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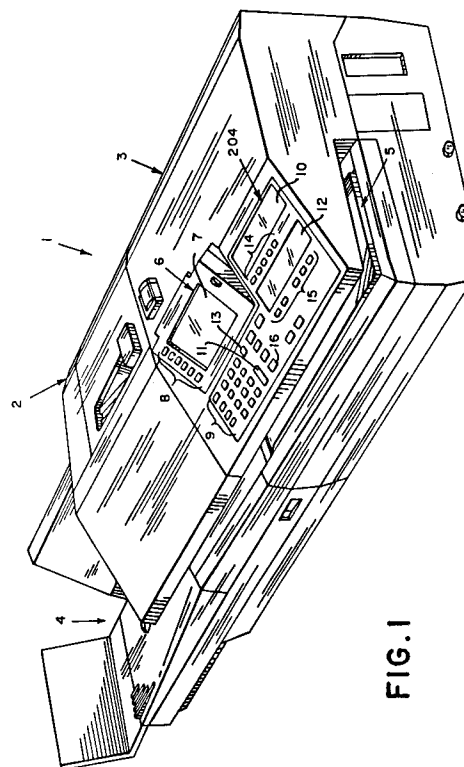
(11) Publication number:

0 543 397 A2

(12)

EUROPEAN PATENT APPLICATION(21) Application number: **92119802.4**(51) Int. Cl.⁵: **G07B 1/00**(22) Date of filing: **20.11.92**(30) Priority: **22.11.91 US 796157**(43) Date of publication of application:
26.05.93 Bulletin 93/21(84) Designated Contracting States:
CH DE FR GB LI(71) Applicant: **PITNEY BOWES INC.**
World Headquarters One Elmcroft
Stamford Connecticut 06926-0700(US)(72) Inventor: **Bystriany, Roman**
309 Terrace Avenue, Unit 31
West Haven, CT 06516(US)
Inventor: **Collins, Jacqueline****200 Woodmont Avenue, Apt. 116**
Bridgeport, CT 06606(US)Inventor: **Doeberl, Terrence M.****111 Simpaug Turnpike****West Redding, CT 06896(US)**Inventor: **Hunter, Kevin D.****440 Allyndale Drive****Stratford, CT 06497(US)**(74) Representative: **Ritter und Edler von Fischern,**
Bernhard, Dipl.-Ing. et al
HOFFMANN - EITLE & PARTNER
Arabellastrasse 4
W-8000 München 81 (DE)(54) **Postage meter accounting system with rate control.**

(57) A mailing machine (1) includes a postage meter (3) for dispensing postage on envelopes positioned for postage printing on the mailing machine. The postage meter (3) includes a printing mechanism for printing postage information on an envelope. The mailing machine (1) also includes a microcomputer for controlling machine and meter operation, and also accounting for postage dispensed by the postage meter (3). Departmental accounting for dispensed postage as well as gross accounting is provided by the microcomputer. A keypad (9) is provided for operator entry of data to the microcomputer. Stored in computer memory is postal carrier and carrier fee information. Configured by the microcomputer and stored in computer memory are the permitted carrier and carrier fees sets for each department. The microcomputer is programmed to cause, in response to operator data entry through the keypad, the microcomputer to enable permitted carrier and carrier fees sets in accordance with operator selected department accounting during department mail posting by the postage meter mailing machine.

**FIG. 1****EP 0 543 397 A2**

The present invention relates to a mail processing system having departmental accounting.

This application is related to European Patent Publication No. 0 492 439 published August 5, 1992 entitled "User Interface For A Mail Processing System", the disclosure of which is hereby incorporated by reference.

It is known to provide a postage metering mailing machine with a limited degree of departmental accounting capability employing a postage accounting system. The primary purpose of such accounting is to enable allocation of postage expenses between individual departments of an organization. As an example, a university may find it beneficial to allocate mail posting cost to the respective departments in order to charge back to that department its posting cost. It is readily appreciated that security is also a relevant consideration for the university mail processing operation. That is, operating procedures and processing equipment provide sufficient protection to reasonably assure that department mailings are properly authorized. Further, in order to control cost, certain departments may desire more expensive mailing rates or carrier services excluded from usage or charged to a special department accounts.

It can be appreciated that from the mail processing operation perspective it would be advantageous if the postage mailing machine could readily accommodate the desired department postage rate restriction and provide maximum operation flexibility in accommodation of such restrictions.

It is an object of the present invention to present a postage meter accounting system having the capability of accommodating a large number of accounts whereby each account may be assigned a specific set of permissible mail carrier classes, carrier services and/or carrier fees.

It is a further object of the present invention to present a postage meter accounting system which provides increased system flexibility by automatically selecting the appropriate meter print element in accordance with the mail class and or carrier selected.

According to one aspect of the invention, there is provided a mail processing system comprising: a postage meter for dispensing postage; printing means for printing postage information on an envelope; microcomputer means for accounting for postage dispensed by said postage meter and for providing departmental accounting of said dispensed postage; and data entry means for providing operator entering data to said microcomputer, the system further comprising: memory means for storing carrier and carrier fee information; memory means for storing permitted carrier and carrier fee sets for each department; and said microcomputer

being programmed to cause said microcomputer to enable permitted carrier and carrier fee sets in accordance with an operator selected department account, and in response to operator data entry through said data entry means.

According to another aspect of the invention, there is provided a method of processing mail comprising the steps of: dispensing postage; printing postage information on an envelope; providing departmental accounting for postage dispensed; and entering operator data, further comprising the steps of: storing carrier and carrier fee information; storing permitted carrier and carrier fee sets for each department; and enabling permitted carrier and carrier fee sets in accordance with operator data entry and an operator selected department account.

For a better understanding of the invention, and to show how the same may be carried into effect, reference will now be made by way of example to the accompanying drawings, in which:

Fig. 1 is a schematic of microcomputer system for a mail processing system having a user interface system and accounting system in accordance with one embodiment of the present invention;

Fig. 2 is a schematic of a microcomputer system for a mail processing system suitable for controlling the user interface system and accounting system of the mail processing system in accordance with one embodiment of the present invention;

Fig. 3 is a schematic of a display for the mail processing system in accordance with one embodiment of the present invention;

Figs. 4A and 4B is a partial schematic of the user interface display logic in accordance with one embodiment of the present invention;

Fig. 5 is a schematic of the departmental account criteria in accordance with one embodiment of the present invention; and

Figs. 6A and 6B is a schematic of the logic flow for the department account function of the mail processing system in accordance with one embodiment of the present invention.

Referring to Fig. 1, the illustrated embodiment of the present invention is particularly suited for postage meter mailing machine application. For example, a postage meter mailing machine, generally indicated as 1, is comprised of a feeder section 2 and a postage meter mailing machine section 3. In operation, envelopes are placed in a hopper 4 of the feeder section 2, whereupon the envelopes are serially fed through the feeder section to the mailing machine section 3 for imprinting of a postage indicia on fed envelopes by a postage meter print arrangement (not shown) detachably mounted within the mailing machine section 3. In

the preferred embodiment, the mailing machine 1 includes a scale 5 for weighing the envelope and communicating with a microcomputer system which controls the operation of the postage meter mailing machine such that proper postage is printed by the printing mechanism of the postage meter on the envelope according to the weight of the envelope.

The mailing machine 1 includes a user interface, generally indicated as 6. The user interface 6 includes a visual display 7 and a plurality of soft keys 8 aligned to a respective portion of the screen 7 and a plurality of hard keys 9, which form a keyboard or keypad. At least one of the keys 9 are designated as an enter key 11 and another designated as a return key 13. Also one of the hard keys is designated as a start 16. The interface 6 also includes first and second mimic displays 10 and 12, respectively. Each mimic display also has associated function hard keys, those generally indicated as 14 associated with the mimic display 10 and hard keys 15 associated with mimic display 12.

Referring to Fig. 2, for the purpose of simplifying understanding, the mail processing system 1 is illustrated here under the control of a microcomputer 20. The microcomputer 20 is comprised of a plurality of programmable micro-processor based controller, memory units and suitable system interfaces (not here shown). A more detailed description of the microcomputer system of the mail processing system is set forth in European Patent Publication No. 0 492 439, herein incorporated by reference. The microcomputer 20 is in communication with a meter unit, generally indicated as 22. The meter unit 22 includes a printing mechanism 24 under the control of a setting mechanism 26. The setting mechanism 26 is in communication with the microcomputer 20. The microcomputer 20 is also in communication with a display driver 28 which in turn controls the display 7. A input-output controller 30 is in communication with the display keypad 12 and the microcomputer 20.

Referring to Fig. 3, the display 7 is mapped such that each screen defines data window area DW, a soft key menu field MF, a screen title field TF, a prompt/error field PF. The soft keys, individually referred as 8a through 8f, are aligned to a respective portion of the screen menu field MF. Aligning the soft keys to the screen field MF in this manner allows a machine operator to easily associate the options presented in the menu field MF with the depression of the correspondingly aligned soft key. Operator instructions, request for operator variable data input and operator error messages are presented in the prompt field PF. Within the data window DW, user system information pertinent

to the current state of the mailing machine 1 or selected soft function can be presented to the operator. It is noted that the soft functions refer to data processing functions, such as funds accounting, and hard functions refer to machine control functions.

Illustrated in Fig. 5 is a schematic of the carrier fee table structure which preferably stored in the non-volatile memory of the microcomputer 20. Represented within the enclosed area is the fee associated with the respective carrier (ABC through XYZ). Each carrier has a plurality of classes (e.g., Class A through AA). Each class has an associated range of fees (e.g., C1 through C10).

As an example, Class Bb may be assigned to a private carrier for two day service. The specific fee may be determined by weight of the item to be posted. In a more preferred embodiment of the invention, the item weight is obtained from the scale 5. As illustrated, a department (e.g., Physic Department) may be assigned, during account set up, a carrier set.

Referring to Figs. 4A and 4B, and briefly here described, upon initialization of power to the system operator at 100, the microcomputer 20 causes the display 7 within the prompt field PF to prompt the operator to enter the operator identification number at 102. If the operator enters erroneous information, the operator is then prompted at 104 to re-enter the proper information. The re-entered information is verified at 106, subsequent to which the operator is prompted to press start to run mail at 108. The operator is also presented with a menu in the menu field MF consisting of: change class at 110, change accounts at 112, site set-up at 114, service diagnostics at 116, access to additional menu options at 118 or quit at 120.

For the purposes of the present invention, the operator may choose to change accounts at 112; hereafter the operator is prompted to enter the new account number at 122. Upon operator entry of the new account number, the operator may choose to change class of posting. Should the operator choose to change mail class at 110, the operator is prompted to pick a mail class or enter a speed code at 124. A speed code is a short cut data entry method to identify an account number. An example is speed code 5 identifies a particular account number. The operator is also presented with the option to pick a fee at 126.

The operator is then presented with the posting class available for that account at 128. If the operator has chosen to pick a fee, the operator is presented with the option to view fees at 130. The operator is then presented with the fees selected at 132 and prompted to hit the resume key to continue at 134. Should the operator select the resume key, the operator is again presented with the op-

tions of picking a class at 124 or picking a fee at 126. It should now be appreciated that an operator may choose a subset of the carrier class set from which to process the present mail run.

Referring to Figs. 6A and 6B, after an operator has selected a new account or the default account as described above, the microcomputer is programmed to enter a routine at logic block 400. The operator inputs an account number, block 402, the routine then clears the class/carrier choice list at block 404. The routine retrieves from the carrier table, the first class/carrier defined in the carrier table at block 406. The class/carrier is then tested at block 408 to verify if it is permitted for the selected account. If the class is permitted for the selected account, the class is added to the class/carrier choice list at block 410. The routine then proceeds to test whether additional class/carriers remain to be processed at decision block 412. If additional classes remain, the next class/carrier of mail defined for the chosen account is obtained from the carrier table at logic block 414. The routine then returns to decision block 408 to verify if the class is permitted for the account.

If at decision block 408 it is determined that the class/carrier is not permitted for the selected account, the routine proceeds to decision block 416 to verify whether "All Others" class/carrier is permitted for the selected account. The "All Others" selection designates an account defined to include all class/carrier or all class/carriers with an exception. If an "All Others" category is permitted for the account, the routine proceeds to logic block 410 to contain in a loop until all the appropriate class/carriers have been enabled. If an "All Others" category is not permitted for the account, the routine proceeds again to decision block 412.

If at decision block 412, no additional class/carriers remain to be enabled, the operator is presented with a class/carrier of choice list at block 418. The operator then selects a class/carrier through the soft keys at block 420. The routine then clears the fee choice list and fees chosen list at block 422. The first fee defined in the account set for the class/carrier selected that is in the fees chosen list is obtained from the carrier table at block 424, and tested to verify if the fee is permitted for the account selected at decision block 426. If the fee is permitted, the routine proceeds to test the fee to determine if the fee is consistent with previous fees selected by the operator at decision block 428, using pre-defined postal rules, e.g., in the United States as set forth in the United States Postal Service Domestic Mail Manual. If the fee is consistent with previous fee selections, the fee is added a fee choice list at logic block 430. The routine proceeds to decision block 432. If, at decision block 432, it is determined that there are

fees remaining to be processed, the next fee selected is retrieved from the carrier table at block 434, wherefrom the routine returns to decision block 426. If at decision block 426 it is determined that a fee is not permitted for the selected account, the routine tests whether an "All Others" category is permitted for the account at decision block 436. If an "All Others" category is permitted for the account, the routine proceeds to decision block 428 and proceeds as described above. If an "All Others" category is not permitted for the account, processing continues at decision block 432.

If at decision block 432, it is determined that no further fees remain to be processed, the fee choice list is presented to the operator at block 438. The operator selects the desired fee, block 440. The routine adds the selected fee to the fees chosen list at block 442. The system then determines if any fees remain unselective by the operator at decision block 444, and if so, queries the operator, at decision block 446, whether additional fees are to be added to the fees chosen list. If the operator requires additional fees, the routine returns back to block 424 to begin the process of obtaining the additional fees. If at the decision block 444 no fees remain to be chosen or at decision block 446, the operator does not wish to add more fees, the process is completed at block 448.

A suitable postage meter mailing machine may include a feeder assembly for automatically feeding envelopes to the mailing machine in a serial manner for individually posting each envelope. The mailing machine preferably includes a display and keypad data entry system for providing a user interface with the mailing machine. The mailing machine operates under the control of multi-processor microcomputer system. The microcomputer is programmed to selectively enable mailing machine function and account for postage dispensed by the postage meter mailing machine.

In the most preferred embodiment of the invention, the microcomputer includes a read-only memory (ROM) which has stored therein the respective carrier class and rate structure information. During machine set-up by authorized personnel, such as, the mail room supervisor or manufacturer's personnel, each account established has assigned a specific carrier set and for each carrier, a specific class and rate set. The class and rate set is comprised of the permissible mail class and fee range for the respective carrier mail classes.

During operation, the machine is presented with a menu option set which includes the option to enter a charging account number and set a carrier, otherwise the accounting system will default to the last accessed account and carrier information. The

operator may optionally view the permissible fees for the selected carrier class for that account. Once the operator has chosen the desired account, the microcomputer verifies that the chosen carrier and class is with the chosen account carrier set and identifies the permissible fee range as specified in the account set. The operation may then initiate mail posting by the mailing machine.

Claims

1. A mail processing system comprising: a post – age meter for dispensing postage; printing means for printing postage information on an envelope; microcomputer means for account – ing for postage dispensed by said postage meter and for providing departmental ac – counting of said dispensed postage; and data entry means for providing operator entering data to said microcomputer, the system further comprising:
 - memory means for storing carrier and carrier fee information;
 - memory means for storing permitted car – rier and carrier fee sets for each department; and
 - said microcomputer being programmed to cause said microcomputer to enable permitted carrier and carrier fees sets in accordance with an operator selected department account, and in response to operator data entry through said data entry means.
2. A mail processing system as claimed in claim 1 further comprising said microcomputer being further programmed to permit a designated operator to establish said permitted carrier and carrier fee sets for said respective department.
3. A mail processing system as claimed in claim 1 or claim 2 wherein:
 - said postage meter has a plurality of print elements and a print element setting mecha – nism in communication with said microcom – puter for setting said respective print elements to one of a plurality of print positions in re – sponse to instruction from said microcomputer; and
 - said microcomputer is programmed to in – struct said setting mechanism to set said printing elements and enable said printing elements only when said operator has selected a permitted carrier and carrier fee set for said respective department and has entered a proper identification code.
4. A mail processing system as claimed in claim 3 wherein said microcomputer is further pro –

grammed to set a second permitted carrier and carrier fee set comprising a subset of said permitted carrier and carrier fee, said permit – ted carrier and carrier fee set being enabled upon selection of said respective department for accounting, and said respective second permitted carrier and carrier fee set being en – abled upon identification of said respective operator.

5. A method of processing mail comprising the steps of: dispensing postage; printing postage information on an envelope; providing depart – mental accounting for postage dispensed; and entering operator data, further comprising the steps of:
 - storing carrier and carrier fee information;
 - storing permitted carrier and carrier fee sets for each department; and enabling permitted carrier and carrier fee sets in accordance with operator data en – try and an operator selected department ac – count.

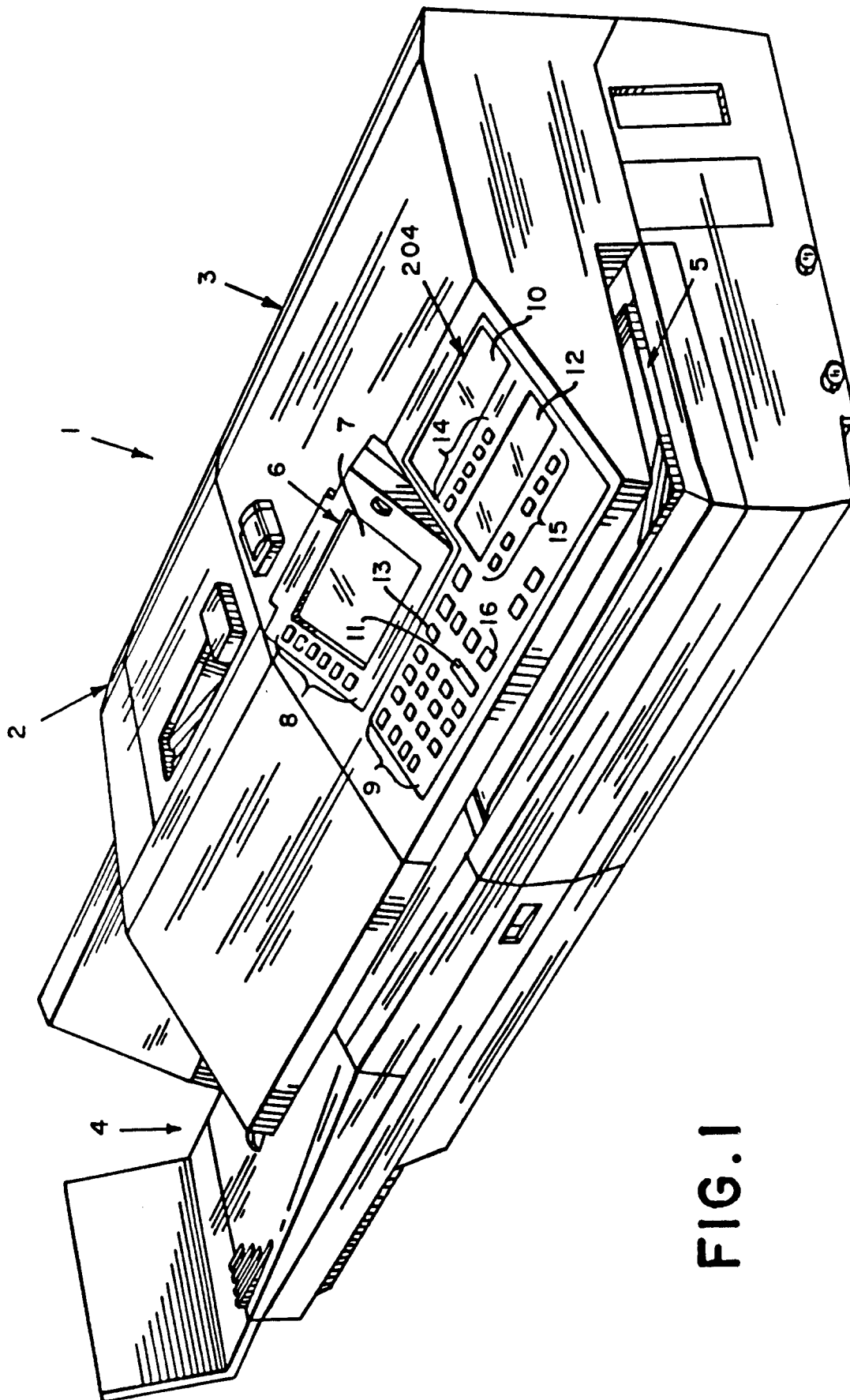


FIG. 1

FIG. 2

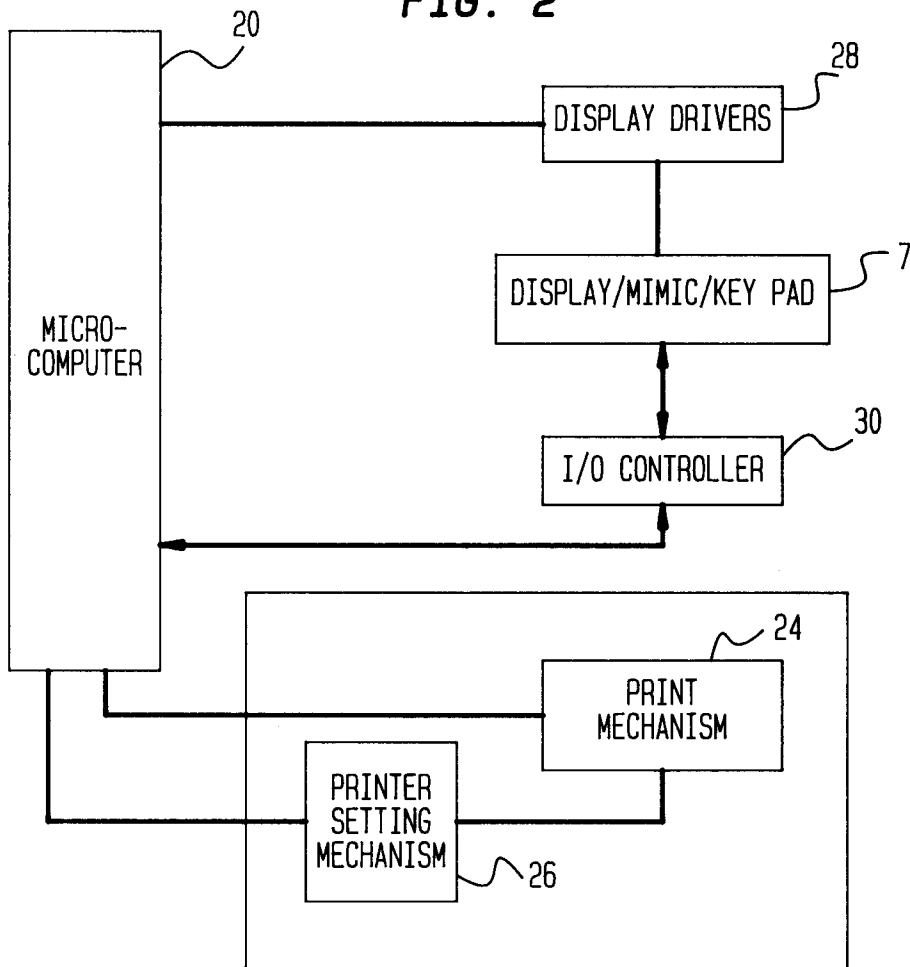


FIG. 3

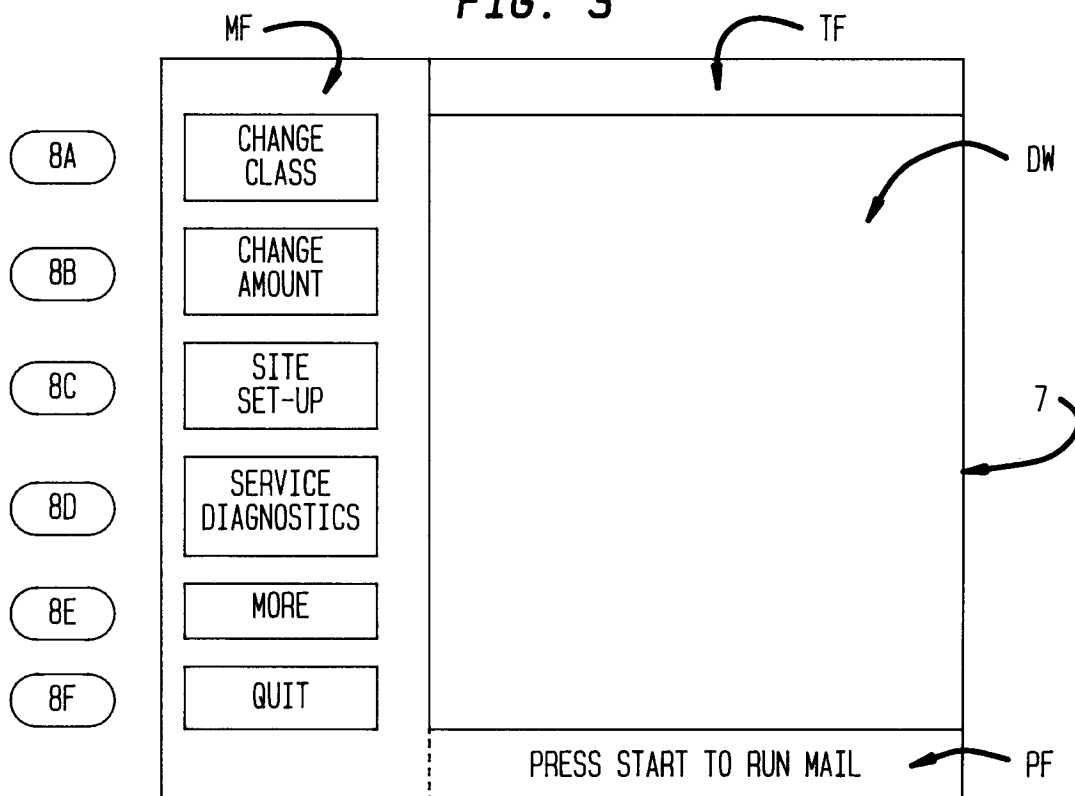


FIG. 4A

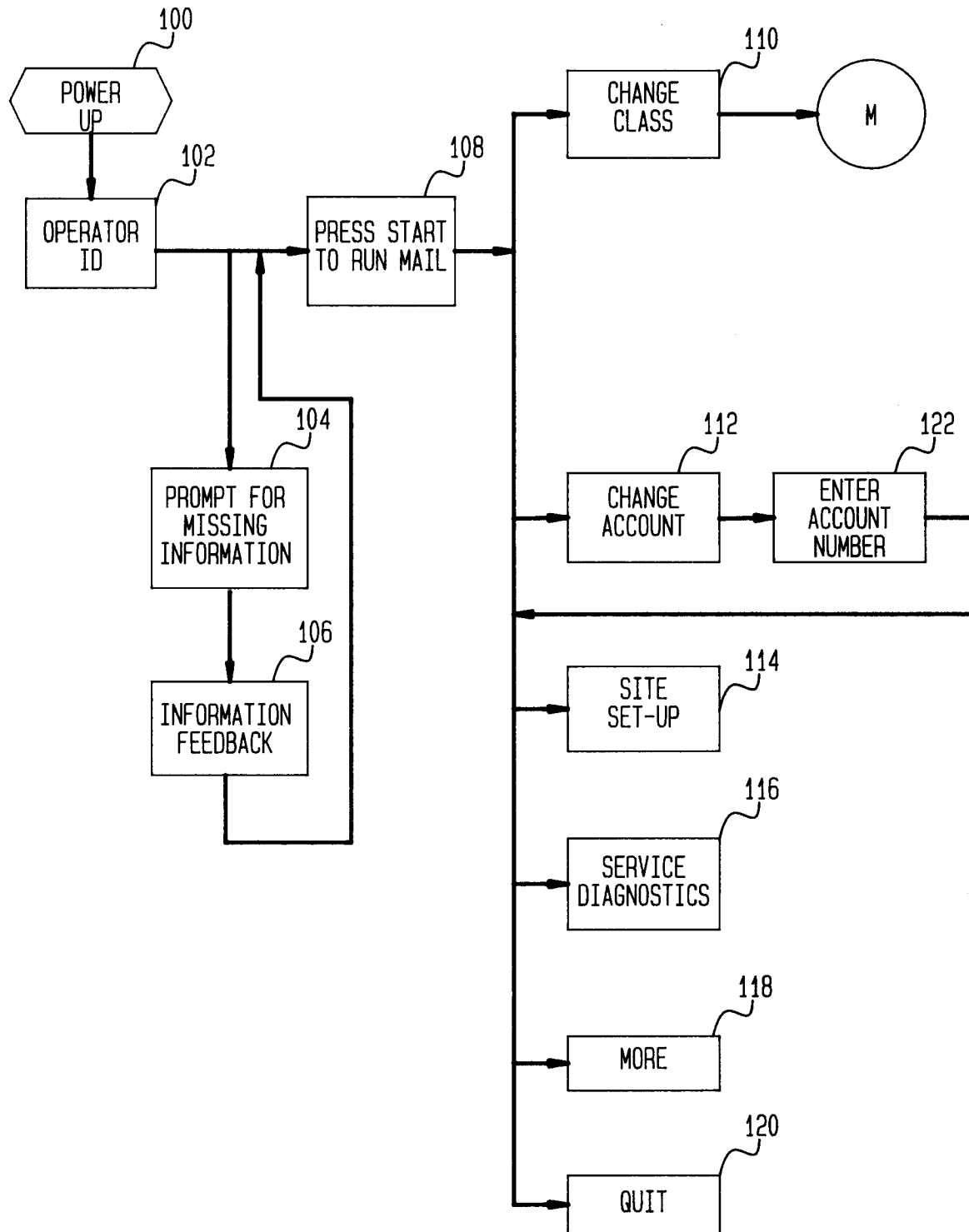


FIG. 4B

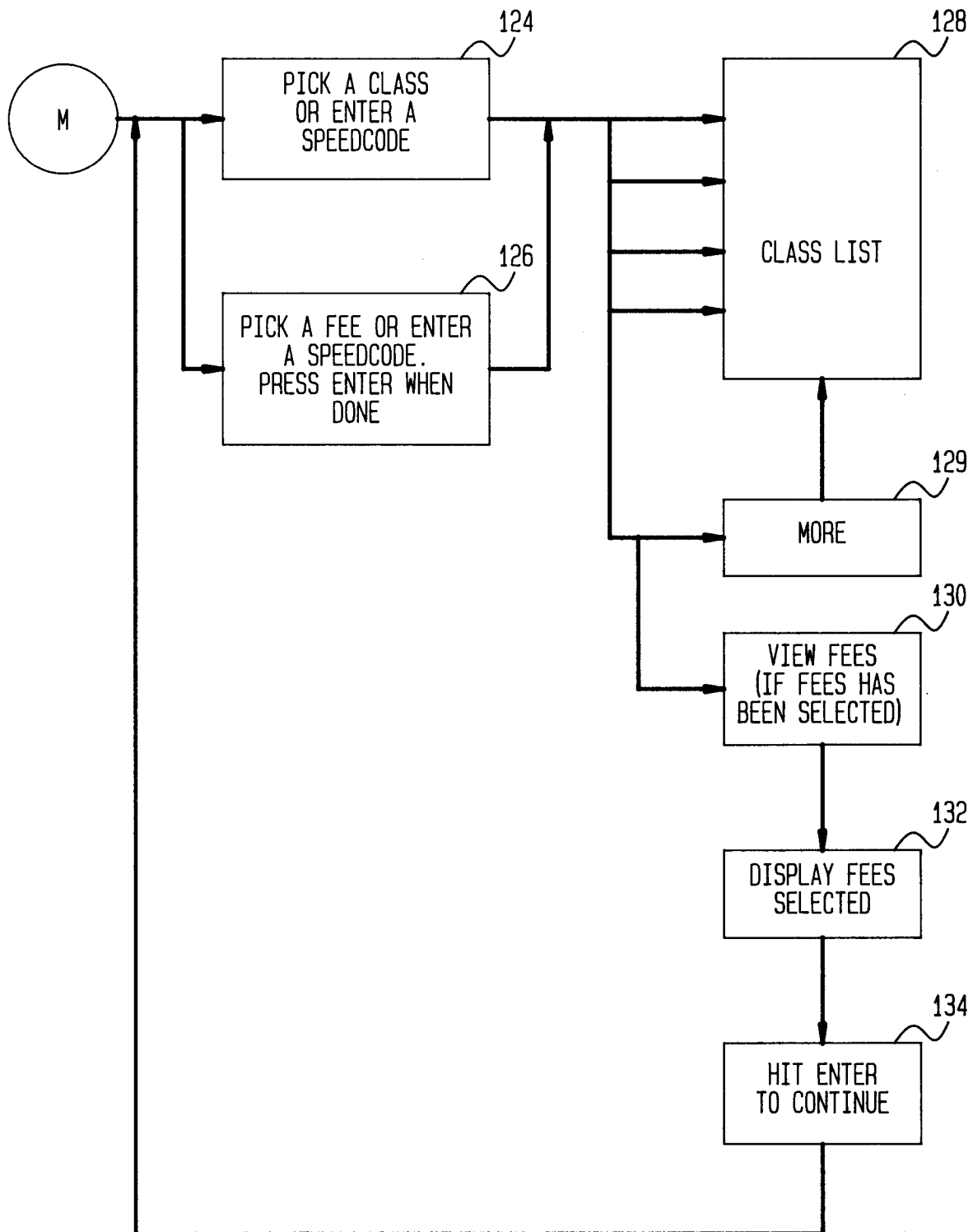
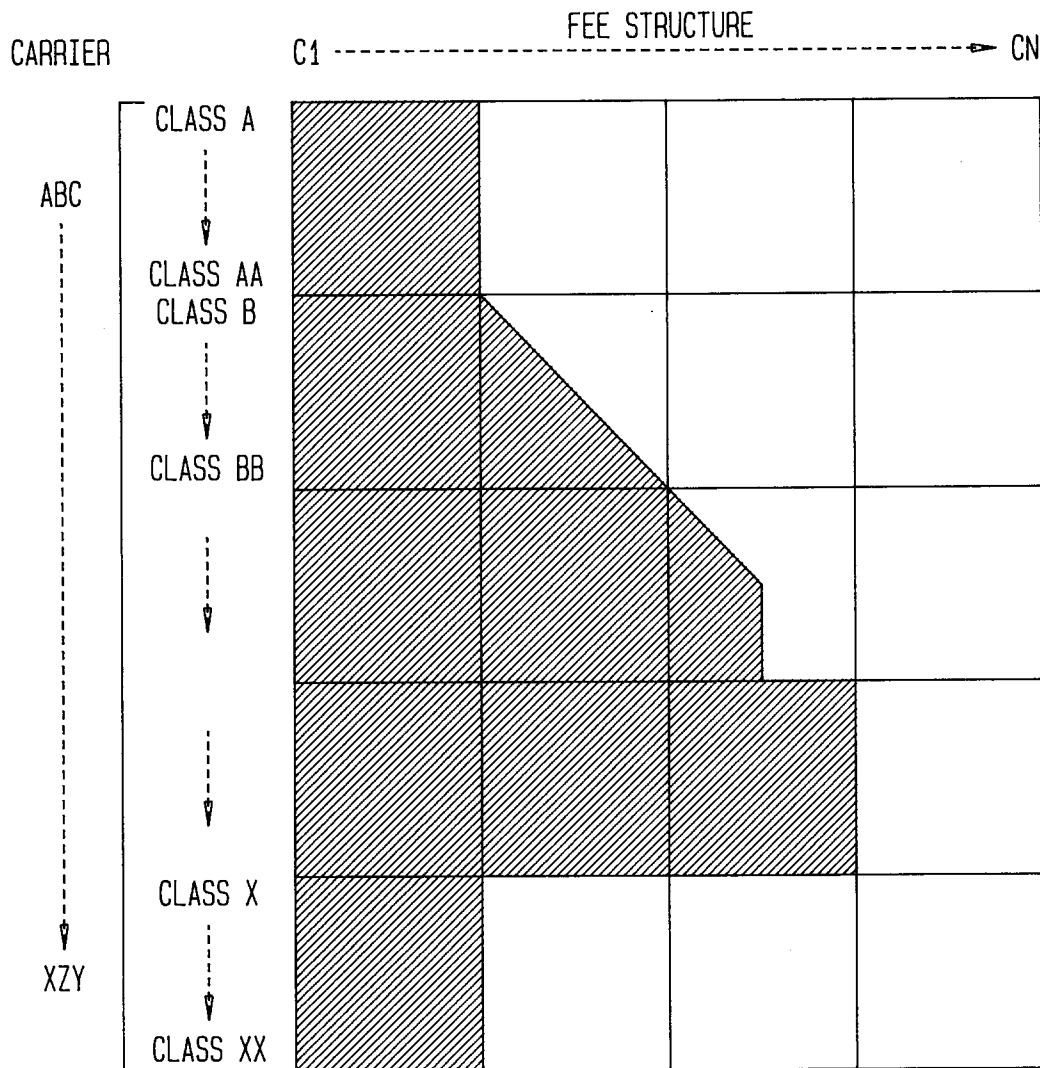


FIG. 5



PHYSICS DEPARTMENT

CARRIER SET

{ABC, C1 ... C10, CLASS D ... CLASS AA}
 {DEF, C1 ... C20, CLASS B ... CLASS BB}
 ⋮
 {XYZ, C1 ... C10, CLASS X ... CLASS XX}

FIG. 6A

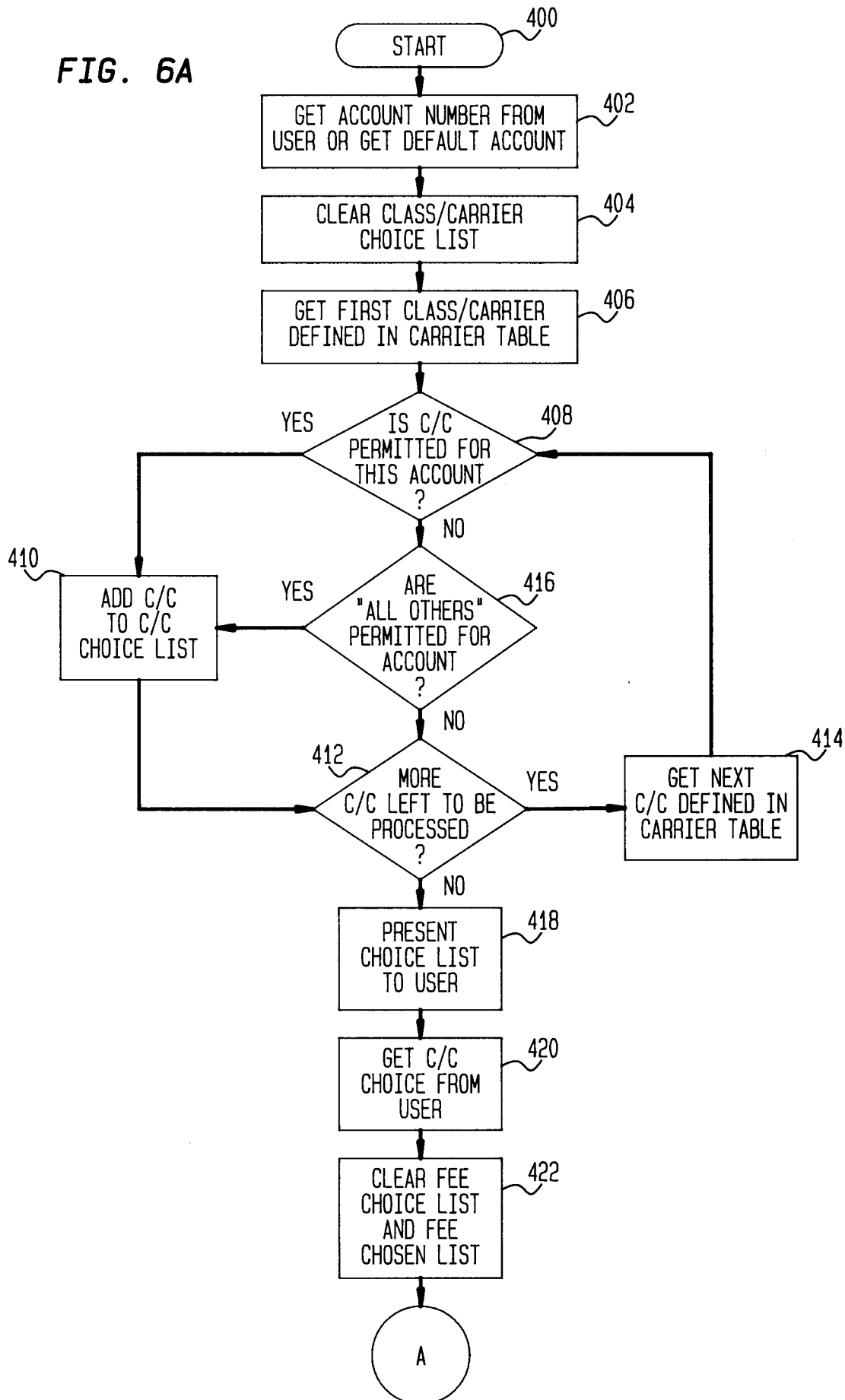


FIG. 6B

