpage with an 8½ inch by 13 inch dimension, wherein the height of said checks is 2.83 inches.

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40. The checkpage of claim 39 further comprising a one inch perforated stub disposed alongside said 8½ inch by 13 inch to increase the dimension of said checkpage to 8½ by 14 inches.

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41. A method for determining the location of a check on a 3-to-a-page checkpage, comprising:

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determining a modulus associated with a recorded top of page check number and a current check number requested to print; and

ascertaining whether a check is in the top, middle or bottom portion of the checkpage by analyzing said modulus.

35

- 43 -

°

42. The method of claim 41 wherein said modulus is determined by a modulus of 3 function.

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43. The method of claim 42 wherein said check location equals (modulus ((any recorded top of page check number + current check number requested to print), 3)), wherein if check location equals 2 then said check location is at a top position, wherein if check location equals 0 then said check location is at a middle portion, and wherein if check location equals 1 then said check location is at a bottom portion.

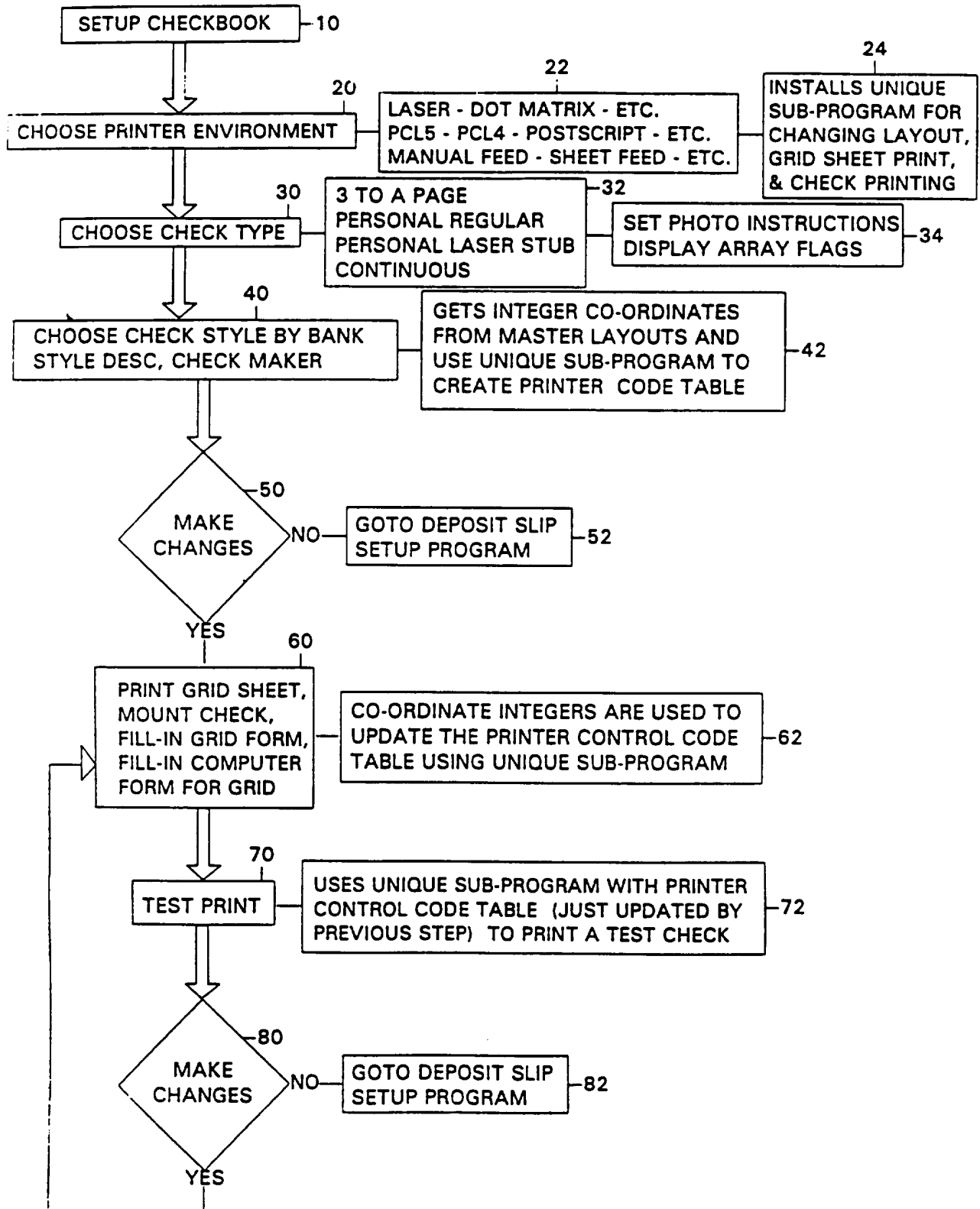


FIG. 1

[illegible]

STUBS AND CHECKS, WITH
 (ALONG LEFT SIDE) AND THE COLUMNS (ALONG TOP SIDE) GRID COORDINATES.
 THESE ROW AND COLUMN NUMBERS IN THE FORM BELOW. LATER YOU WILL FILL-IN
 THESE NUMBERS EASILY INTO YOUR COMPUTER CHECK LAYOUT FORM. PLEASE PLACE THE 3
 WITH THE (3) IN FRONT BY THEIR DECIMAL POINTS. (COLUMNS) NOTE THAT ALL
 CHECK ITEMS WILL PRINT IN 12 PITCH, AND ALL STUB ITEMS WILL PRINT IN 17 PITCH.

ITEMS HAVE A 1ST 8-- THAT MATCHES THE COMPUTER LAYOUT FORM, AND A 2ND 8-- THAT IS THE MAXIMUM CHARACTERS POSSIBLE FOR THAT ITEM. THE 12/17 RULER SHEET WILL HELP. FOR PERSONAL CHECKS, OR TO SIMPLY NOT TO INCLUDE CERTAIN ITEMS IN YOUR PRINT-OUTS. JUST ENTER {0} IN THE ROWS AND {0} IN THE COLUMNS OF THAT ITEM TO NOT INCLUDE IT. ALIGN ITEMS (BOTTOM OF PRINT) FOR ROW NUMBERS. ALIGN ITEMS (START OF PRINT) FOR ALL COLUMN NUMBERS EXCEPT THE STOPS 3 {8} ITEMS PLACED BY THE DECIMAL POINT LINE

STUB	ITEM POSITIONS	ROOM	COLUMN#	DETAIL	ROOM	COLUMN#	DETAIL	ROOM	COLUMN#	DETAIL	ROOM	COLUMN#	CHECK ITEM POSITIONS	ROOM	COLUMN#
	1= 8-LENDER ACCOUNT	[]	[]	10=10-AMOUNT01	[]	[]	16=9-REF 01	[]	[]	22=10-AMOUNT07	[]	[]	34= 7-MONTH, DAY (JAN 1,)	[]	[]
	2= 7-CHECKS VERIFY	[]	[]	11=10-AMOUNT02	[]	[]	17=9-REF 02	[]	[]	23=10-AMOUNT08	[]	[]	35= 2-(2) DIGIT YEAR	[]	[]
	7-MONTH, DAY (JAN 1,)	[]	[]	12=10-AMOUNT03	[]	[]	18=9-REF 03	[]	[]	24=10-AMOUNT09	[]	[]	36= 7-CHECKS VERIFY	[]	[]
	2-(2) DIGIT YEAR	[]	[]	13=10-AMOUNT04	[]	[]	19=9-REF 04	[]	[]	25=10-AMOUNT10	[]	[]	37=35=PAY TO PAYEE	[]	[]
	35=10-AMOUNT05	[]	[]	14=10-AMOUNT05	[]	[]	20=9-REF 05	[]	[]	26=10-AMOUNT11	[]	[]	38=10-AMOUNT CHECK	[]	[]
	35=10-AMOUNT06	[]	[]	15=10-AMOUNT06	[]	[]	21=9-REF 06	[]	[]	27=10-AMOUNT12	[]	[]	39=77=AMOUNTS DOLLAR 1ST LINE	[]	[]
	7=10=(\$)	[]	[]										40=77=AMOUNTS DOLLAR 2ND LINE	[]	[]
	8=10=(\$)	[]	[]										41= 8-LENDER ACCOUNT CODE	[]	[]
	9=10=(\$)	[]	[]										42=30=FOR (PRINTS 17 PITCH)	[]	[]

THE SAME ORDER AS ABOVE, WITH 1 SPACE BETWEEN AMOUNTS & DESC AND 1 SPACE BETWEEN MIDDLE DESC & AMOUNT. THIS WILL TAKE UP A LITTLE LESS THAN 2 1/2 INCHES. PLACE 1ST COLUMN OF AMOUNTS RIGHT ON HOLE MARGIN (COLUMN 15). 2 ROWS FIT IN STUBS LINES.

FIG. 2

FIG. 2

Fig. 2

3/21

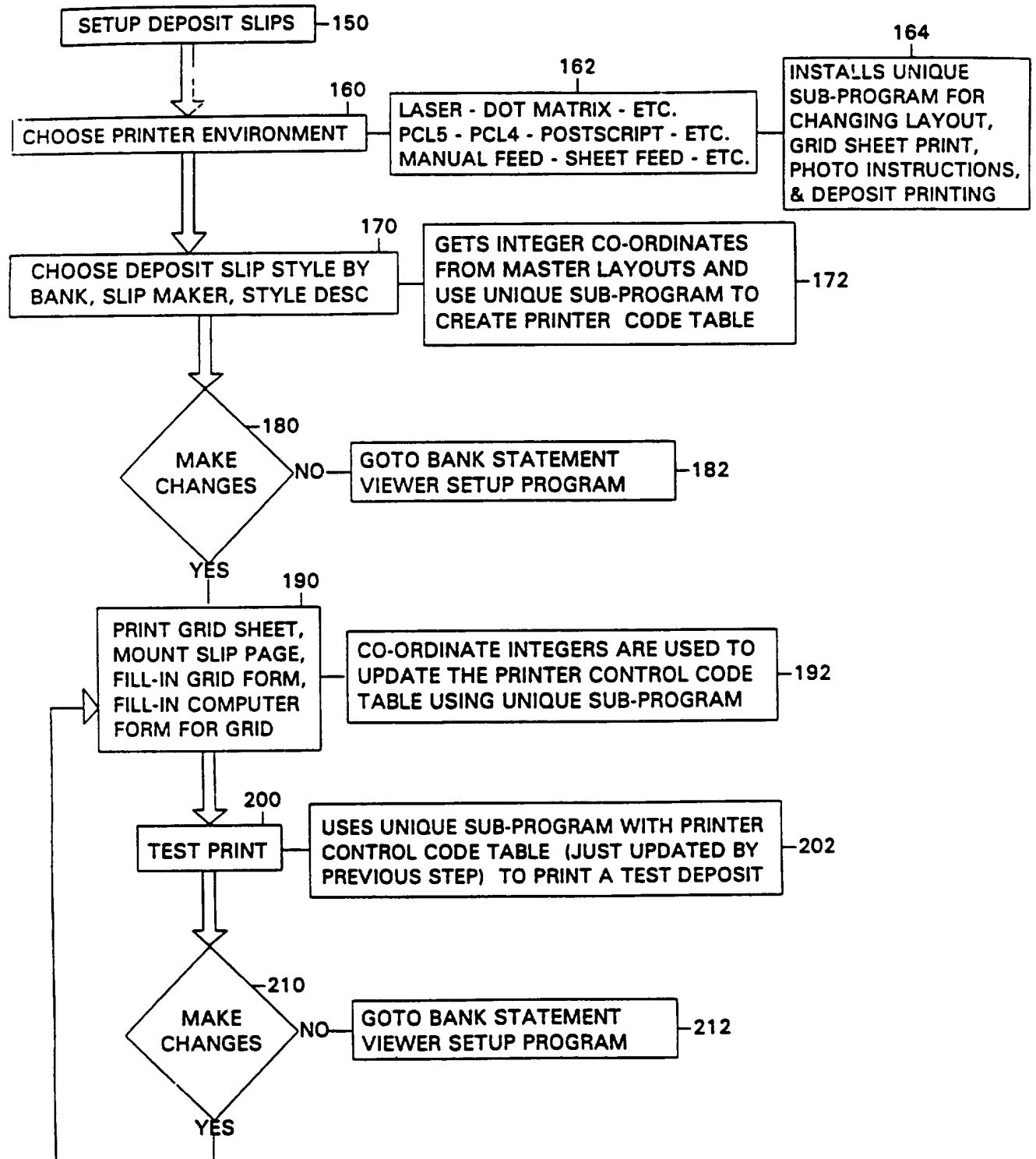


FIG. 3

250

Y
X

0 10 20 30 40 50 60 70 80 0

TAPE A (SINGLF PAGE ONLY) OF DEPOSIT SLIP
FLUSH WITH LEFT LINE [0] AND FLUSH WITH
TOP LINE [0].

0 10 20 30 40 50 60 70 80 0

R
O
W
S

0 10 20 30 40 50 60 70 80 0

THIS DEPOSIT SLIP GRID IS THE EXCLUSIVE
PROPERTY OF V.A.L.U.E. COMPANY.
ALL RIGHTS ARE RESERVED AND COPYRIGHTED.
NO COPIES MAY BE MADE. PATENT PENDING

C O L U M N S

0 10 20 30 40 50 60 70 80 0

[] # OF CHECK LINES ON DEPOSIT SLIP

[] # OF COPIES TO PRINT (USUALLY 3)

[] [\$] DECIMAL POINT VERTICAL LINE (COLUMN#)

[] [DATE (10 DIGIT)] (COLUMN#)

[] [DATE] (BOTTOM OF PRINT) (ROW#)

[] [CURRENCY] (BOTTOM OF PRINT) (ROW#)

[] [COIN] (BOTTOM OF PRINT) (ROW#)

[] CHECK LINE #1 (BOTTOM OF PRINT) (ROW#)

[] CHECK LINE #1 (BOTTOM ACTUAL LINE) (ROW#)

[] LAST CHECK LINE (TOP ACTUAL LINE) (ROW#)

[] [CHECK ID] (10 CHARACTERS) (COLUMN#)
5/8 INCH WIDE. SET STARTING COLUMN# BASED
ON THE SLIP'S SHORTEST [CHECK ID] WIDTH.

[] [TOTAL CHECKS] (BOTTOM OF PRINT) (ROW#)
PRINTS ACROSS. ENTER [0] TO IGNORE IT.

[] [TOTAL CASH] (BOTTOM OF PRINT) (ROW#)
WILL PRINT STRAIGHT ACROSS AND IS OFTEN
NOT USED. ENTER [0] TO IGNORE IT.

[] [TOTAL DEPOSIT] (BOTTOM OF PRINT) (ROW#)
WILL PRINT STRAIGHT ACROSS AND IS OFTEN
NOT USED. ENTER [0] TO IGNORE IT.

THESE LAST 2 ITEMS WILL PRINT ROTATED AT A
90 DEGREE ANGLE IF YOUR PRINTER SUPPORTS
THIS FEATURE. IF NOT, THEN LOCATE THEM NEAR
THE LOWER LEFT OF SLIP, AND WRITE IN BY HAND
ON YOUR DEPOSIT SLIPS AFTER YOU PRINT THEM.

[] [TOTAL# ITEMS] (BOTTOM OF PRINT) (COLUMN#)

[] [TOTAL# ITEMS] (START OF PRINT) (ROW#)

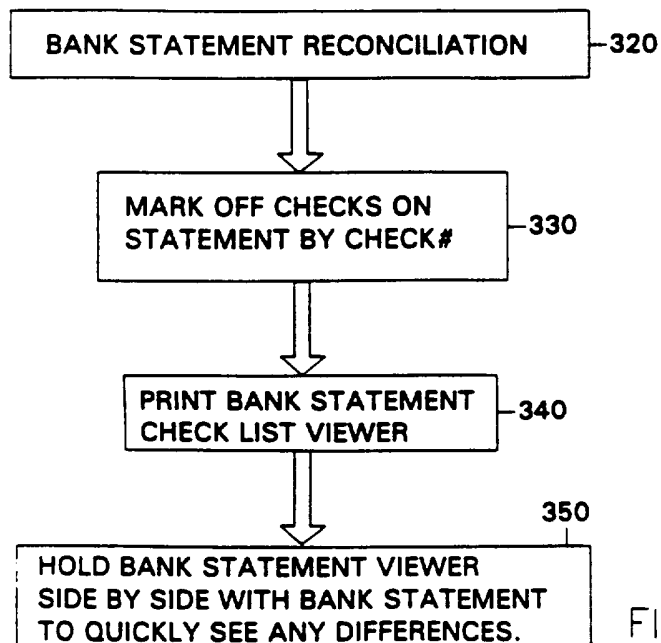
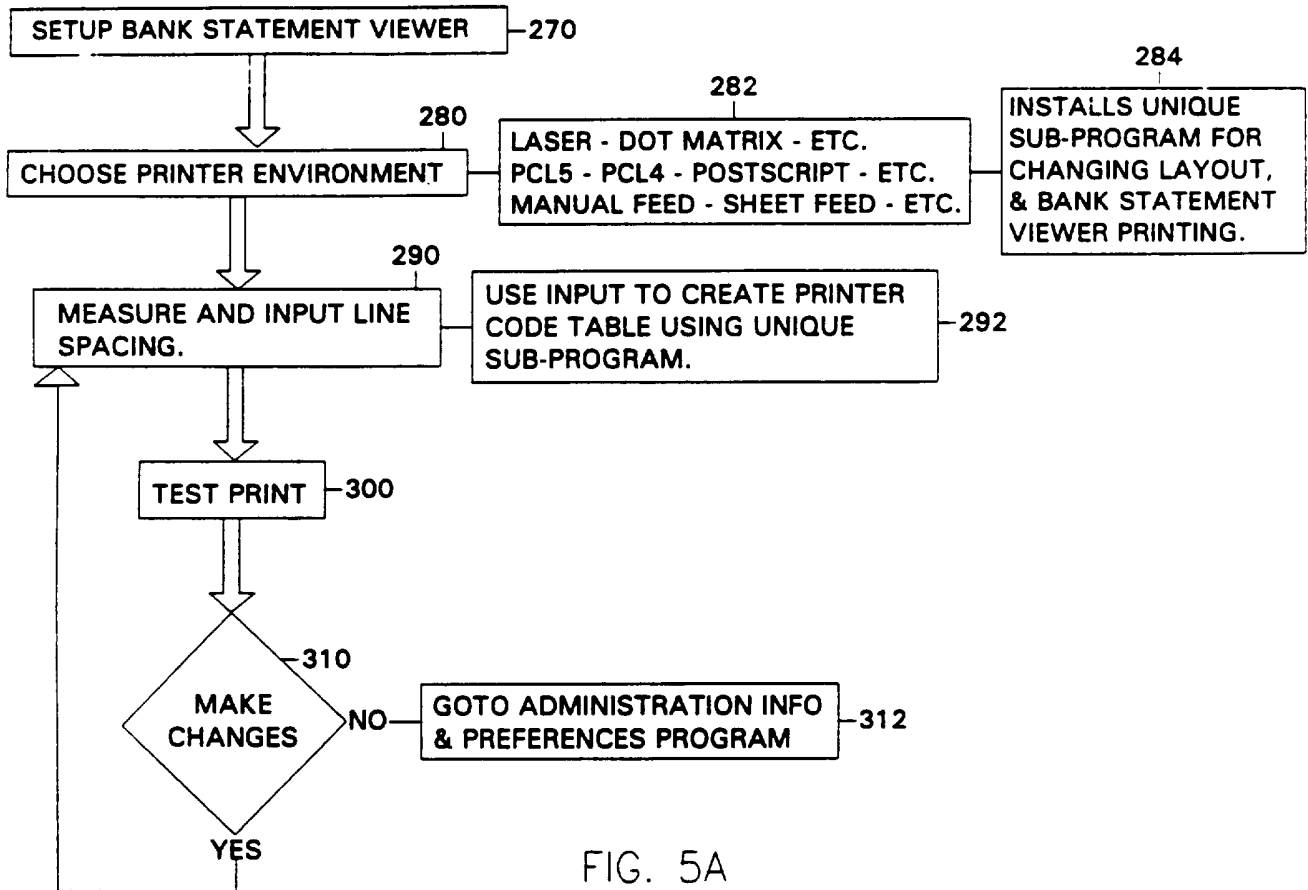
[] [TOTAL DEPOSIT] (BOTTOM OF PRINT) (COLUMN#)

[] [TOTAL DEPOSIT] (DECIMAL POINT LINE) (ROW#)

INSTRUCTIONS SIMPLY ALIGN EACH ITEM AS YOU WOULD
LIKE IT TO APPEAR ON YOUR DEPOSIT SLIP PRINTOUTS.
SPECIFY (ROW#) (HOW FAR DOWN) USING # ALONG RIGHT
SIDE OF GRID. SPECIFY (COLUMN#) (HOW FAR OVER FROM
THE LEFT SIDE) USING # ALONG TOP SIDE OF GRID. ENTER
THESE NUMBERS IN THE FORM ABOVE, THEN LATER INTO
COMPUTER DEPOSIT LAYOUT FORM. NOTE THAT ALL ITEMS
WILL PRINT IN 17 PITCH. [CHECK ID] IS THE NUMBERED
COLUMN USUALLY USED TO WRITE IN THE COMPANY NAME

THE CHECK IS FROM SOME SLIPS ACTUALLY SHORTEN THIS
COLUMN TOWARDS THE BOTTOM OF SLIP. USE THE SHORTEST
COLUMN TO SPECIFY [CHECK ID] (START COLUMN#), SO
AS TO AVOID ANY UNINTENTIONAL OVER PRINTING OF ANY
OTHER ITEMS. DETERMINE IF WE SUPPORT ROTATED PRINT
FOR YOUR PRINTER. IF WE DO THEN [TOTAL# ITEMS] AND
[TOTAL DEPOSIT] WILL PRINT ROTATED RIGHT ON YOUR
DEPOSIT SLIP. IF NOT LOCATE THESE ITEMS WHERE THEY
WILL NOT INTEFERE AND COPY BY HAND AFTER PRINTING.

FIG. 4





REPUBLIC NATIONAL BANK OF NEW YORK

Member F.D.I.C.
DIRECT INQUIRIES TO:

152 FIFTH AVENUE
NEW YORK NY 10018-2706
PHONE NUMBER: 212-525-6120

C

101- E

DATACONNECT INC
43 WEST 27TH STREET
NEW YORK, NY 10001-6915

R031

STATEMENT DATE
06-30-94
PAGE 1

THINKING ABOUT REDUCING OR DEFERRING FUTURE TAXES? WE HAVE
MANY SERVICES WITH TAX ADVANTAGES. FOR MORE INFORMATION
CALL 1-800-522-5214.

SERVICES SUMMARY	SERVICE	ACCOUNT NO.	BALANCE
	CORPORATE CHECKING	0310213888	46,769.05
SUMMARY	PREVIOUS BALANCE AS OF 05-31-94		71,031.07

19 DEPOSITS AND OTHER CREDITS FOR 1994 169,092.41
109 CHECKS AND OTHER DEBITS FOR 1994 193,354.43

CLOSING BALANCE AS OF 06-30-94 46,769.05

DEPOSITS/ CREDITS	DESCRIPTION	DATE	AMOUNT
	DEPOSIT	06-01	1,391.77
	DEPOSIT	06-01	4,470.02
	DEPOSIT	06-01	8,347.15
	DEPOSIT	06-01	9,003.64
	DEPOSIT	06-01	10,179.67
	LOAN CR DPT 530	06-01	25,000.00
	DEPOSIT	06-01	645.98
	DEPOSIT	06-01	5,222.94
	DEPOSIT	06-01	7,787.18
	DEPOSIT	06-01	15,982.11
	DEPOSIT	06-01	16,549.26
	CREDIT ADVICE	06-01	130.49
	DEPOSIT	06-01	879.80
	DEPOSIT	06-01	381.04
	DEPOSIT	06-01	2,285.26
	DEPOSIT	06-01	5,758.86
	DEPOSIT	06-01	8,169.18
	DEPOSIT	06-01	13,520.33
	DEPOSIT	06-01	33,587.65

CHECKS/ DEBITS/ CHARGES	CHECK NUMBER	DATE	AMOUNT	CHECK NUMBER	DATE	AMOUNT	CHECK NUMBER	DATE	AMOUNT
	21218	06-01	26.58	21253	06-01	215.80	21270	06-14	485.15
	21224	06-01	150.06	21254	06-01	150.00	21272	06-15	177.94
	21228	06-01	1,542.88	21256	06-02	2,617.80	21273	06-16	3,319.21
	21229	06-01	513.23	21257	06-02	2,087.88	21274	06-20	380.58
	21231	06-06	132.10	21258	06-02	2,100.00	21275	06-14	22.67
	21232	06-01	329.88	21259	06-02	27.45	21276	06-14	58.35
	21238	06-01	493.50	21260	06-02	3,751.25	21277	06-14	272.40
	21239	06-02	836.73	21261	06-02	272.40	21278	06-14	255.01
	21240	06-06	267.50	21262	06-02	146.00	21279	06-13	198.69
	21243	06-02	882.48	21263	06-02	280.00	21280	06-15	1,275.11
	21244	06-02	847.77	21264	06-02	180.00	21281	06-14	53.15
	21245	06-01	155.40	21265	06-01	300.00	21282	06-14	149.00
	21248	06-02	473.40	21266	06-01	623.32	21283	06-14	74.46
	21250	06-02	346.40	21267	06-02	300.00	21284	06-15	28.52
	21251	06-02	102.09	21268	06-10	1,425.80	21286	06-15	44.00
	21252	06-06	34.58	21269	06-14	785.98	21287	06-15	6,150.00

FIG. 5C

STATEMENT BEGINING 05/31/1994 STATEMENT ENDING 06/30/1994

PAGE# 1

COMPANY DATACONNECT INC
CHECKBOOK REPUBLIC NATIONAL
ACCOUNT# 0310213959

48 CHECKS FLAGGED AS HAVING CLEARED THE BANK ON THIS STATEMENT

AMOUNT	CHECK#	CHECK DATE	PAYEE	LEDGER CODE	LEDGER ACCOUNT DESCRIPTION	CHANGES
26.59	21216	05/15/1994	AT&T	PR	PURCHASES RESALE	
150.06	21224	05/15/1994	AT&T	PR	PURCHASES RESALE	
1,542.88	21226	05/15/1994	AT&T	PR	PURCHASES RESALE	
51.23	21229	05/15/1994	AT&T	PR	PURCHASES RESALE	
132.10	21231	05/15/1994	AT&T	PR	PURCHASES RESALE	
329.89	21232	05/15/1994	AT&T	PR	PURCHASES RESALE	
493.50	21238	05/15/1994	AT&T	PR	PURCHASES RESALE	
636.73	21239	05/15/1994	AT&T	PR	PURCHASES RESALE	
267.50	21240	05/15/1994	AT&T	PR	PURCHASES RESALE	
4,862.49	21243	05/15/1994	AT&T	PR	PURCHASES RESALE	
647.77	21244	05/15/1994	AT&T	PR	PURCHASES RESALE	
155.40	21245	05/15/1994	AT&T	PR	PURCHASES RESALE	
473.40	21248	05/15/1994	AT&T	PR	PURCHASES RESALE	
346.40	21250	05/15/1994	AT&T	PR	PURCHASES RESALE	
102.09	21251	05/15/1994	AT&T	PR	PURCHASES RESALE	
34.58	21252	05/15/1994	AT&T	PR	PURCHASES RESALE	
15.50	21253	05/15/1994	AT&T	PR	PURCHASES RESALE	
450.00	21254	05/15/1994	AT&T	PR	PURCHASES RESALE	
2,637.90	21256	05/15/1994	AT&T	PR	PURCHASES RESALE	
4,097.56	21257	05/15/1994	AT&T	PR	PURCHASES RESALE	
310.09	21258	05/15/1994	AT&T	PR	PURCHASES RESALE	
271.42	21259	05/15/1994	AT&T	PR	PURCHASES RESALE	
39,718.21	21260	05/15/1994	AT&T	PR	PURCHASES RESALE	
74.40	21261	05/15/1994	AT&T	PR	PURCHASES RESALE	
149.00	21262	05/15/1994	AT&T	PR	PURCHASES RESALE	
1,060.00	21263	05/15/1994	AT&T	PR	PURCHASES RESALE	
588.00	21264	05/15/1994	AT&T	PR	PURCHASES RESALE	
1,300.00	21265	05/15/1994	AT&T	PR	PURCHASES RESALE	
623.97	21266	05/15/1994	AT&T	PR	PURCHASES RESALE	
3,500.00	21267	05/15/1994	AT&T	PR	PURCHASES RESALE	
1,425.80	21268	05/15/1994	AT&T	PR	PURCHASES RESALE	
65.98	21269	05/15/1994	AT&T	PR	PURCHASES RESALE	
485.15	21270	05/15/1994	AT&T	PR	PURCHASES RESALE	
177.94	21272	05/15/1994	AT&T	PR	PURCHASES RESALE	
3,319.21	21273	05/15/1994	AT&T	PR	PURCHASES RESALE	
380.58	21274	05/15/1994	AT&T	PR	PURCHASES RESALE	
22.67	21275	05/15/1994	AT&T	PR	PURCHASES RESALE	
58.35	21276	05/15/1994	AT&T	PR	PURCHASES RESALE	
272.40	21277	05/15/1994	AT&T	PR	PURCHASES RESALE	
255.01	21278	05/15/1994	AT&T	PR	PURCHASES RESALE	
198.69	21279	05/15/1994	AT&T	PR	PURCHASES RESALE	
1,275.11	21280	05/15/1994	AT&T	PR	PURCHASES RESALE	
53.15	21281	05/15/1994	AT&T	PR	PURCHASES RESALE	
149.00	21282	05/15/1994	AT&T	PR	PURCHASES RESALE	
74.46	21283	05/15/1994	AT&T	PR	PURCHASES RESALE	
28.52	21284	05/15/1994	AT&T	PR	PURCHASES RESALE	
44.00	21286	05/15/1994	AT&T	PR	PURCHASES RESALE	
6,150.00	21287	05/15/1994	AT&T	PR	PURCHASES RESALE	

NOTE: SINCE THE LINE SPACING OF THIS PRINTOUT IS THE SAME AS YOUR BANK STATEMENT,
YOU CAN EASILY COMPARE THIS WITH YOUR STATEMENT TO FIND ANY DIFFERENCES, BY
SIMPLY HOLDING THEM ALONG-SIDE EACH OTHER.

400

TOP BOUND SIDE OF PERSONAL CHECKBOOK

TEAR OFF CHECK ALONG TOP PERFORATION TO PRINT CHECK IN LASER PRINTER. REMOVE STUB ONLY AFTER PRINTING.

TEAR OFF CHECK ALONG BOTTOM PERFORATION FOR HANDWRITTEN CHECKS

19

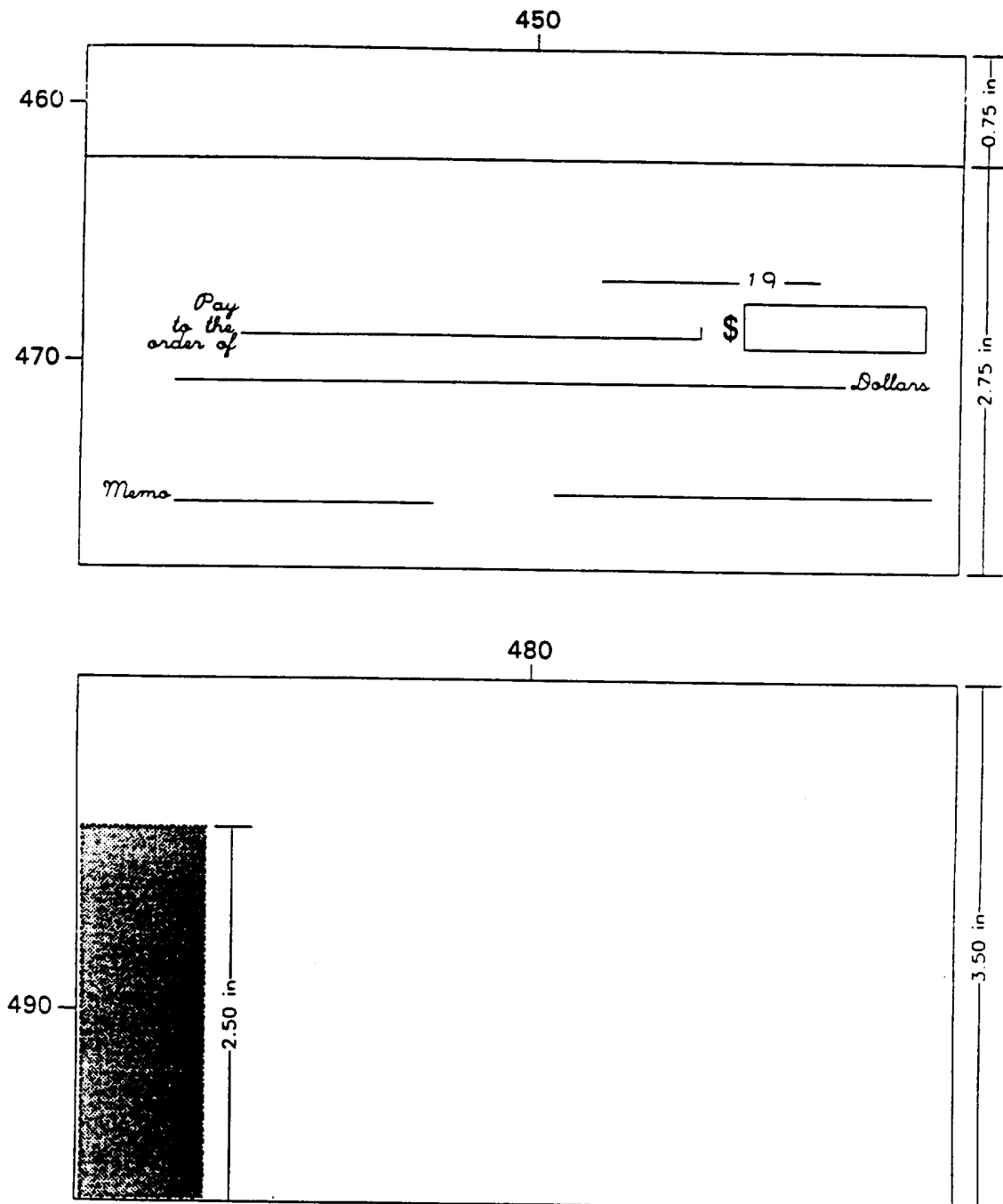
Pay to the order of _____ \$

_____ Dollars

Memo _____

PERSONAL CHECKBOOK WITH OPTIONAL LASER-STUB TEAR-OFF

FIG. 6



CHECK POST LASER CHECK FORM LEADER CARRIER

FIG. 7

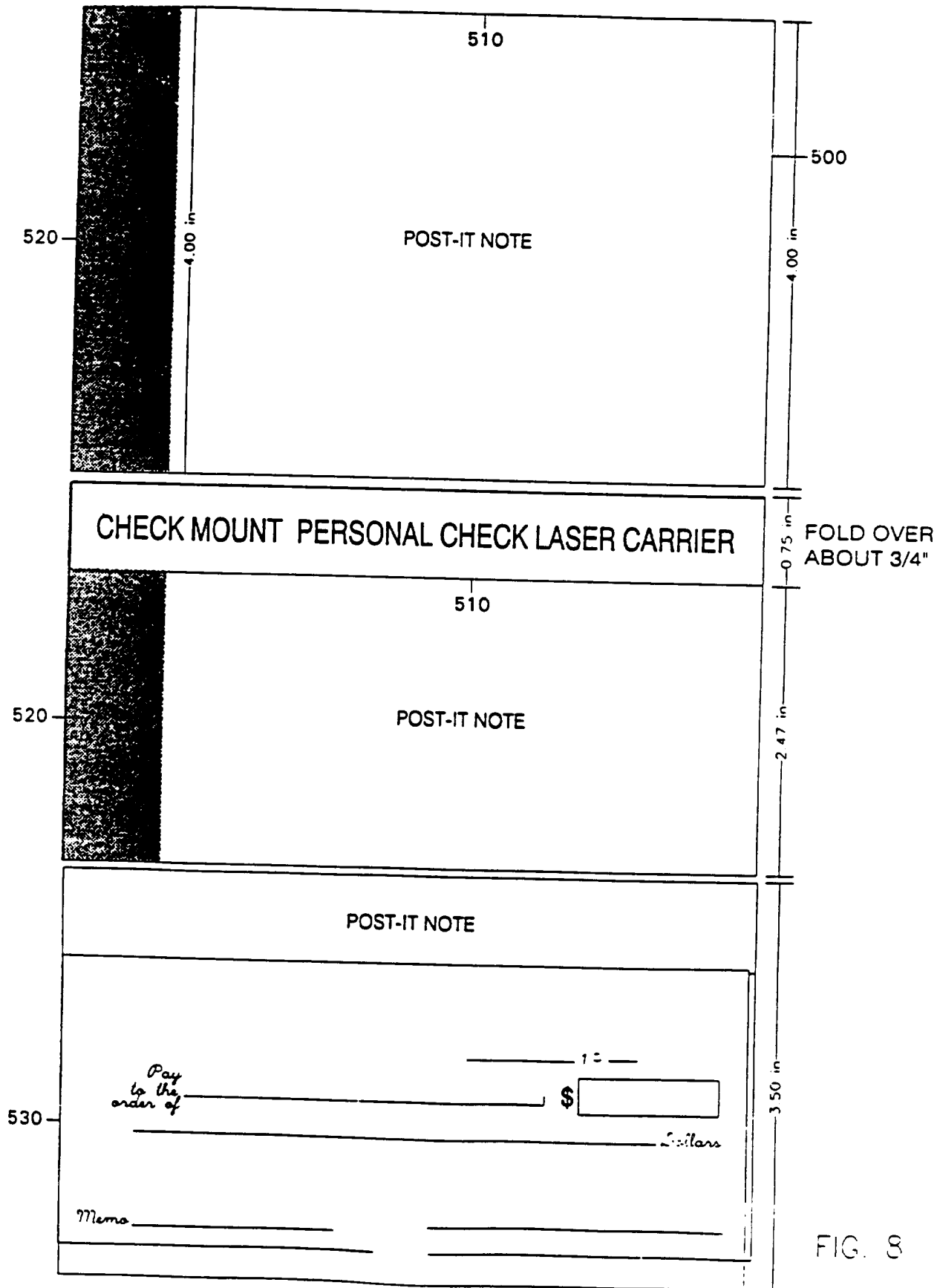
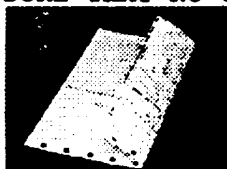
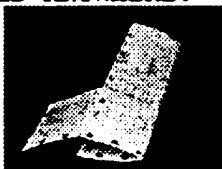


FIG. 8

FOLD YOUR CHECKS AS SHOWN BELOW. IF YOU HAVE REMOVED THE TOP OR MIDDLE CHECK OF CHECKBOOK PAGE, THEN YOU MUST ATTACH AN EXTRA BOTTOM LAYER AS SHOWN. USE TWO 4 X 6 POST-IT NOTES CONNECTED END TO END AND ATTACH UNDERNEATH STUB. MAKE SURE THAT NO GLUE IS EXPOSED ANYWHERE. OTHERWISE ONLY THE STUB PRINTS !



TOP CHECK



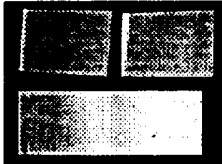
MIDDLE CHECK



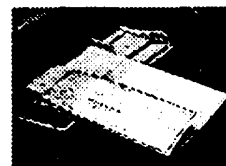
BOTTOM CHECK

HINT:

BATCH CHECKS WILL PRINT CONTINUOUSLY SO YOU WILL NOT DETACH CHECKS UNTIL YOU HAVE FINISHED RUN. JUST FOLD, INSERT, AND PRESS ONLINE BUTTON... REFOLD, INSERT, PRESS. THE MAILING PAGE WILL PRINT AFTER EACH CHECK.



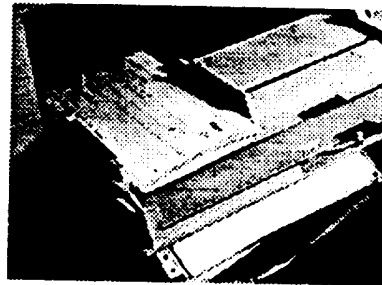
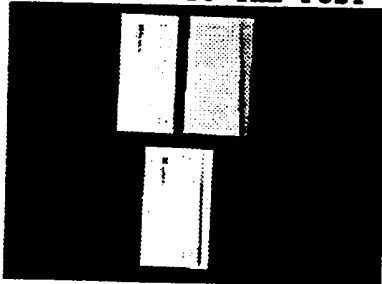
INSERT PAGE STUB FIRST TO LEFT OF MANUAL TRAY, WITH DESIRED CHECK FACE UP AND ON THE LEFT SIDE. THEN PRESS ONLINE BUTTON.



[TAB] THEN [z] TO ZOOM
PRESS [ANY KEY] TO PRINT

FIG 9A

PERSONAL SIZE CHECKS MUST BE ATTACHED TO A 4 X 6 POST-IT NOTE AS SHOWN. WITH THE GLUE SIDE AT TOP AND FACING YOU, FOLD OVER ABOUT 3/4 INCH DOWN ALONG RIGHT SIDE OF POST-IT NOTE. SECURELY MOUNT THE CHECK TO THE POST-IT NOTE WITH THE LEFT SIDE OF CHECK TOWARD THE TOP GLUE SIDE OF POST-IT. THE CHECK SHOULD COVER ALL EXPOSED GLUE AND HAVE AT LEAST 1/2 INCH OF THE POST-IT NOTE VISIBLE ALONG THE RIGHT SIDE. OTHERWISE THE CHECK WILL JAM IN THE PRINTER ! DO NOT USE THE SAME POST-IT NOTE TOO MANY TIMES SO THAT THE CHECK IS NOT SECURELY FASTENED TO THE POST-IT NOTE.



BATCH CHECKS WILL PRINT CONTINUOUSLY SO YOU MIGHT MOUNT SEVERAL CHECKS AHEAD OF TIME. THE MAILING PAGE WILL PRINT AFTER EACH CHECK.

INSERT LEFT SIDE OF CHECK IN FIRST, TO LEFT SIDE OF MANUAL TRAY, WITH CHECK FACE UP. THEN PRESS ONLINE BUTTON.

[TAB] THEN [z] TO ZOOM

FIG 9B

13/21

560

SEALED SIDE 550

564

F
O
L
D
E
D

S
I
D
E

562

O
P
E
N

S
I
D
E

566

OPEN SIDE

574

19 BAL BRO'T FOR'D

TO

FOR

TOTAL

AMOUNT

BALANCE

570

572

19 BAL BRO'T FOR'D

TO

FOR

TOTAL

AMOUNT

BALANCE

Pay to the order of 19 \$

Dollars

FOR

CHECKBOOK PAGE LASER PRINTER CARRIER SLEEVE

FIG. 10A

14/21

	575	576																				
575a	4 X 6 INCH POST-IT																					
	576b																					
578	<table border="1"><tr><td>_____ 19</td><td>SA SPOT FORD</td></tr><tr><td>TO _____</td><td></td></tr><tr><td>FOR _____</td><td></td></tr><tr><td>_____</td><td></td></tr><tr><td>TOTAL _____</td><td></td></tr><tr><td>AMOUNT _____</td><td></td></tr><tr><td>BALANCE _____</td><td></td></tr></table>	_____ 19	SA SPOT FORD	TO _____		FOR _____		_____		TOTAL _____		AMOUNT _____		BALANCE _____		577						
_____ 19	SA SPOT FORD																					
TO _____																						
FOR _____																						

TOTAL _____																						
AMOUNT _____																						
BALANCE _____																						
		<table border="1"><tr><td>_____ 19</td><td></td></tr><tr><td>Pay to the order of _____</td><td>\$ _____</td></tr><tr><td>_____ Dollars</td><td></td></tr><tr><td>FOR _____</td><td></td></tr></table>	_____ 19		Pay to the order of _____	\$ _____	_____ Dollars		FOR _____													
_____ 19																						
Pay to the order of _____	\$ _____																					
_____ Dollars																						
FOR _____																						
579	<table border="1"><tr><td>_____ 19</td><td>SA SPOT FORD</td></tr><tr><td>TO _____</td><td></td></tr><tr><td>FOR _____</td><td></td></tr><tr><td>_____</td><td></td></tr><tr><td>TOTAL _____</td><td></td></tr><tr><td>AMOUNT _____</td><td></td></tr><tr><td>BALANCE _____</td><td></td></tr></table>	_____ 19	SA SPOT FORD	TO _____		FOR _____		_____		TOTAL _____		AMOUNT _____		BALANCE _____		<table border="1"><tr><td>575</td><td>576</td></tr><tr><td colspan="2">4 X 6 INCH POST-IT</td></tr><tr><td colspan="2">4 X 6 INCH POST-IT</td></tr></table>	575	576	4 X 6 INCH POST-IT		4 X 6 INCH POST-IT	
_____ 19	SA SPOT FORD																					
TO _____																						
FOR _____																						

TOTAL _____																						
AMOUNT _____																						
BALANCE _____																						
575	576																					
4 X 6 INCH POST-IT																						
4 X 6 INCH POST-IT																						
		<table border="1"><tr><td>_____ 19</td><td></td></tr><tr><td>Pay to the order of _____</td><td>\$ _____</td></tr><tr><td>_____ Dollars</td><td></td></tr><tr><td>FOR _____</td><td></td></tr></table>	_____ 19		Pay to the order of _____	\$ _____	_____ Dollars		FOR _____													
_____ 19																						
Pay to the order of _____	\$ _____																					
_____ Dollars																						
FOR _____																						

CHECKBOOK PAGE LASER PRINTER POST-IT SLEEVE

FIG. 10B

[illegible][illegible][illegible]

CHECK SHADE SECURITY PRINTING DEVICE

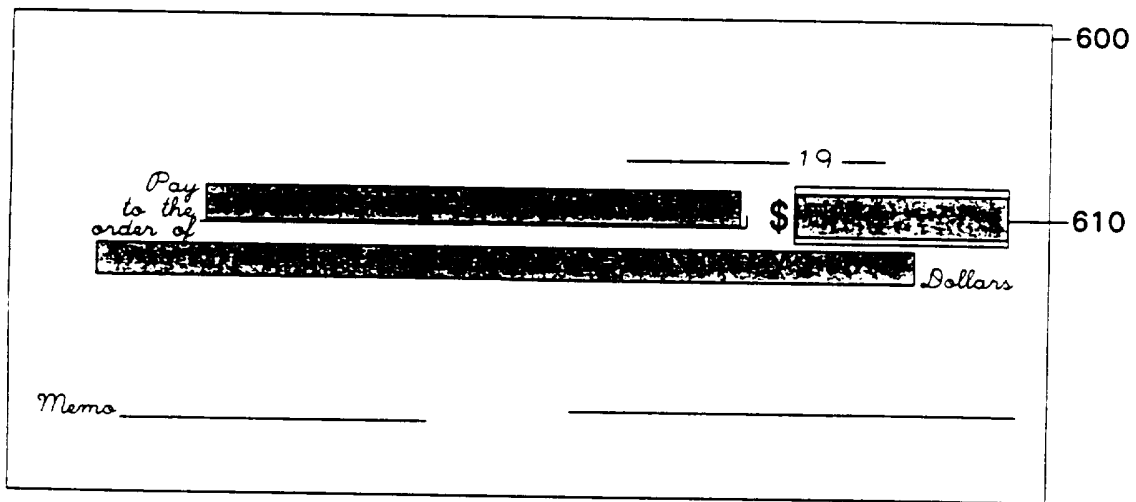


FIG. 12A

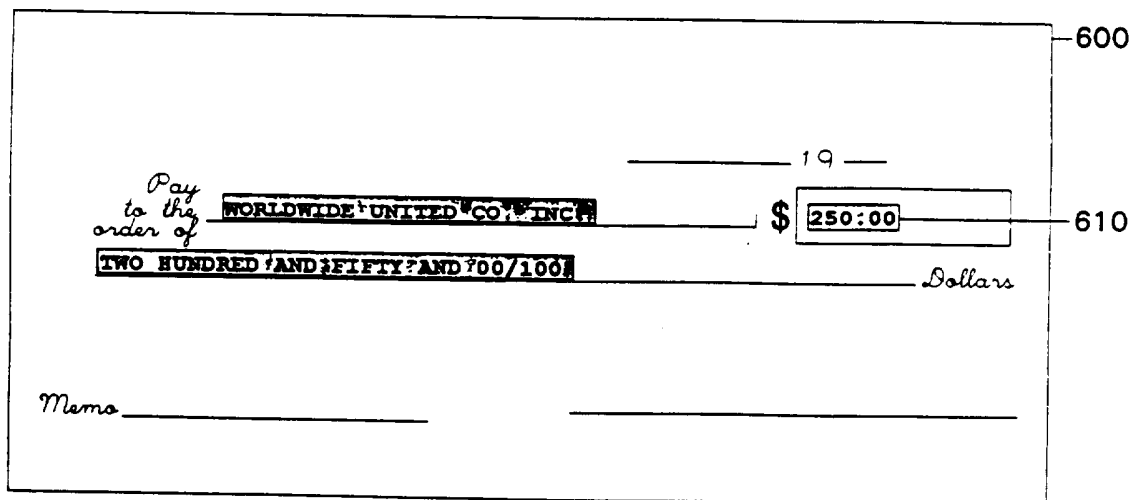


FIG. 12B

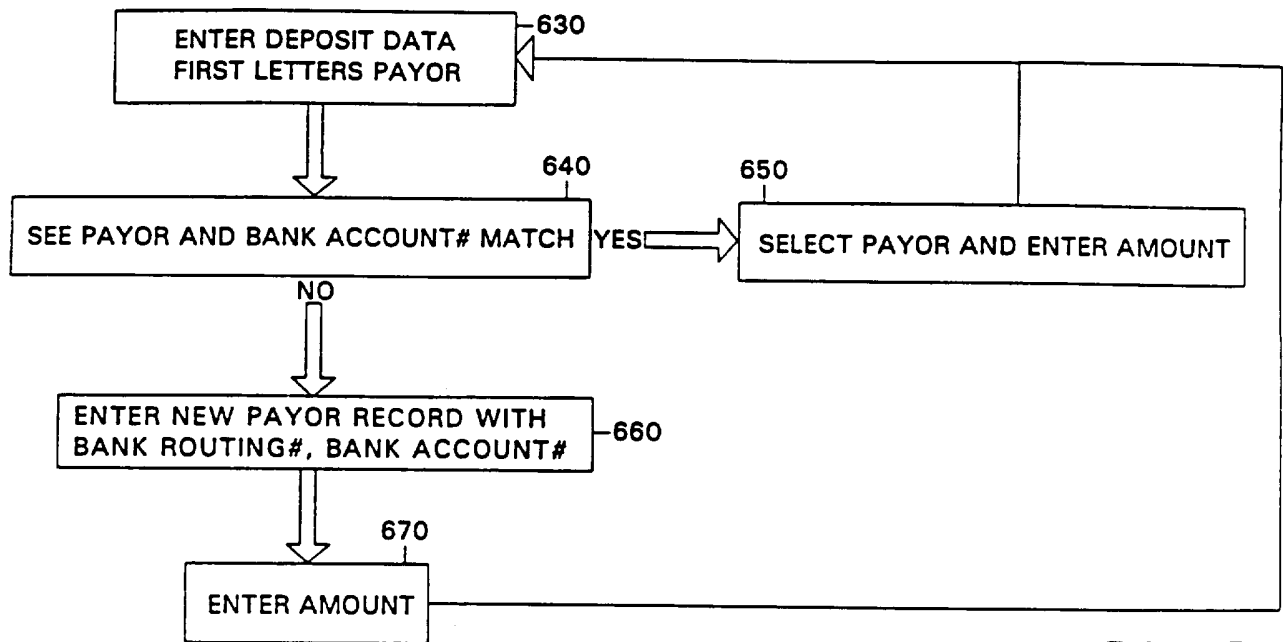


FIG. 13A

NATIONWIDE ELECTRONIC COLLECTION SERVICE

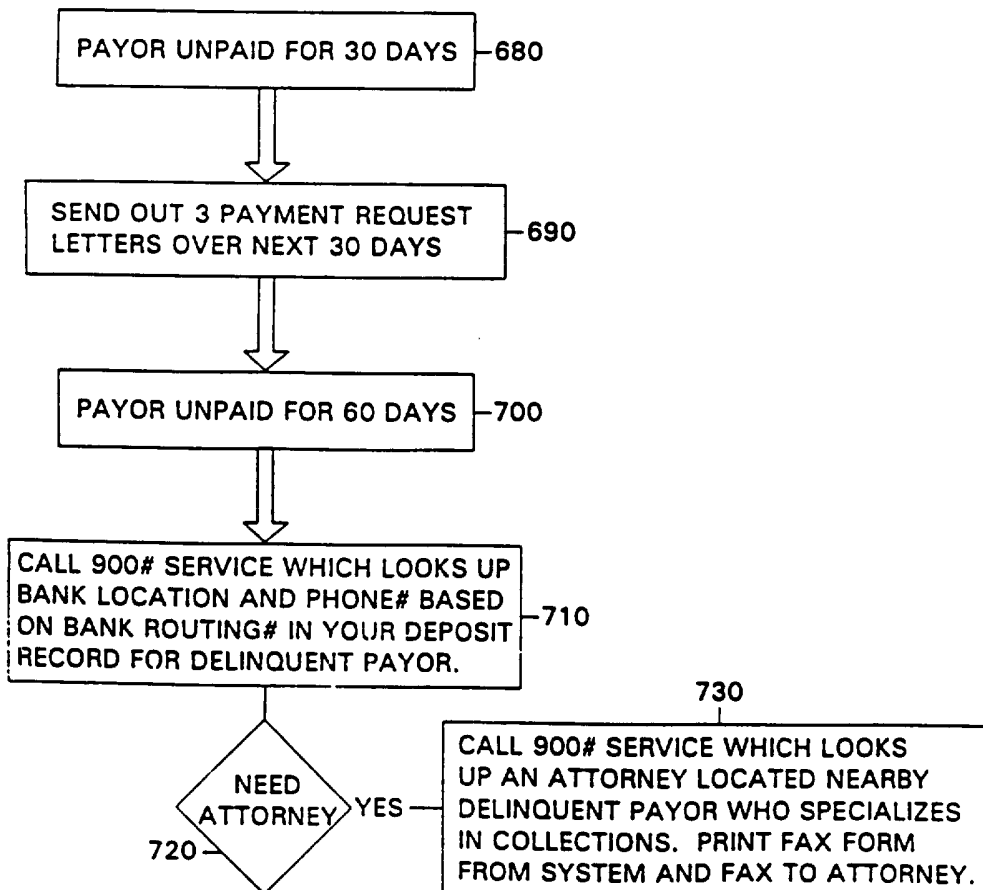


FIG. 13B

NATIONWIDE ELECTRONIC PAYROLL SERVICE

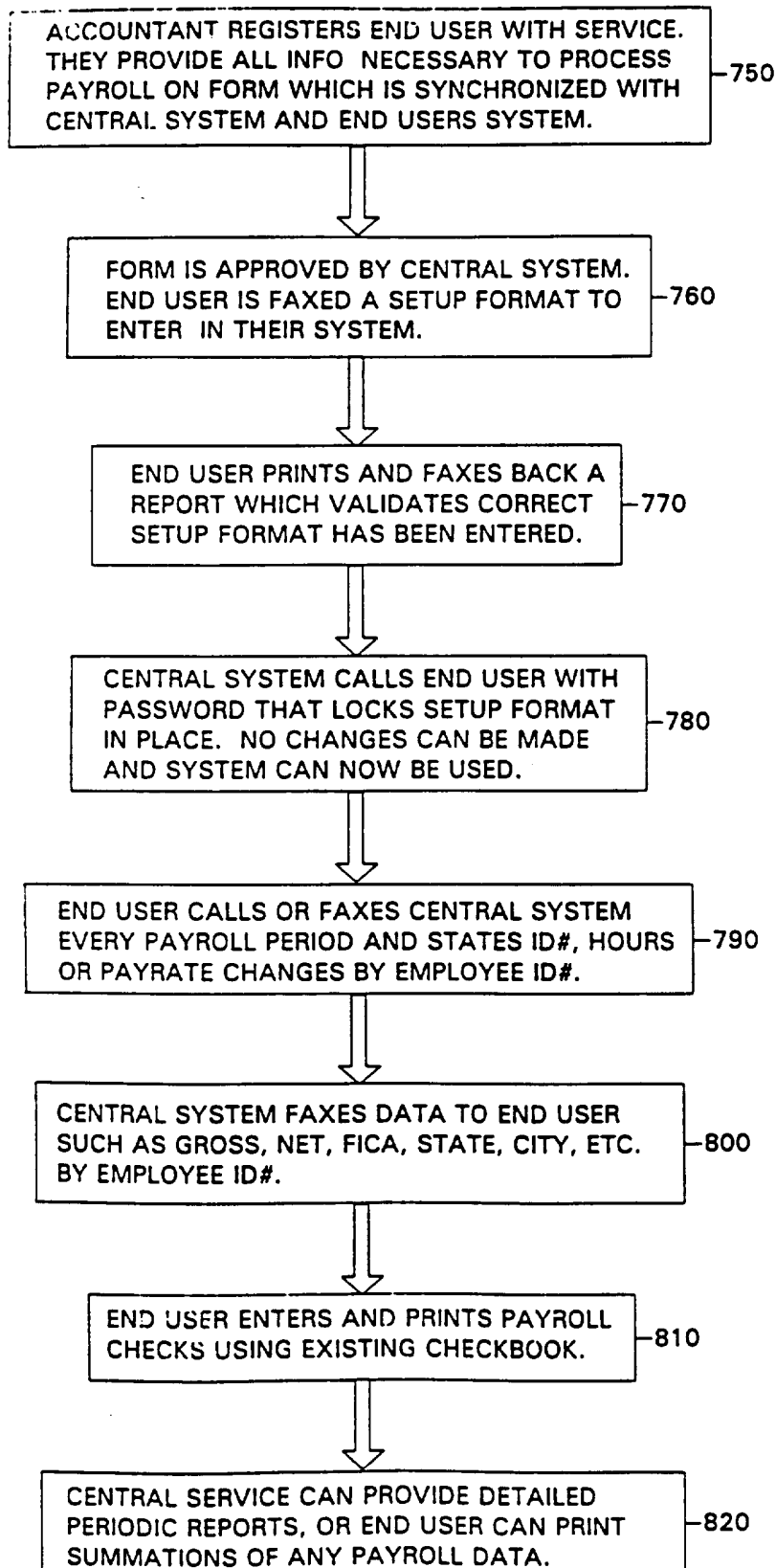


FIG. 14

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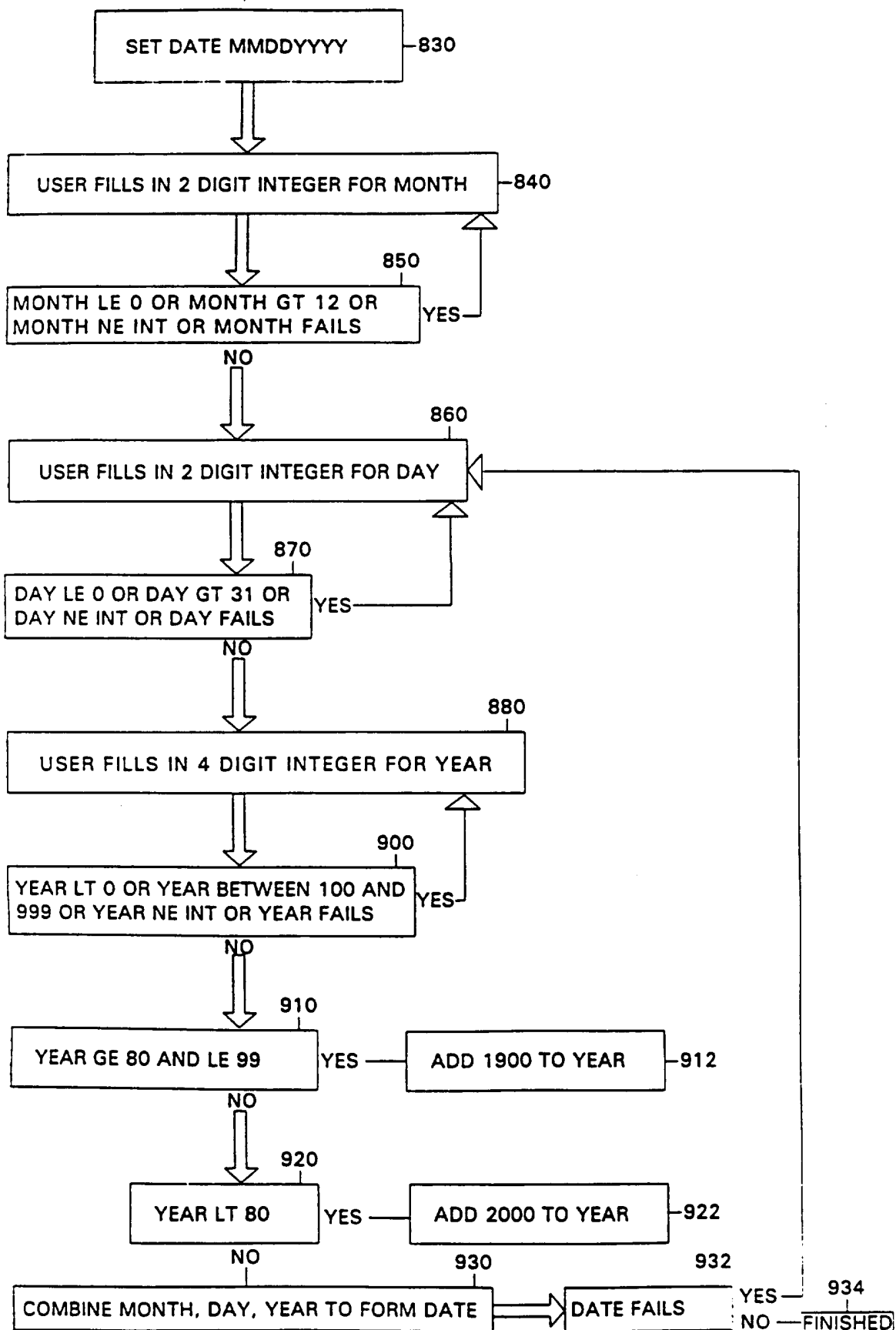


FIG. 15

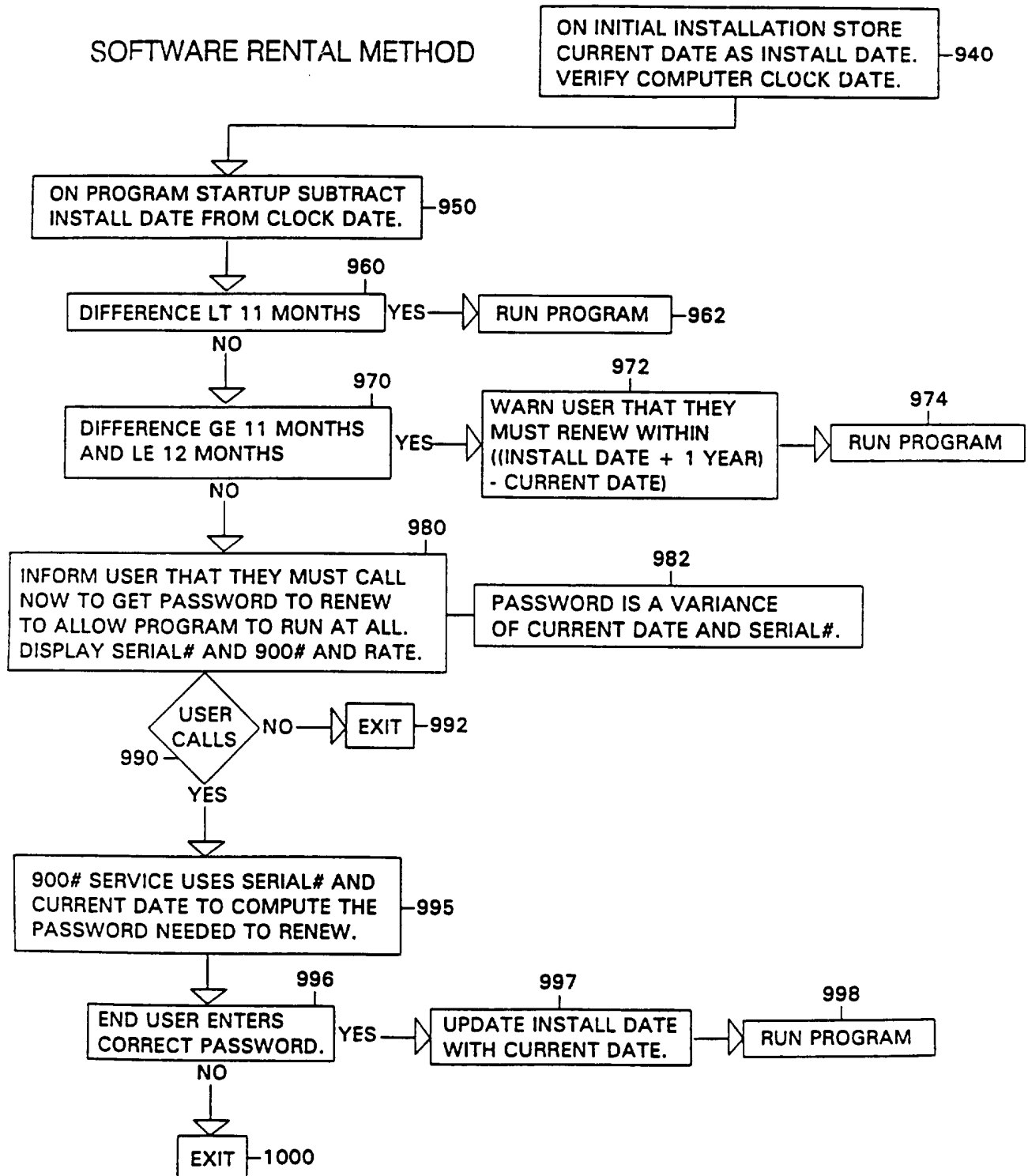


FIG. 16

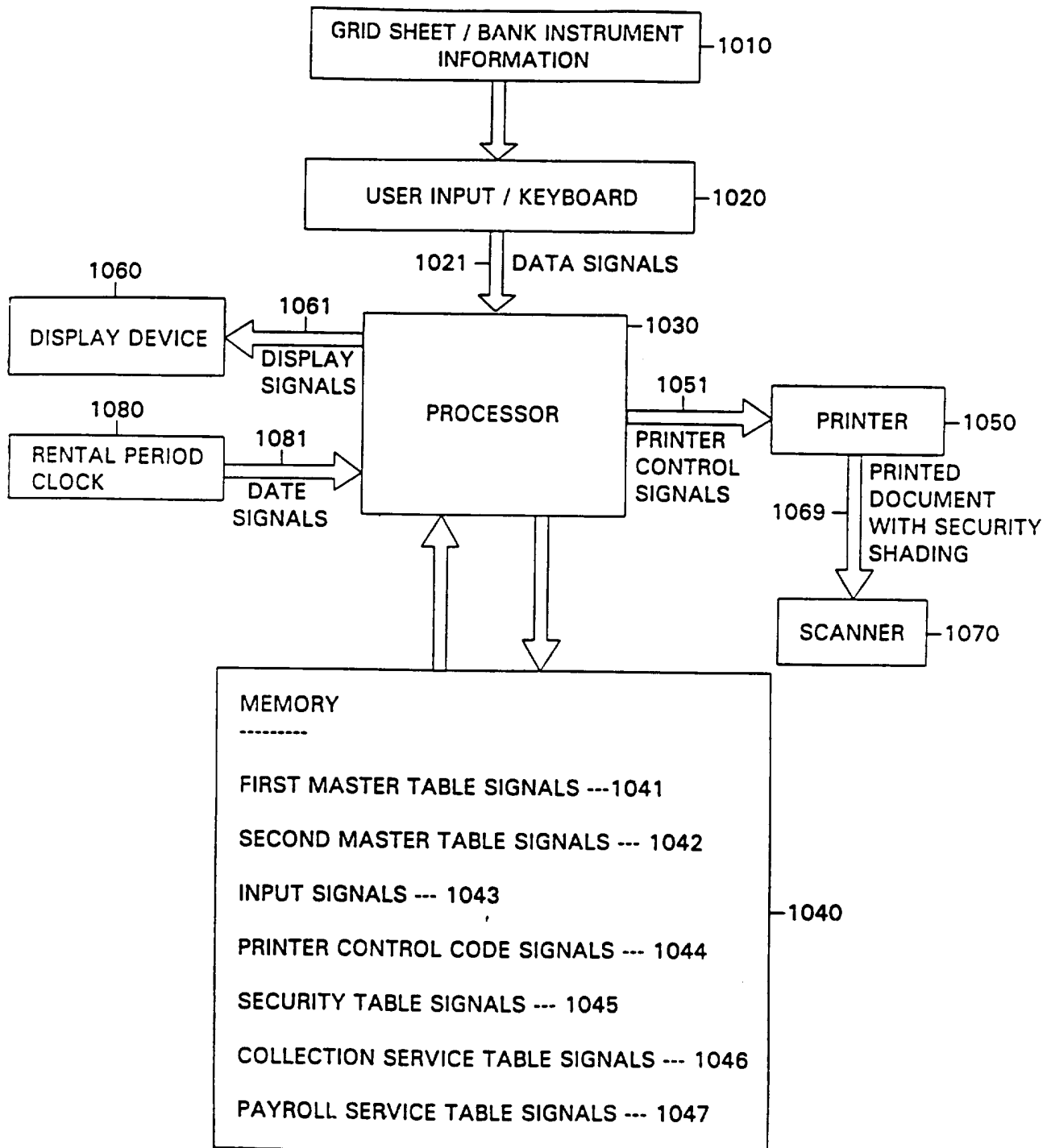


FIG. 17

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US95/11829

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) : G06F 17/60, 157:00

US CL : Please See Extra Sheet.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 395/149, 148, 161; 355/201, 202, 308, 266, 309, 311, 324; 283/57-59, 67, 70, 72, 95-96; 364/401, 406, 408; 382/137; 271/3.14, 4.01

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

APS (USPAT), IEEE, COMPUTER SELECT

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US, A, 5,215,396 (ROGERS) 01 June 1993, abstract, figures 1-2, columns 1-8.	1-19
X	US, A, 3,734,543 (DONOVAN) 22 May 1973, abstract, figures 1, 4, 4A, 5, 8-12, 14-20, 22-30, columns 1-28	35-36, 39-43
Y	US, A, 5,208,905 (TAKAKURA ET AL) 04 May 1993, abstract, figure 3-2, columns 4-28.	1-19
A	US, A, 3,858,705 (REITANO) 07 January 1975, abstract, figures 1-13, columns 1-8.	1-28
A,E	US, A, 5,456,498 (GREENE) 10 October 1995, abstract, columns 1-6.	1-28
Y	US, A, 4,846,502 (CHANG ET AL) 11 July 1989, abstract, figures 1-7, columns 1-10.	1-28



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
A document defining the general state of the art which is not considered to be part of particular relevance	*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
E earlier document published on or after the international filing date	*Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	*G* document member of the same patent family
O document referring to an oral disclosure, use, exhibition or other means	
P document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

06 DECEMBER 1995

Date of mailing of the international search report

07 FEB 1996

Name and mailing address of the ISA/US
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INTERNATIONAL SEARCH REPORT

international application No.
PCT/US95/11829

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US, A, 3,770,943 (SILL) 06 November 1973, abstract, figure 1, columns 1-6.	35-36, 39-40
Y	US, A, 5,289,547 (LIGAS ET AL) 22 February 1994, abstract, columns 1-18.	3, 13, 20-28
Y	US, A, 3,886,083 (LAXER) 27 May 1975, abstract, columns 1-6.	3, 13, 20-28
Y	US, A, 5,274,567 (KALLIN ET AL) 28 December 1993, abstract, figures 6, 9, 11, columns 1-36.	1-28
Y	US, A, 4,658,366 (POSH) 14 April 1987, abstract, figures 1-3, columns 1-14.	1-19
A	US, A, 5,317,646 (SANG, JR. ET AL) 31 May 1994, abstract, columns 1-12.	1-19
A	US, A, 5,140,139 (SHEPARD) 18 August 1992, abstract, figures 1-4.	1-19
Y	US, A, 5,129,053 (MAKIHARA) 07 July 1992, abstract, figures 2-5, columns 1-6.	1-19
Y	US, A, 4,953,105 (HIRATA ET AL) 28 August 1990, abstract, figures 1-6, columns 1-6.	1-19
Y	US, A, 4,651,288 (ZEISING) 17 March 1987, abstract, figures 2A-2B, columns 1-10.	1-19
Y	US, A, 5,326,959 (PERAZZA) 05 July 1994, abstract, columns 1-20.	1-19
Y	US, A, 5,336,870 (HUGHES ET AL) 09 August 1994, abstract, columns 1-12	6-9, 16-19
Y	US, A, 4,642,767 (LERNER) 10 February 1987, abstract, figures 1-6, columns 1-14.	1-19
Y, P	US, A, 5,441,309 (D'ALESSIO ET AL) 15 August 1995, abstract, columns 1-8.	1-19
Y, P	US, A, 5,412,190 (JOSEPHSON ET AL) 02 May 1995, abstract, columns 1-34.	1-19

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US95/11829

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y, P	US, A, 5,450,537 (HIRAI ET AL) 12 September 1995, abstract, columns 1 -10.	1-19
A, P	US, A, 5,448,685 (OGURA ET AL) 05 September 1995, abstract.	1-19
Y, P	US, A, 5,428,694 (BETTS ET AL) 27 June 1995, abstract, columns 1-20.	1-19
Y, P	US, A, 5,420,695 (OHTA) 30 May 1995, abstract, columns 1-16.	1-19

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US95/11829

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

Please See Extra Sheet.

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐

The additional search fees were accompanied by the applicant's protest.

☒

No protest accompanied the payment of additional search fees.

A. CLASSIFICATION OF SUBJECT MATTER:

US CL :

395/149, 148; 355/308, 266, 309, 311; 283/57-59, 72; 364/401, 406, 408; 382/137

BOX II. OBSERVATIONS WHERE UNITY OF INVENTION WAS LACKING

This ISA found multiple inventions as follows:

This application contains the following inventions or groups of inventions which are not so linked as to form a single inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claim(s) 1-28, drawn to printing data on forms, classified in Class 395, subclass 149.

Group II, claim(s) 29-34 and 37-38, drawn to document handling, classified in Class 355, subclass 108+.

Group III, claim(s) 35-36 and 39-40, drawn to printed matter (specifically bank checks), classified in Class 283, subclass 58.

Group IV, claim(s) 41-43, drawn to reading bank checks, classified in Class 382, subclass 137.

The inventions listed as Groups I-IV do not relate to a single inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

Inventions I-IV are related as apparatus and product made. The inventions in this relationship are distinct if either or both of the following can be shown: (1) that the apparatus as claimed is not an obvious apparatus for making the product and the apparatus can be used for making a different product or (2) that the product as claimed can be made by another and materially different apparatus. In this case, invention III is the product formed by apparatus/method of invention I. Invention II operates on documents that could be created by invention I or by any other document printing apparatus. Invention IV operates on documents that could be created by invention I and/or invention II, or any other document creating apparatus.

Inventions I-II and IV are disclosed as different combinations which are not connected in design, operation or effect. These combinations are independent if it can be shown that (1) they are not disclosed as capable of use together, (2) they have different modes of operation, (3) they have different functions, or (4) they have different effects. In the instant case the combinations have different functions and different effects. Invention I is for printing a form with security shading. Invention II is for document handling. Invention IV is for document analysis (separating the document into distinct areas based on image content).

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, establishment of lack of unity as indicated is proper. Furthermore, because these inventions have acquired a separate status in the art because of their recognized divergent subject matter, establishment of lack of unity as indicated is proper.