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(54) **Franking machine**

Frankiermaschine

Machine à affranchir

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(73) Proprietor: **NEOPOST LIMITED**
Romford, Essex RM1 2AR (GB)

(72) Inventor: **Gilham, Dennis Thomas**
Brentwood Essex CM13 2SL (GB)

(74) Representative: **Boden, Keith McMurray et al**
Fry Heath & Spence LLP
The Gables
Massetts Road
Horley Surrey RH6 7DQ (GB)

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EP-A- 0 230 658 **DE-A- 3 132 765**
DE-A- 3 712 100 **US-A- 4 636 975**

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Description

[0001] This invention relates to franking machines.

[0002] Known franking machines comprise a printer in the form of a print drum carrying a fixed die and settable print wheels for printing a franking impression on a mail item such as an envelope or label and an electronic unit for carrying out accounting and control unit functions. The electronic unit includes registers for storing a value of credit available for use in franking, a total value of franking used by the machine and a count of the number of mail items franked by the machine. The machine is also provided with a keyboard whereby a user may enter data into the franking machine and a display device to enable the franking machine to communicate data and operational information to the user. When it is desired to use the machine for franking a mail item, a user enters by means of a keyboard the value of franking desired and the electronic unit checks to ensure that there is sufficient credit available for the desired franking. If the available credit is sufficient the unit decrements the value of credit remaining in a descending register, increments an ascending register to indicate the new total of franking values used and increments the count of mail items franked and outputs a print control signal to permit printing to take place. The electronic unit sets the print wheels of the printer to print the required value of franking and provided the print control signal has been output the printer is operated to print the required franking.

[0003] With currently available franking machines using a print drum only a fixed format franking impression with variable postage charge value and date can be printed and hence the operations of addressing envelopes and inserting material into the envelopes are separated from the franking of the mail items. For example, addressing and filling envelopes is usually carried out by secretaries and typists whereas the franking operation is carried out in a mail room. Thus the envelopes are placed into typewriters or the like for the printing of a destination address and then after filling are carried to the mail room where the sealed envelopes are fed through a franking machine. As a result each mail item has to be handled a number of times.

[0004] GB Patent specification 2 174 039 discloses a system for applying postage information and mail addresses to mail items. Postage and address information is input by a user to a computer and the computer outputs this information to an accounting unit. The accounting unit includes memory storing postage funds and upon receipt of the postage information checks that sufficient funds are available. The accounting unit generates encrypted information relating to the postage information and outputs to the computer the encrypted postage information and plain text address information. A printer is connected to the computer and is controlled by the computer to print the encrypted postage information and the address on a mail item. The printer is a non-secure

printer, and since it is connected to and controlled by the computer, it is necessary to print the postage information in encrypted form.

[0005] EP-A-0 125 526 discloses a postage meter device comprising a postage meter for printing a franking impression and a control unit for controlling the postage meter.

[0006] Accordingly, the present invention provides the printing and franking device of claim 1.

[0007] An embodiment of the invention will now be described with reference by way of example to the drawings in which:-

Figure 1 shows a block schematic diagram of a personal computer or workstation connected to a franking and addressing device and

Figure 2 is a flow chart showing a sequence of steps in carrying out addressing and franking of an envelope or label.

[0008] Referring first to Figure 1, a personal computer or workstation 10 has a peripheral device 11 connected to it by a multi-way cable 12. The personal computer 10 comprises a micro-processor 13 for carrying out data processing operations, a random access memory 14 and a floppy and/or hard disk store 15 for storing data. One or more input/output ports 16 are provided for sending and receiving data between the micro-processor 13 and other devices such as the peripheral device 11. The personal computer has a keyboard 17 for the input of data by a user and a display 18 for displaying data to the user. Such personal computers are well known and accordingly it is considered unnecessary for the understanding of the invention to describe the construction and operation of the computer in greater detail. Personal computers are commonly used under the control of a so-called word processing program for the typing of documents by means of the keyboard and for the subsequent amendment and correction of the typed data when required. During entry of the data comprising the document and amendment of the data, the data is stored in the random access memory 14. Subsequently the data may be written to the floppy or hard disk store 15 for retention. The data comprising the document may be output through one of the ports 16 to a printer to produce a hard copy of the document on paper.

[0009] As will be appreciated when the document typed into the computer consists of a letter there is usually a requirement to type a destination address on an envelope in which the letter is to be inserted. The peripheral device 11 is utilised not only for printing the destination address on the envelope but also to print a franking impression and/or code on the envelope. The device 11 comprises a micro-controller 19 for carrying out accounting and control functions, non-volatile memories 20, 21 containing registers for storing values of credit available for use in franking, the total value of franking used and a count of the number of mail items franked.

The memories 20, 21 are identical to one another and store duplicate copies of the credit and usage data in order to ensure that the data is stored in a manner such that if the device should be subject to mal-function the data can be retrieved without corruption. The device 11 also includes a printer 22 operable to print an address and a franking impression on a mail item. An input/output port 23 connected to the micro-controller 19 provides an interface to the external cable 12 for the receipt and sending of data. In order to provide security and prevent fraudulent use of the franking machine 11, the micro-controller 19, memories 20, 21 and the input/output port 23 are housed in a secure casing 24 which can be sealed by the postal authority. The input/output port 23 is accessible from the exterior of the casing 24 to permit insertion of a connector plug on the end of the cable 12. The electronic circuits in the interior of the casing are protected from damaging voltages applied to the connections of the port 23 by means of protection circuits incorporated in the port. The protection circuits may include devices such as zener diodes to prevent excessive voltages appearing on the connections and fuses to prevent flow of excessive current.

[0010] In order to utilise the personal computer 10 to control the operation of the printing and franking device 11, the computer is provided with a program in addition to the usual word processing program. This additional program is entered by the user keying an appropriate command on the keyboard. The sequence of major steps carried out by the additional program is shown in Figure 2. Upon the user entering the address/franking mode, the program checks that the device 11 is connected to the input/output port 16 of the computer 10 and that the device 11 is operational. If connection of an operational device is not detected the program returns to its start and an error message is displayed. If connection of operational device 11 is detected the program displays a series of requests on the display to which requests the user is required to key in an acceptable response. It is preferred that the device 11 is provided with means 25 for selectively feeding different sizes of envelopes from hoppers to the printer 22. A device for feeding envelopes is described and claimed in our co-pending UK patent application No. 8716185. If such feeding means 25 is provided, the program requests the user to enter the size of envelope required. Next the program requests the destination address. Conveniently all destination addresses to be used are held in a data base of addresses in the disk store. Thus the user, in response to the request for the destination address, may enter a key word or number by which the required address may be retrieved from the data base. Lastly the user is requested to enter the postage value required. Upon receipt of this last response, the computer outputs, via the port 16, data representing the address and the postage value and an indication of the size of envelope selected by the user. Upon receipt of this data the micro-controller 19 carries out a check on the contents of the descending

register to ascertain whether sufficient credit is available for the required franking. If sufficient credit is available, the micro-controller operates an envelope selector and feed mechanism to feed a selected size of envelope to the printer and routes the data to control circuits 26 of the printer to effect printing of the franking and of the destination address by printing means 27. The micro-controller 19 returns an acknowledgement of receipt of the franking data to the computer 10. If desired the computer may be programmed to display a message indicating that franking of an envelope is proceeding. In the event that insufficient credit is available an error signal is returned to the computer to cause the computer to display an "insufficient credit" message.

[0011] If desired, the last request for the user to specify the postage value may be modified. Instead the user may be requested to specify the number of sheets of paper intended to be inserted in the envelope and the postage rate applicable to the destination address. The computer stores a look-up table from which it is programmed to calculate the combined weight of the envelope selected and the intended contents and to calculate the postage value from the applicable postage rate. If desired the addresses held in the data base may have associated therewith a code indicating the postage rate applicable to the respective addresses. Hence the user would not need to enter the postage rate.

[0012] The printer preferably uses a dot matrix type of print head in which selective operation of print elements causes selected dots to be printed in a column on the envelope. By repeated selection and operation of the print elements in synchronism with feeding of the envelope past the print head a complete pattern may be printed. The printing means 27 may include two separate print heads, one head 28 being positioned to print the franking impression 29 and any other material along the upper portion of an envelope 30 and the other head 31 being positioned to print an address 32 in a central portion of the envelope. However if desired a single print head spanning both the franking and address portions of the envelope may be used. The printer control circuit 26 includes a character generator circuit operative in response to the data signal input from the computer 10 to produce print element drive signals such as to effect printing of the required characters and symbols on the envelope. A suitable form of dot printer is a thermal transfer printer in which ink carried on a thermal transfer ribbon fed in contact with the face of the envelope is transferred by printing elements adjacent the rear of the ribbon which are heated selectively.

[0013] The computer may receive information via an internal or external modem 33 from a resetting centre to update the credit value in the franking machine registers. For reasons of security the computer would simply act as a courier of the information received from the resetting centre and may provide some non-secure application functions relating to the interface. Thus coded data received from the resetting centre would be passed

to the franking machine in coded form without change and the coded data would be operated upon solely within the sealed secure housing of the franking machine.

Claims

1. A printing and franking device (11) for operation by computer means (10), comprising: electronic means (19) operable to carry out accounting and control functions; register means (20,21) for storing a value of credit available for use in franking; input means (23) connected to said electronic means (19) for receiving data relating to franking and addressing of mail items (30) from computer means (10); and printing means (22); said electronic means (19) being operative in response to received data relating to a desired franking to interrogate said register means (20,21) to check if sufficient credit is available for said desired franking, and being further operative, if said check indicates sufficient credit, to route said received data relating to franking and addressing to said printer means (22) to cause said printer means (22) to print a franking (29) and an address (32) on a mail item (30).
2. A device as claimed in claim 1 further comprising: feeding means (25) operable to select a mail item (30) comprising an envelope or label and feed said selected mail item (30) to said printer means (22); and wherein said electronic means (19) is operable in response to a mail item selection signal to operate said feeding means (25).
3. A device as claimed in claim 1 or 2 wherein said printing means (22) includes a plurality of dot printing elements (28,31) selectively operable to print said franking (29) and said address (32).
4. A device as claimed in claim 3 wherein said printing elements (28,31) are arranged in two groups, one group (28) being positioned to print said franking (29) and the other group (31) being positioned to print said address (32).
5. A device as claimed in claim 3 wherein said printing elements (28,31) are disposed to print dots in a column on said mail item (30), and said printing means (22) includes print control means (26) operative to repeatedly select and operate said, print elements (28,31) in synchronism with feeding of said mail item (30) past said printing elements (28,31).
6. A device as claimed in any preceding claim in combination with a computer (10) having output means (16) connected to said input means (23) and programmed to be operable to send data relating to franking and addressing to said printing and frank-

ing device (11).

7. A device in combination with a computer as claimed in claim 6 wherein said printing and franking device (11) is operable to send data relating to operation of said franking machine (11) to said computer (10).

Patentansprüche

1. Druck- und Frankiervorrichtung (11) zur Betätigung durch Computermittel (10) mit elektronischen Mitteln (19), die zur Ausführung von Abrechnungs- und Steuerfunktionen betätigbar sind, mit Registermitteln (20,21) zur Speicherung eines Kreditwertes, der zum Gebrauch bei der Frankierung verfügbar ist, mit Eingabemitteln (23), die mit den elektronischen Mitteln (19) zum Empfangen von Daten von den Computermitteln (10) verbunden sind, die sich auf die Frankierung und Adressierung von Poststücken (30) beziehen, und mit Druckmitteln (22), wobei die elektronischen Mittel (19) betätigbar sind in Antwort auf empfangene Daten, die sich auf eine gewünschte Frankierung beziehen, um die Registermittel (20,21) zu befragen, um zu überprüfen, ob ausreichend Kredit für die gewünschte Frankierung verfügbar ist, und weiterhin betätigbar sind, wenn die Überprüfung einen ausreichenden Kredit anzeigt, die empfangenen Daten, die sich auf die Frankierung und Adressierung beziehen, zu den Druckmitteln (22) zu leiten, um die Druckmittel (22) zu verursachen, einen Frankierwert (29) und eine Adresse (32) auf ein Poststück (30) zu drucken.
2. Vorrichtung nach Anspruch 1, welche weiterhin Zuführungsmittel (25) aufweist, die betätigbar sind, um ein Poststück (30) auszuwählen, das einen Umschlag oder ein Label aufweist, und um dieses ausgewählte Poststück (30) zu den Druckmitteln (22) zuzuführen, und wobei die elektronischen Mittel (19) betätigbar sind in Antwort auf ein Poststückauswahlsignal zur Betätigung der Zuführungsmittel (25).
3. Vorrichtung nach Anspruch 1 oder 2, wobei die Druckmittel (22) eine Mehrzahl von Punktdruckelementen (28,31) aufweisen, welche selektiv betätigbar sind, um den Frankierwert (29) und die Adresse (32) zu drucken.
4. Vorrichtung nach Anspruch 3, wobei die Druckelemente (28,31) in zwei Gruppen angeordnet sind, wobei eine Gruppe (28) angeordnet ist, um den Frankierwert (29) zu drucken, und die andere Gruppe (31) angeordnet ist, um die Adresse (32) zu drucken.
5. Vorrichtung nach Anspruch 3, wobei die Druckelemente (28,31) angeordnet sind, um Punkte in einer

Reihe auf das Poststück (30) zu drucken, wobei die Druckmittel (22) Drucksteuermittel (26) einschließen, die betätigbar sind, um wiederholt die Druckelemente (28,31) in Synchronisation mit der Zuführung des Poststückes (30) hinter die Druckelemente (28,31) auszuwählen und zu betätigen.

6. Vorrichtung nach irgendeinem vorangehenden Anspruch, in Verbindung mit einem Computer (10), der Ausgabemittel (16) aufweist, die mit den Eingabemitteln (23) verbunden sind und programmiert ist, um betätigbar zu sein, um Daten, die sich auf die Frankierung und Adressierung beziehen, zu der Druck- und Frankiervorrichtung (11) zu senden.

7. Vorrichtung in Verbindung mit einem Computer nach Patentanspruch 6, wobei die Druck- und Frankiervorrichtung (11) betätigbar ist, um Daten, die sich auf die Betätigung der Frankiermaschine (11) beziehen, zum Computer (10) zu schicken.

Revendications

1. Dispositif d'impression et d'affranchissement (11) destiné à fonctionner sous la commande de moyens d'ordinateur (10), comprenant :

des moyens électroniques (19) actionnables pour effectuer des fonctions de comptabilité et de commande ;

des moyens de registres (20, 21) pour stocker une valeur de crédit disponible pour être utilisée dans l'affranchissement ;

des moyens d'entrée (23) connectés aux moyens électroniques (19) pour recevoir des données concernant l'affranchissement et l'inscription d'adresse sur des articles de courrier (30), à partir des moyens d'ordinateur (10) ; et des moyens d'impression (22) ;

les moyens électroniques (19) pouvant fonctionner en réponse aux données reçues concernant un affranchissement voulu, afin d'interroger les moyens de registres (20, 21) pour vérifier s'il existe un crédit suffisant disponible pour l'affranchissement voulu, et

les moyens électroniques pouvant en outre fonctionner, si la vérification indique un crédit suffisant, pour envoyer aux moyens d'impression (22) les données reçues concernant l'affranchissement et l'inscription d'adresse, de manière à amener les moyens d'impression (22) à imprimer un affranchissement (29) et une adresse (32) sur un article de courrier (30).

2. Dispositif selon la revendication 1, comprenant en outre

des moyens d'alimentation (25) actionnables pour sélectionner un article de courrier (30) comprenant une enveloppe ou une étiquette, et pour amener cet article de courrier sélectionné (30) aux moyens d'impression (22) ; et

les moyens électroniques (19) pouvant fonctionner en réponse à un signal de sélection d'article de courrier, pour faire fonctionner les moyens d'alimentation (25).

3. Dispositif selon la revendication 1 ou 2, dans lequel les moyens d'impression (22) comprennent un certain nombre d'éléments d'impression par points (28, 31) actionnables sélectivement pour imprimer l'affranchissement (29) et l'adresse (32).

4. Dispositif selon la revendication 3, dans lequel les éléments d'impression (28, 31) sont disposés en deux groupes, l'un des groupes (28) étant positionné pour imprimer l'affranchissement (29) et l'autre groupe (31) étant positionné pour imprimer l'adresse (32).

5. Dispositif selon la revendication 3, dans lequel les éléments d'impression (28, 31) sont disposés pour imprimer des points en une colonne sur l'article de courrier (30), et les moyens d'impression (22) comprennent des moyens de commande d'impression (26) pouvant fonctionner pour sélectionner et actionner de manière répétitive les éléments d'impression (28, 31) en synchronisme avec l'alimentation des articles de courrier (30) passant devant les éléments d'impression (28, 31).

6. Dispositif selon l'une quelconque des revendications précédentes, en combinaison avec un ordinateur (10) comportant des moyens de sortie (16) connectés aux moyens d'entrée (23), cet ordinateur étant programmé pour être actionnable de manière à envoyer au dispositif d'impression et d'affranchissement (11) des données concernant l'affranchissement et l'inscription d'adresse.

7. Dispositif en combinaison avec un ordinateur, selon la revendication 6, dans lequel le dispositif d'impression et d'affranchissement (11) est actionnable pour envoyer à l'ordinateur (10) des données concernant le fonctionnement de la machine à affranchir (11).

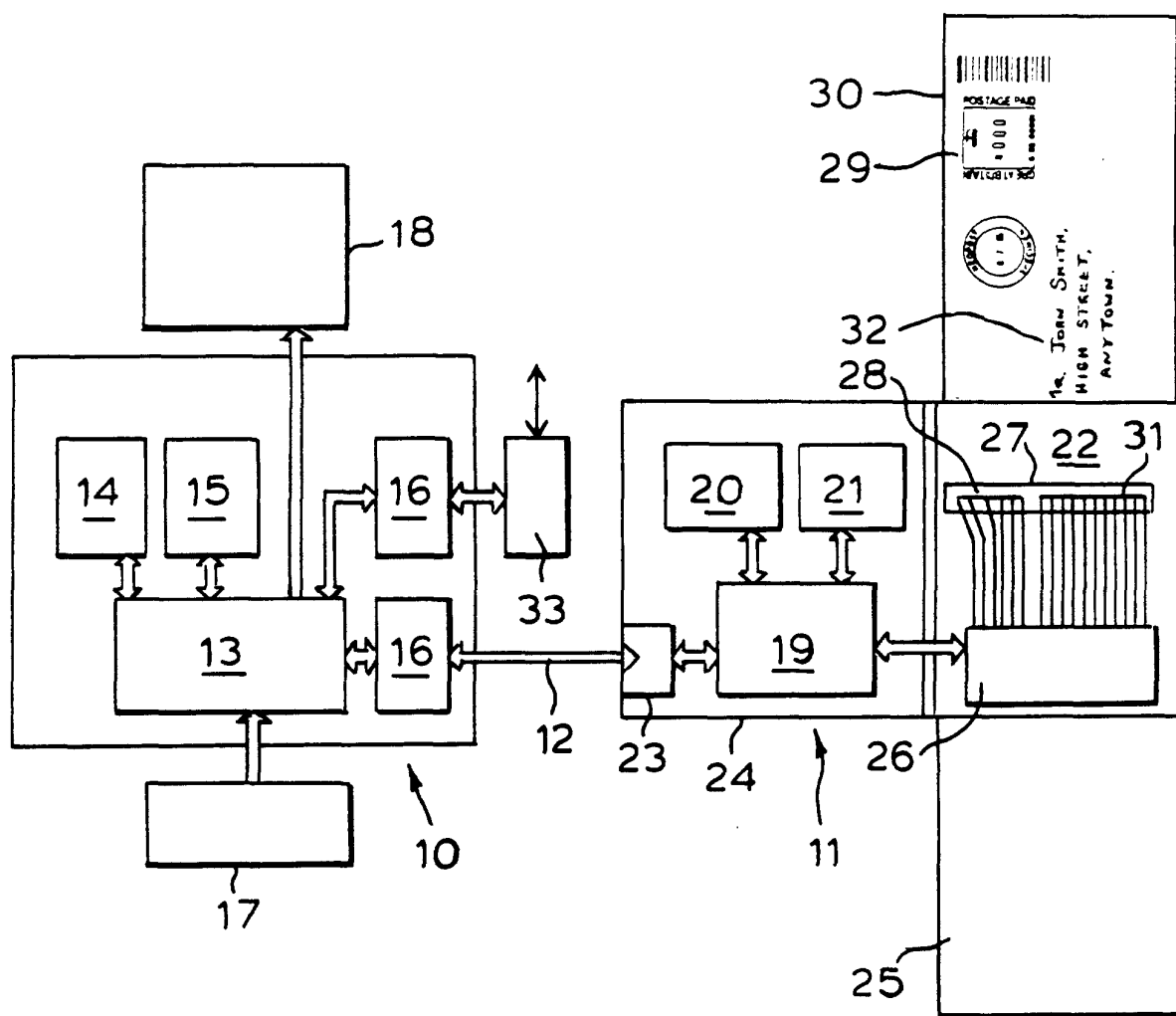


FIG.1.

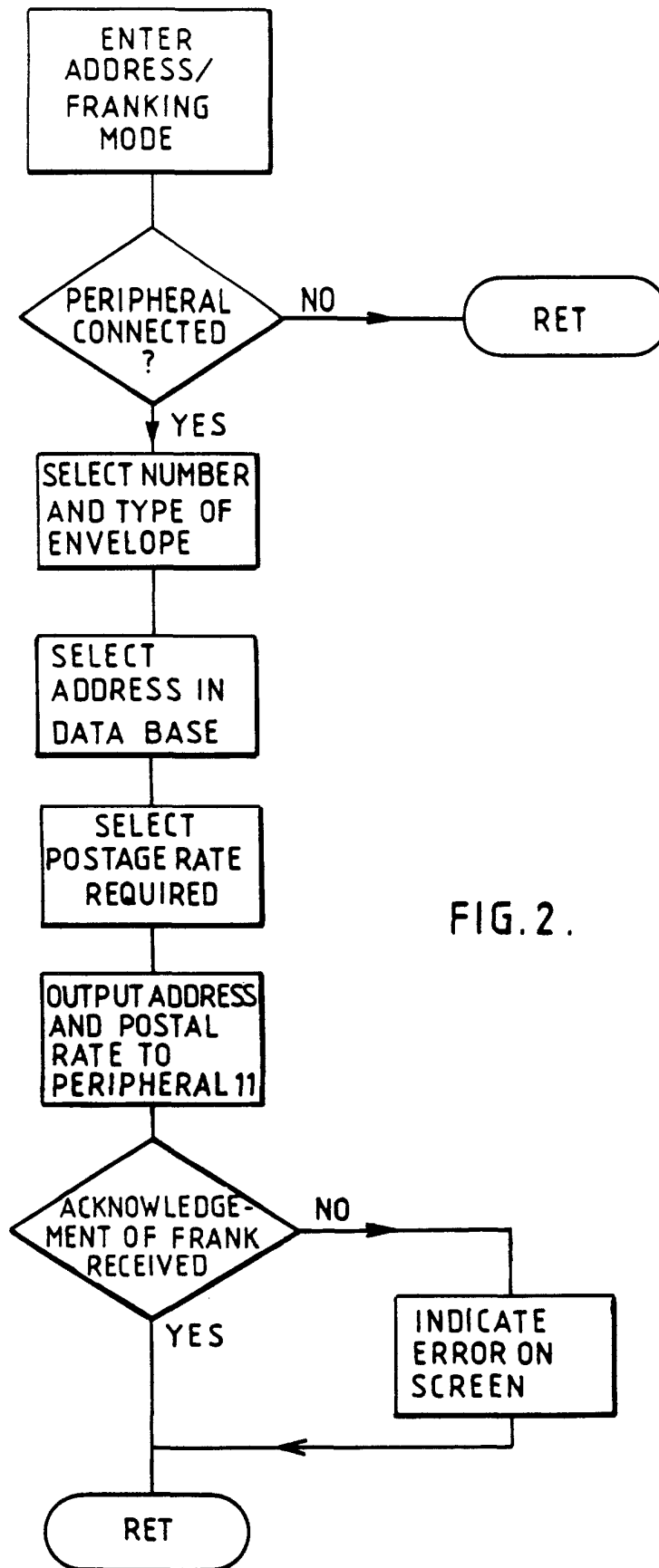


FIG. 2.