(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 0 507 241 B1

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
05.08.1998 Bulletin 1998/32

(51) Int Cl.[6]: **G07G 1/12**, G07F 7/02

(21) Application number: **92105485.4**

(22) Date of filing: **30.03.1992**

(54) Cash register capable of switching operation mode

Registrierkasse, geeignet zur Umschaltung der Betriebsart

Caisse enregistreuse pouvant commuter le mode de fonctionnement

(84) Designated Contracting States:
DE GB

(30) Priority: **05.04.1991 JP 73238/91**

(43) Date of publication of application:
07.10.1992 Bulletin 1992/41

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- **PATENT ABSTRACTS OF JAPAN vol. 009 no. 062 (P-342), 19 March 1985 & JP-A-59 195765 (TOKYO DENKI KK) 6 November 1984**

EP 0 507 241 B1

Printed by Jouve, 75001 PARIS (FR)

Description

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a cash register in accordance with the precharacterizing part of claim 1. Such a cash register is known from US-A-4 570 223.

2. Description of the Related Art

The cash register known from the above mentioned US-A-4 570 223 has a clerk identifying function wherein the clerk who handles the electronic cash register must be first registered for initiating the actual registration operation. An operation ability determination circuit is provided for determining whether specific operations can be performed by a specific clerk. The clerk is indicated through an input through a key switch. Therefore, anyone who pushes the key switch properly can operate the cash register. Further, the known document does not disclose that the clerk identification for determining the operating mode is performed when a memory card is directly connected to a connector.

A further known electronic cash register with a data reading wand is disclosed in US-A-3 916 386. The data reading wand is designed for reading data tags or badges. The security of this known cash register is not very high, since the message strip manager's badge or clerk's badge is easily forged, since the magnetic strips are detachably adhered to the badges or goods. This cash register is intended to input information easily with respect to point-of-sale or the like.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide an electronic cash register having a large number of operating modes each assigned to respective operators so that the operating modes can be implemented easily and at low costs. Further, the cash register of the present invention should obtain a high security level.

The object of the present invention can be achieved by a cash register having a plurality of operating modes to be switched among by an operator, comprising a cash register main body including means for specifying one or more kinds of said operating modes, means for determining whether said operating mode specified by said specifying means is permitted to said operator, and means for executing a process of cash registering corresponding to said specified operating mode at a time when said specified operating mode is determined to be permitted to said operator by said determining means,

characterized in that said cash register comprises a memory card to be possessed by an operator for storing one or more operating modes therein as a permitted operating range, and in that said cash register main body includes a connector for receiving said inserted memory card and means for reading said operating range from said memory card through said connector, and that said determining means determines that said specified operating mode is permitted to said operator when said specified operating mode is determined to be within said operating ranges read by said reading means from said memory card.

In operation, when the specifying unit serves to specify the operation mode, the reading unit is initiated to read the operating range from the memory card. Then, the determining unit serves to determine whether or not the operating mode specified by the specifying unit is included in the operating range read by the reading unit. If yes, the executing unit operates to execute the cash-registering operation. If not, the informing unit gives an alarm of an operation error.

As will be understood from the above description, in case that the memory card possessed by each operator has the corresponding operating range written therein and is loaded to the cash register when he or she wants to operate it, each operator can operate the cash register in the corresponding mode range. The use of the memory card makes it possible to set more operation modes than the known cash register and to eliminate mechanical key switch used for this function.

Preferably, the cash register further includes a unit for informing an operation error at a time when the specified operating mode is determined to be not within the operating range by the determining unit.

More preferably, the storage unit is capable of storing operating modes including a setting mode, a registering mode, a checking mode, and a clearing mode.

The reading unit is preferably an input/output buffer which is capable of reading an operating range from the memory card through the connector.

The specifying unit is a keyboard which is capable of specifying each kind of the operating mode such as a setting mode, a registering mode, a checking mode, and a clearing mode, preferably.

The specifying unit further includes a key interface which is capable of sending a key scan signal to the keyboard and receiving a return signal therefrom, preferably.

The determining unit includes a read only memory and a central processing unit, preferably.

The executing unit is preferably a random access memory.

The read only memory, the central processing unit, the random access memory, and the input/output buffer are formed in a microcomputer, preferably.

The informing unit is preferably an alarming device.

Further objects and advantages of the present invention will be apparent from the following description of the preferred embodiment of the invention as illustrated in the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a block diagram showing an arrangement of a first embodiment of a cash register according to the present invention;

Fig.2 is a block diagram showing an arrangement of a second embodiment of a cash register according to the present invention;

Fig.3 is an explanatory view showing the content of an operating range written in a memory card shown in Figs. 1 and 2; and

Fig.4 is a flowchart showing an operation of the cash register shown in Figs. 1 and 2.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to the accompanying drawings, an embodiment of a cash register according to the present invention will be described in details.

Fig. 1 is a block diagram showing an arrangement of a first embodiment of a cash register according to the present invention.

As shown in Fig.1, a memory card 10 is provided together with a cash register having a main body 11 which includes a connector 12 for receiving the memory card 10. Aside from the connector 12, a main body 11 of the cash register further includes a reading unit 13 connected to the connector 12, a specifying unit 14, a determining unit 15 connected to both of the reading unit 13 and the specifying unit 14, an executing unit 16 connected to the determining unit 15, and an alarming unit 17 connected to the determining unit 15.

The memory card 10 has a kind of an operating mode selected from various modes such as a setting mode, a registering mode, a checking mode, and a clearing mode.

The specifying unit 14 enables to specify each of various operating modes such as a setting mode, a registering mode, a checking mode, and a clearing mode.

The reading unit 13 reads the operating range from the memory card 10 inserted to the connector 12.

The determining unit 15 determines whether or not the operating mode specified by the specifying unit 14 is included in the operating range. If yes, the executing unit 16 executes the cash-registering operation at the specified mode. If not, the alarming unit 17 gives an alarm of indicating an operation error.

The specifying unit 14 may be a keyboard for specifying various operating modes.

The combination of the reading unit 13, the determining unit 15 and the executing unit 16 may be formed in a microcomputer which is arranged to have a central processing unit (CPU), a read only memory (ROM), a random access memory (RAM) and an input/output (I/O) port.

The alarming unit 17 may be any light or sound indicator such as a buzzer or a lamp.

Fig.2 is a block diagram showing an arrangement of a second embodiment of a cash register according to the present invention.

The cash register shown in Fig.2 is a point-of-sales electronic cash register (hereinafter, referred as POS. ECR).

As shown in Fig. 2, a memory card 20 is provided with a main body 21 of POS.ECR which includes a connector 22 for receiving the memory card 20. Aside from the connector 22, the main body 21 of the POS.ECR further includes an input/output (I/O) buffer 23 connected to the connector 22, a keyboard 24, a key interface 25 connected to the keyboard 24, a central processing unit (CPU) 26 connected to both of the I/O buffer 23 and the key interface 25, a read only memory (ROM) 27 connected to both of the I/O buffer 23 and the key interface 25, and a random access memory (RAM) 28 connected to both of the I/O buffer 23 and the key interface 25.

The memory card 20 has an integrated circuit (IC) memory built therein and also has a kind of operating mode written as its operating range. The operating mode is selected from various modes such as a setting mode, a registering mode, a checking mode, and a clearing mode.

The main body 21 of the POS.ECR has the connector 22 to which the memory card 20 is inserted.

The keyboard 24 is provided in the main body 21. The keyboard 24 provides keys (not shown) for various operating modes such as a setting mode, a registering mode, a checking mode, and a clearing mode.

The key interface 25 serves to send a key scan signal to the keyboard 24 and to receive a return signal therefrom.

The I/O buffer 23 is provided for temporarily storing the data at a time when it is performing the I/O of the data to and from the memory card 20 through the connector 22.

The control program is written in the ROM 27. The CPU 26 operates to process various kind of data under the control of the program written in the ROM 27.

The RAM 28 enables to load the program which is written in the ROM 27 and to execute the loaded program therein in accordance with the information and/or instructions input either from the memory card 20 or the keyboard 24.

The CPU 26 serves to read the operating range from the memory card 20 through the connector 22. By pressing the keys on the keyboard 24, the operating mode is specified. Then, the CPU 26 determines whether or not the specified operating mode is included in the read operating range. If yes, the cash-registering operation is executed at the specified operating mode. If not, an operation error is indicated through a buzzer (not shown).

Fig.3 is an explanatory view showing the content of the operating range written in the memory card 20 of Fig.2.

The memory card 20 contains operating range flags

having the data arrangement. If each flag has risen, that is, has a value of one, the flag indicates that the operation is allowed at the flag mode. If it has a value of zero, the flag indicates that the operation is disabled at the flag mode.

Hence, in an example shown in Fig.3, the memory card 20 enables to perform the registering and the checking operations through the cash register for the holder of the memory card 20.

Next, the description will be directed to the operation of the CPU 26 of Fig.2 referring to the flowchart shown in Fig.4.

In case that the operation is executed at a certain mode, an operator presses a key for the mode on the keyboard 24.

When the proper key on the keyboard 24 is pressed (step S1), the CPU 26 reads the operating range flag stored in a predetermined area of the memory card 20 (step S2) and determines whether or not the operation specified by the key is enabled, that is, whether the operating range flag is 1 or not (step S3). If it is 1, the specified operation is enabled. The later process is executed at the mode (step S4). If it is not 1, the specified operation is disabled. Then, the operation error is indicated (step S5).

As set forth above, the embodiment of the present invention is arranged to prepare one kind of memory card 20 even if two or more persons may use the cash register.

By writing some factors such as an operating range flag, a user code, and a transaction limit card in a predetermined area of the memory card 20, it is possible to properly manage the cash register for a point of sale without using the key switches.

Many widely different embodiments of the present invention may be constructed and the present invention is not limited to the specific embodiments described in the specification, except as defined in the appended claims.

Claims

1. A cash register having a plurality of operating modes to be switched among by an operator, comprising a cash register main body (11) including means (14) for specifying one or more kinds of said operating modes, means (15) for determining whether said operating mode specified by said specifying means is permitted to said operator, and means (16) for executing a process of cash registering corresponding to said specified operating mode at a time when said specified operating mode is determined to be permitted to said operator by said determining means,

   characterized in that said cash register comprises a memory card (10) to be possessed by an operator for storing one or more operating modes therein as a permitted operating range, and in that said cash register main body (11) includes a connector (12) for receiving said inserted memory card (10) and means (13) for reading said operating range from said memory card (10) through said connector (12), and that said determining means determines that said specified operating mode is permitted to said operator when said specified operating mode is determined to be within said operating ranges read by said reading means (13) from said memory card (10).

2. A cash register according to claim 1, characterized in that said cash register further comprises means (17) for informing an operation error at a time when said specified operating mode is determined to be not within said operating range by said determining means (15).

3. A cash register according to claims 1 or 2, characterized in that said memory card (19) has an integrated circuit memory built therein which is capable of storing operating modes including a setting mode, a registering mode, a checking mode, and a clearing mode.

4. A cash register according to any one of claims 1 to 3, characterized in that said reading means (13) is an input/output buffer (23) which is capable of reading an operating range from said memory card (20) through said connector (22).

5. A cash register according to any one of claims 1 to 4, characterized in that said specifying means (14) is a keyboard (24) which is capable of specifying each kind of said operating mode such as a setting mode, a registering mode, a checking mode, and a clearing mode.

6. A cash register according to claim 5, characterized in that said specifying means (14) further comprises a key interface (25) which is capable of sending a key scan signal to said keyboard (24) and receiving a return signal therefrom.

7. A cash register according to any one of claims 1 to 6, characterized in that said determining means (15) includes a read only memory (27) and a central processing unit (26).

8. A cash register according to any one of claims 1 to 7, characterized in that said executing means (16) is a random access memory (28).

9. A cash register according to claim 8, characterized in that said read only memory (27), said central processing unit (26), said random access memory (28), and said input/output buffer (23) are formed in

a microcomputer.

10. A cash register according to any one of claims 2 to 9, characterized in that said informing means (17) is an alarming device (17).

Patentansprüche

1. Registrierkasse mit einer Anzahl von Betriebsmodi, die durch eine Bedienperson umgeschaltet werden können, mit einem Registrierkassen-Hauptgehäuse (11) mit einer Einrichtung (14) zum Spezifizieren einer oder mehrerer Arten der Betriebsmodi, einer Einrichtung (15) zum Bestimmen, ob der durch die Spezifiziereinrichtung spezifizierte Betriebsmodus für die Bedienperson zulässig ist, und einer Einrichtung (16) zum Ausführen eines Registrierkassenprozesses entsprechend dem spezifizierten Betriebsmodus, wenn durch die Bestimmungseinrichtung bestimmt wurde, dass der spezifizierte Betriebsmodus für die Bedienperson zulässig ist, **dadurch gekennzeichnet, dass** die Registrierkasse über eine von einer Bedienperson zu besitzende Speicherkarte (10) verfügt, um einen oder mehrere Betriebsmodi als zulässigen Funktionsbereich einzuspeichern, und dass das Registrierkassen-Hauptgehäuse (11) einen Verbinder (12) zum Aufnehmen der eingeführten Speicherkarte (10) und eine Einrichtung (13) zum Einlesen des Funktionsbereichs von der Speicherkarte (10) über den Verbinder (12) aufweist, und dass die Bestimmungseinrichtung bestimmt, dass der spezifizierte Betriebsmodus für die Bedienperson zulässig ist, wenn bestimmt wird, dass der spezifizierte Betriebsmodus innerhalb der von der Leseeinrichtung (13) von der Speicherkarte (10) gelesenen Funktionsbereiche liegt.

2. Registrierkasse nach Anspruch 1, **dadurch gekennzeichnet, dass** sie ferner eine Einrichtung (17) zum Mitteilen eines Bedienungsfehlers aufweist, wenn durch die Bestimmungseinrichtung (15) bestimmt wird, dass der spezifizierte Betriebsmodus nicht innerhalb des Funktionsbereichs liegt.

3. Registrierkasse nach einem der Ansprüche 1 oder 2, **dadurch gekennzeichnet, dass** die Speicherkarte (19) eine eingebaute integrierte Speicherschaltung enthält, die Betriebsmodi einschließlich eines Einstellmodus, eines Registriermodus, eines Prüfmodus und eines Löschmodus speichern kann.

4. Registrierkasse nach einem der Ansprüche 1 bis 3, **dadurch gekennzeichnet, dass** die Leseeinrichtung (13) ein Eingangs/Ausgangs-Puffer (23) ist, der über den Verbinder (22) einen Funktionsbereich von der Speicherkarte (20) lesen kann.

5. Registrierkasse nach einem der Ansprüche 1 bis 4, **dadurch gekennzeichnet, dass** die Spezifiziereinrichtung (14) eine Tastatur (24) ist, die jede Art von Betriebsmodus wie einen Einstellmodus, einen Registriermodus, einen Prüfmodus und einen Löschmodus spezifizieren kann.

6. Registrierkasse nach Anspruch 5, **dadurch gekennzeichnet, dass** die Spezifiziereinrichtung (14) ferner eine Tastenschnittstelle (25) aufweist, die ein Tastenabrastersignal an die Tastatur (24) liefern kann und von dieser ein Rücksetzsignal empfangen kann.

7. Registrierkasse nach einem der Ansprüche 1 bis 6, **dadurch gekennzeichnet, dass** die Bestimmungseinrichtung (15) einen Festwertspeicher (27) und eine zentrale Verarbeitungseinheit (26) aufweist.

8. Registrierkasse nach einem der Ansprüche 1 bis 7, **dadurch gekennzeichnet, dass** die Ausführungseinrichtung (16) ein Direktzugriffsspeicher (28) ist.

9. Registrierkasse nach Anspruch 8, **dadurch gekennzeichnet, dass** der Festwertspeicher (27), die zentrale Verarbeitungseinheit (26), der Direktzugriffsspeicher (28) und der Eingangs/Ausgangs-Puffer (23) in einem Mikrocomputer ausgebildet sind.

10. Registrierkasse nach einem der Ansprüche 2 bis 9, **dadurch gekennzeichnet, dass** die Informiereinrichtung (17) eine Alarmvorrichtung (17) ist.

Revendications

1. Caisse enregistreuse ayant une pluralité de modes de fonctionnement qu'un opérateur peut sélectionner par commutation, comprenant un corps principal (11) de caisse enregistreuse comportant un moyen (14) servant à indiquer un ou plusieurs types desdits modes de fonctionnement, un moyen (15) servant à déterminer si ledit mode de fonctionnement indiqué par ledit moyen d'indication est autorisé audit opérateur, et un moyen (16) servant à exécuter une opération d'utilisation de caisse enregistreuse correspondant audit mode de fonctionnement indiqué, à un moment où il est déterminé que ledit mode de fonctionnement indiqué est autorisé audit opérateur par ledit moyen de détermination,

caractérisée en ce que ladite caisse enregistreuse comprend une carte à mémoire (10) possédée par un opérateur pour y mémoriser un ou plusieurs modes de fonctionnement constituant les possibilités de fonctionnement permises, et en ce que ledit corps principal (11) de caisse enregistreu-

se comporte un connecteur (12) destiné à recevoir ladite carte à mémoire insérée et un moyen (13) servant à lire sur ladite carte à mémoire (10) lesdites possibilités de fonctionnement, par l'intermédiaire dudit connecteur (12), et en ce que ledit moyen de détermination détermine que ledit mode de fonctionnement indiqué est autorisé audit opérateur lorsqu'il est déterminé que ledit mode de fonctionnement indiqué entre dans la gamme desdites possibilités de fonctionnement lues par ledit moyen de lecture (13) sur ladite carte à mémoire (10).

2. Caisse enregistreuse selon la revendication 1, caractérisée en ce que ladite caisse enregistreuse comprend en outre un moyen (17) servant à informer d'une erreur d'utilisation à un moment où il est déterminé par ledit moyen de détermination (15) que ledit mode de fonctionnement indiqué n'est pas dans ladite gamme de possibilités de fonctionnement.

3. Caisse enregistreuse selon la revendication 1 ou 2, caractérisée en ce que dans ladite carte à mémoire (19) est installée une mémoire à circuits intégrés qui est apte à stocker des modes de fonctionnement comprenant un mode d'établissement, un mode d'enregistrement, un mode de contrôle et un mode d'effacement.

4. Caisse enregistreuse selon l'une quelconque des revendications 1 à 3, caractérisée en ce que ledit moyen de lecture (13) est une mémoire tampon (23) d'entrée/sortie qui est apte à lire des possibilités de fonctionnement sur ladite carte à mémoire (20) par l'intermédiaire dudit connecteur (22).

5. Caisse enregistreuse selon l'une quelconque des revendications 1 à 4, caractérisée en ce que ledit moyen d'indication (14) est un clavier (24) apte à indiquer chaque type de dit mode de fonctionnement tel qu'un mode d'établissement, un mode d'enregistrement, un mode de contrôle et un mode d'effacement.

6. Caisse enregistreuse selon la revendication 5, caractérisée en ce que ledit moyen d'indication (14) comprend en outre une interface (25) de touches qui est apte à envoyer audit clavier (24) un signal de lecture de touches et à recevoir de celui-ci un signal de retour.

7. Caisse enregistreuse selon l'une quelconque des revendications 1 à 6, caractérisée en ce que ledit moyen de détermination (15) comporte une mémoire morte (27) et une unité centrale de traitement (26).

8. Caisse enregistreuse selon l'une quelconque des revendications 1 à 7, caractérisée en ce que ledit moyen d'exécution (16) est une mémoire vive (28).

9. Caisse enregistreuse selon la revendication 8, caractérisée en ce que ladite mémoire morte (27), ladite unité centrale de traitement (26), ladite mémoire vive (28) et ladite mémoire tampon d'entrée/sortie (23) sont formées dans un micro-ordinateur.

10. Caisse enregistreuse selon l'une quelconque des revendications 2 à 9, caractérisée en ce que ledit moyen d'information (17) est un dispositif d'alerte (17).

Fig. 1

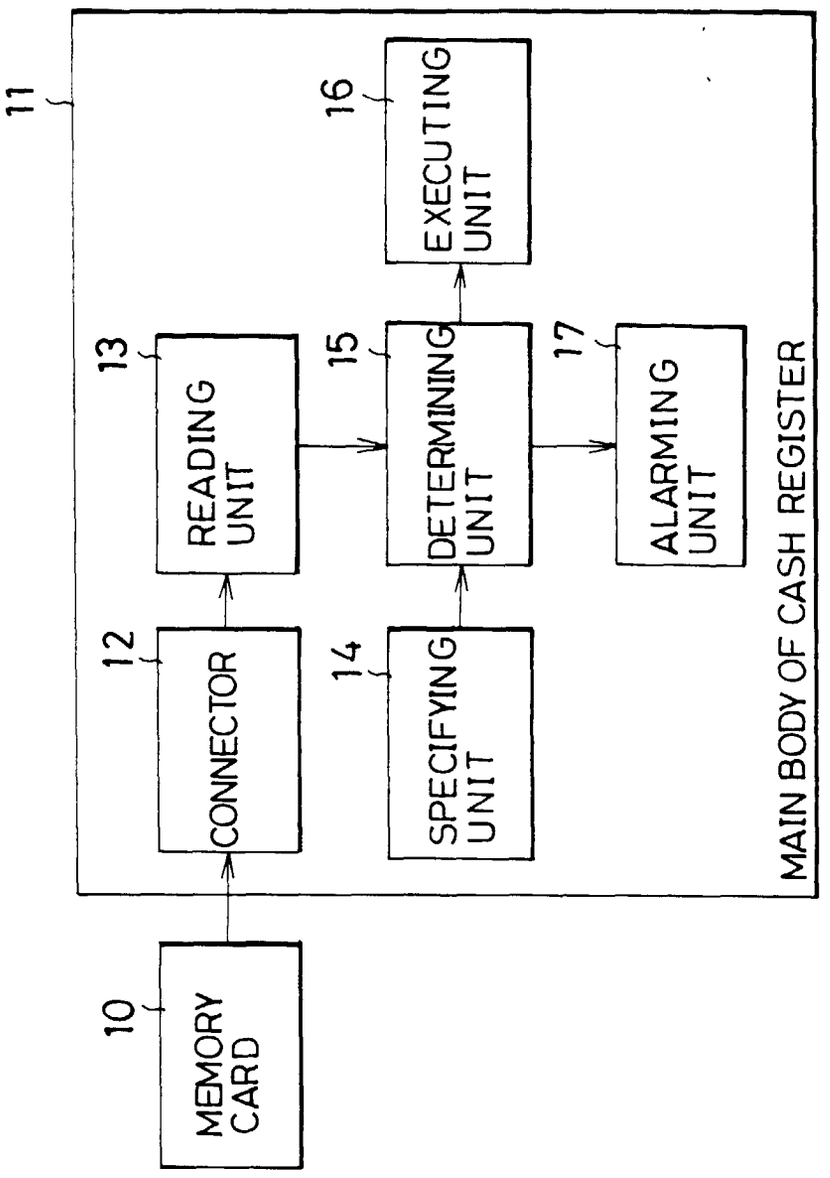

11
MAIN BODY OF CASH REGISTER
10
MEMORY CARD
12
CONNECTOR
13
READING UNIT
14
SPECIFYING UNIT
15
DETERMINING UNIT
16
EXECUTING UNIT
17
ALARMING UNIT

Fig. 2

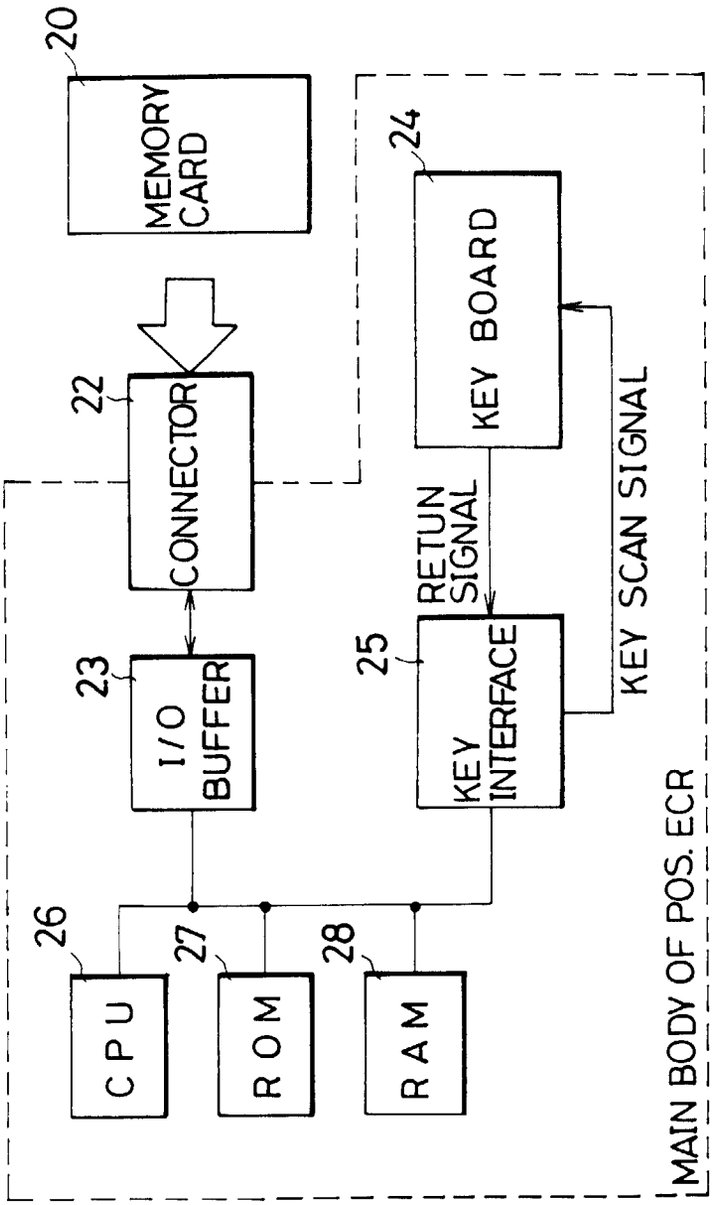

20
MEMORY CARD
22
CONNECTOR
23
I/O BUFFER
24
KEY BOARD
RETUN SIGNAL
25
KEY INTERFACE
KEY SCAN SIGNAL
26
CPU
27
ROM
28
RAM
MAIN BODY OF POS. ECR

Fig. 3

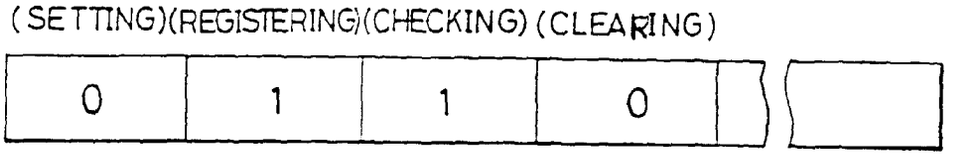
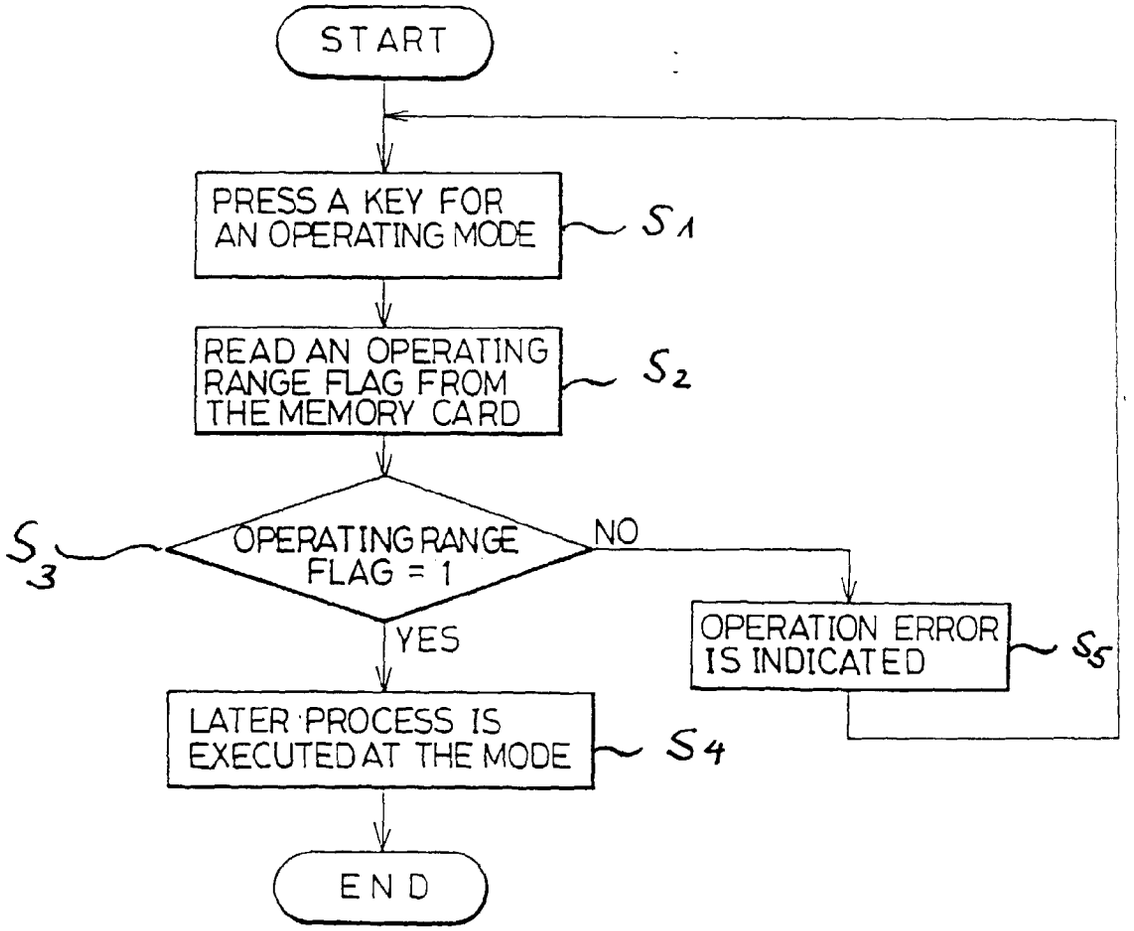

(SETTING)(REGISTERING)(CHECKING) (CLEARING)
0
1
1
0

Fig. 4


START
PRESS A KEY FOR AN OPERATING MODE
S1
READ AN OPERATING RANGE FLAG FROM THE MEMORY CARD
S2
OPERATING RANGE FLAG = 1
S3
NO
YES
OPERATION ERROR IS INDICATED
S5
LATER PROCESS IS EXECUTED AT THE MODE
S4
END