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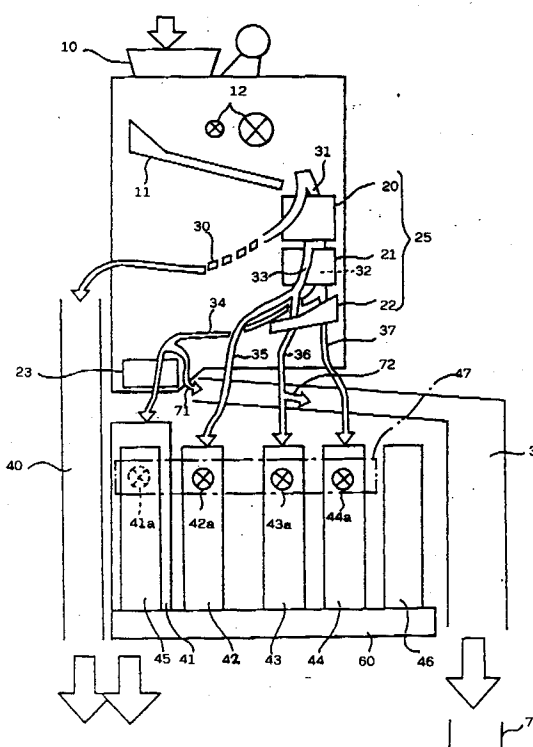
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W-8000 München 90(DE)(54) **Coin handling mechanism for vending machines.**

(57) A coin handling mechanism for vending machines is disclosed which includes a control portion. The control portion always counts the number of each deposited denomination coins which is outputted from or inputted into each change retaining tubes according to the results of paying out of a coin return mechanism, output signals of a coin validation sensor and output signals of overflow sensors. Accordingly, when the sales are collected, if the number of the coins which should be retained in change retaining tubes is not changed, the increment of the coins retained in change retaining tubes is automatically paid out by turning switches "OFF" and "H" of the inventory switch on. Simultaneously, with respect to the decrement of the coins retained in change retaining tubes, since the denomination of the coins corresponding to the decrement is indicated by an indication portion, respectively, the decrement is solved by depositing the denomination coins corresponding to the indication to each change retaining tubes through an coin inlet until the indication is disappeared, and thereby to make the operation of supplying coins to change retaining tubes be easy.

FIG. 1

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The present invention relates to a coin handling mechanism, and more particularly, to a coin handling mechanism for a vending machine which can make the operation of supplying coins to change retaining tubes be easy.

A conventional change handling mechanism detects the deposited denomination coins, and retains the coins in change retaining tubes corresponding to each denomination of coins. When the change retaining tube is filled with the coins, each overflow sensors detects the coins. If a coin corresponding to the change retaining tube which is filled with the denomination coins is deposited, the coin is directly introduced into a cash box. More specifically, each change retaining tube previously retain the predetermined number of the coins for particular denominations therein, respectively. When a merchandise is sold, if the change is necessary to be paid out, the particular denomination coins are returned from the change retaining tube corresponding to the particular denomination coin to a return opening.

On the other hand, in case of collecting sales, all the coins in the cash box and the change retaining tubes are first returned, and collected. Then, each denomination coins is supplied to each change retaining tubes as the coins for change. The number of coins supplied thereto is usually the same number as the coins previously supplied before start of selling. Accordingly, the remaining coins after supplying coins to change retaining tube are the whole sales.

With respect to supplying coins to change retaining tubes, there are two ways for supplying coins for change to change retaining tubes. One of them is to supply the coins thereto as the number of the coins supplied are being counted. The other one is to supply the coins thereto until the change retaining tubes, in which the retainable number of the coins is previously determined, are filled with coins.

In case of the first one, since the number of the coins are counted by an operator, there is the possibility of making mistakes in counting. In case of the second one, since there are some differences among the dimensions of change retaining tubes and the thickness of the coins according to each type of coins, the number of the coins in each change retaining tubes is not always the same number each other when each change retaining tubes is filled with particular denomination coins, and thereby to occur inconvenience in change control for an operator.

It is a primary object of this invention to provide a coin handling mechanism for a vending machine which can make the operation of supplying coins to change retaining tubes be easy.

It is another object of this invention to provide a coin handling mechanism for a vending machine which can automatically pay out the increment of coins retained in change retaining tubes.

It is still another object of this invention to provide a coin handling mechanism for a vending machine which can indicate the number of the lack of coins.

A coin handling mechanism for vending machines according to the present invention which includes a controller for controlling operation of the vending machines comprises a coin validation sensor for testing the authenticity and type of deposited coins. A plurality of change retaining tubes responsive to the coin validation sensor retain each deposited denomination coins. A inventory switch includes a plurality of switches. A coin return mechanism pays out coins from the change retaining tubes according to an output signal from each switches or the controller. Overflow sensors detect that each change retaining tubes is filled with each deposited denomination coins. Output-input detecting means counts the number of each deposited denomination coins which is outputted from or inputted into each change retaining tubes according to the results of paying out of the coin return mechanism, output signals of the coin validation sensor and output signals of the overflow sensors. Operational memory means, in which the number of the coins memorized is set to be zero based on output signals from the inventory switch, adds the number of each denomination coins deposited into a corresponding change retaining tubes to a prior number of each denomination coins previously memorized, or subtracts the number of each denomination coins paid out of a corresponding change retaining tubes from a prior number of each denomination coins previously memorized. Coin number correcting means, based on output signals of the inventory switch and the number of each denomination coins memorized by the operational memory means, outputs a signal to instruct the coin return mechanism to pay out particular denomination coins, of which the number memorized is larger than zero, from the change retaining tubes until the number of the particular denomination coins memorized becomes zero and outputs a signal to instruct to output an indication signal to indicate the lack of a particular denomination coins retained in the change retaining tubes, of which the number memorized is less than zero. An indication portion indicates the lack of particular denomination coins based on the indication signals from the coin number correcting means.

Further objects, features and other aspects of this invention will be understood from the following detailed description of the preferred embodiments to this invention with reference to the drawings.

FIG. 1 is a schematic view of a coin handling mechanism according to one embodiment of the present invention.

FIG. 2 is a block diagram of an electric circuit of a coin handling mechanism as shown in FIG. 1.

FIGS. 3-7(d) are flowcharts of the control systems of a coin handling mechanism as shown in FIG. 1.

The preferred embodiment of the present invention will be described hereafter with reference to the attached drawings.

FIG. 1 illustrates a coin handling mechanism for a vending machine according to an embodiment of the present invention. The coin handling mechanism has on the upper portion thereof coin inlet 10 into which coins are deposited, coin validation sensor 12 which tests the authenticity of the deposited coin and detects or determines the type of the deposited coin.

Coin accepting gate 20 is provided on a portion of the exit side of coin chute 11. Coin accepting gate 20 distributes a deposited coin to either acceptable coin path 31 or unacceptable coin path 30 in accordance with the authenticity of the deposited coin tested by coin validation sensor 12. Acceptable coin path 31 leads the deposited coin into opened coin accepting gate 20. Unacceptable coin path 30 communicates with discharge path 40 for unacceptable coins.

Coin distributing gates 21 and 22 are arranged in the vertical direction downstream of coin accepting gate 20, and another coin distributing gate 23 is positioned downstream of the coin distributing gate 21.

Coin path 34 communicates with coin tube 41 for 500 unit coins, coin path 35 communicates with coin tube 42 for 10 unit coins, coin path 36 communicates with coin tube 43 for 50 unit coins and coin path 37 communicates with coin tube 44 for 100 unit coins. Coin path 34 as a coin path for the largest coins (that is, 500 unit coins) also can communicate with cash box 73 via coin path 71, which diverges from coin path 34, and coin path 38. Therefore, parts of coin path 34, coin path 71 and coin path 34 constitute a coin path communicating with cash box 73. Namely, the part of coin path 34 for 500 unit coins is common to a part of the coin path communicating with cash box 73. Coin distributing gate 23 is disposed on the divergent portion of the common path and the gate distributes a coin led from the common path to either the coin path communicating with coin tube 41 or with coin path 71.

Coin accepting gate 20 and coin distributing gates 21, 22 and 23 are driven by solenoids (not shown), respectively. Each of solenoids is controlled to the "on" or "off" states thereof according to the signal of the authenticity and type of a

deposited coin from coin validation sensor 12. When the solenoid of coin accepting gate 20 is in its "off" state, coin accepting gate 20 opens unacceptable coin path 30, and when the solenoid is in its "on" state, the gate opens acceptable coin path 31. When the solenoid of coin distributing gate 21 is in its "off" state, coin distributing gate 21 opens coin path 32 for 100 unit coins and 500 unit coins, and when the solenoid is in its "on" state, the gate opens coin path 33 for 10 unit coins and 50 unit coins. When the solenoid of coin distributing gate 22 is in its "off" state, coin distributing gate 22 opens coin path 36 for 50 unit coins, and when the solenoid is in its "on" state, the gate opens coin path 37 for 100 unit coins. When the solenoid of coin distributing gate 23 is in its "off" state, coin distributing gate 23 opens coin path 71 communicating with cash box 73 through coin path 38, and when the solenoid is in its "on" state, the gate opens the coin path communicating with coin tube 41.

Overflow sensors 41a, 42a, 43a and 44a are attached on the upper portions of coin tube 41, 42, 43 and 44, respectively. Each overflow sensors 41a, 42a, 43a and 44a detects whether the corresponding coin tube is filled with coins. Coin paths 34, 71 and 38 communicating with cash box 73 also constitute a coin path for overflow coins in this embodiment. Coin path 72 diverges from coin path 36 for 50 unit coins at a position above coin tube 43. At the divergent portion, a distributing plate (not shown) having a hole or a slit for a coin to be distributed is provided. Coin path 72 is connected to coin path 38 and a 10 unit coin or a 100 unit coin misdirected to coin path 36 can be sent to coin path 38 through coin path 72.

Further, auxiliary coin tubes 45 and 46 retaining coins for change are provided in the mechanism. Coin tubes 41-44 and auxiliary coin tubes 45 and 46 are connected to change return mechanism 60 for returning change to the customer.

In the above coin handling mechanism, a coin deposited into coin inlet 10 is tested for the authenticity and type thereof by coin validation sensor 12 during passage through coin chute 11. Coin accepting gate 20 and coin distributing gates 21, 22 and 23 are controlled according to the signal from coin validation sensor 12 and the signals from overflow sensors 41a-44a.

FIG. 2 illustrates a block diagram of an electric circuit of a coin handling mechanism. The electric circuit has control portion 50 including CPU(Central Processing Unit) 50a, ROM(Read-Only Memory) 50b and RAM(Random-Access Memory) 50c, coin selecting portion 80, overflow sensor portion 90 including overflow sensors 41a, 42a, 43a and 44a, and change return mechanism 60. CPU 50a is connected to ROM 50b and RAM 50c, respectively.

CPU 50a operates according to a program stored in ROM 50b. Coin selecting portion 80 is directly connected to CPU 50a and coupled with CPU 50a through overflow sensor portion 47. Coin validation sensor 12 and a coin distributing portion 25 are connected coin selecting portion 80, respectively. CPU 50a is also connected to change return mechanism 60, inventory switch 90, controller 91 and indication portion 92, respectively. Control portion 50 operates change return mechanism 60 according to a control signal from controller 91 and pays out change. Control portion 50 always detects the output and input of coins for each change retaining tubes 41-44. The increment and decrement numbers of the coins in each change retaining tubes 41-44, which control portion 50 detects, are memorized in RAM 50c. When the sales are collected, control portion 50 operates change return mechanism 60 to pay out the increment number of the coin or operates indication portion 92 to indicate the decrement number of each denomination coins corresponding to change retaining tubes 41-44, based on the signals from inventory switch 90. Inventory switch 90 includes switches "OFF", "H", "50", "100" and "500".

The operation of the system as shown in FIGS. 1 and 2 at the time of collecting the sales will be explained with reference to flowcharts shown in FIGS. 3-7. Here, deposited coins are all assumed for simplicity to be acceptable coins.

First, it is determined by control portion 50 whether each inventory switch 90 is turned on or not (step 101). If inventory switch 90 is turned on, a signal is input to step 108 as mentioned later. Otherwise, it is determined by control portion 50 based on a signal from coin selecting portion 80 whether a coin is deposited or not (step 102). If a coin is not deposited, a signal is inputted to step 105 as mentioned later. Otherwise, it is determined by control portion 50 whether each change retaining tubes 41-44 is filled with coins corresponding to each denomination coins or not (step 103). If at least one of change retaining tubes 41-44 is filled with the corresponding denomination coins, a control returns to step 101. Otherwise, the number Cin10, Cin50, Cin100 or Cin 500 of the deposited coin is added to memorized number X10, X50, X100 and X500 of coins corresponding to the denomination of the deposited coin, and the number of the coin after adding is newly memorized in RAM 50c as the memorized number of the coin (step 104). Thereafter, a control returns to step 101. Memorized number X10, X50, X100 and X500 of coins are predetermined to be zero by operation of inventory switch 90 after supplying coins for change to each change retaining tubes 41-44 at

start of selling. Accordingly, the increment and decrement number of each denomination coins is memorized as memorized numbers of coins.

At step 102, if any coins are not deposited, it is determined by control portion 50 whether a change pay-out signal is input to control portion 50 from controller 91 or not (step 105). If a change pay-out signal is not input to control portion 50 from controller 91, a control returns to step 101. Otherwise, change is paid out by operating change return mechanism 60 (step 106). Simultaneously, the number Cpay10, Cpay50, Cpay100 and Cpay500 of pay-out coins is subtracted from memorized number X10, X50, X100 and X500 of coins corresponding to the denomination of the pay-out coin, and the number of the coin after subtracting is newly memorized in RAM 50c as the memorized number of the coin (step 107). Thereafter, a control returns to step 101.

At step 101, if inventory switch 90 is turned on, it is determined by control portion 50 whether switches "OFF" and "H" are turned on or not (step 108). If these switches are not turned on, a control returns to step 102. Otherwise, a control move to a change correcting mode as shown in FIG. 4, and control portion 50 operates indication portion 92 to indicate character "P" representing change correcting mode (step 109). Thereafter, it is determined by control portion 50 whether switch "OFF" is solely turned on or not (step 110). If switch "OFF" is solely turned on, control portion 50 regards as change correcting mode is solved, and a control returns to step 101. Otherwise, it is determined by control portion 50 whether switch "H" is solely turned on or not (step 111). If switch "H" is solely turned on, a control moves to a memorized coin number clear sub-routine as shown in FIG. 5, and control portion 50 operates indication portion 92 to indicate character "CL" representing memorized coin number clear mode (step 112). Thereafter, it is determined by control portion 50 whether switch "10" is turned on or not (step 113). If switch "10" is not turned on, a control moves to step 116. If switch "10" is turned on, memorized number X10 of 10 unit coin is set to be zero (step 114), and control portion 50 operates indication portion 92 to indicate character "C10" representing that memorized number X10 of 10 unit coin is cleared (step 115). Thereafter, it is determined by control portion 50 whether switch "50" is turned on or not (step 116). If switch "50" is not turned on, a control moves to step 119. If switch "50" is turned on, memorized number X50 of a 50 unit coin is set to be zero (step 117), and control portion 50 operates indication portion 92 to indicate character "C50" representing that memorized number X50 of a 50 unit coin is cleared (step 118). Thereafter, it is determined by control portion 50 whether switch

"100" is turned on or not (step 119). If switch "100" is not turned on, a control moves to step 122. If switch "100" is turned on, memorized number X100 of a 100 unit coin is set to be zero (step 120), and control portion 50 operates indication portion 92 to indicate character "C100" representing that memorized number X100 of a 100 unit coin is cleared (step 121). Thereafter, it is determined by control portion 50 whether switch "500" is turned on or not (step 122). If switch "500" is not turned on, a control moves to step 125. If switch "500" is turned on, memorized number X500 of a 500 unit coin is set to be zero (step 123), and control portion 50 operates indication portion 92 to indicate character "C500" representing that memorized number X500 of a 500 unit coin is cleared (step 124). Thereafter, it is determined by control portion 50 whether switch "OFF" is turned on or not (step 125). If switch "OFF" is not turned on, a control returns to step 112. Otherwise, control portion 50 regards as memorized coin number clear mode is solved, and a control returns to step 109 as shown in FIG. 3.

The above-mentioned programs between steps 12-25 are made at the start of a vending machine or correction of the number of change coin only.

At step 111 as shown in FIG. 4, if switch "H" is not turned on, it is determined by control portion 50 whether at least one of memorized numbers X10, X50, X100 and X500 of coins is greater than zero or not (step 126). If at least one is greater than zero, control portion 50 operates indication portion 92 to indicate character "H" (step 127), and it is determined by control portion 50 whether inventory switch 90 except for switches "OFF" and "H" is turned on or not (step 128). If inventory switch 90 except for switches "OFF" and "H" is not turned on, a control returns to step 110. Otherwise, control portion 50 operates indication portion 92 to indicate character "PAY" (step 129).

Thereafter, a control moves to coin pay-out sub-routines as shown in FIGS. 6(a)-6(d), and it is first determined by control portion 50 whether memorized number X500 of a 500 unit coin is greater than zero or not (step 130). If the memorized number X500 is greater than zero, control portion 50 operates coin return mechanism 60 to pay out a 500 unit coin (step 131), and the number 1 is subtracted from the memorized number X500 of 500 unit coin (step 132). The subtracted memorized number is newly memorized in RAM 50c as memorized number of 500 unit coin, and a control returns to step 130. If the memorized number X500 is not greater than zero, a control moves to 100 unit coin pay-out sub-routine, and it is determined by control portion 50 whether memorized number X100 of a 100 unit coin is greater than zero or not (step 133). If the memorized number X100 is great-

er than zero, control portion 50 operates coin return mechanism 60 to pay out a 100 unit coin (step 134), and the number 1 is subtracted from the memorized number X100 of 100 unit coin (step 135). The subtracted memorized number is newly memorized in RAM 50c as memorized number of 100 unit coin, and a control returns to step 133. If the memorized number X100 is not greater than zero, a control moves to 50 unit coin pay-out sub-routine, and it is determined by control portion 50 whether memorized number X50 of a 50 unit coin is greater than zero or not (step 136). If the memorized number X50 is greater than zero, control portion 50 operates coin return mechanism 60 to pay out a 50 unit coin (step 137), and the number 1 is subtracted from the memorized number X50 of 50 unit coin (step 138). The subtracted memorized number is newly memorized in RAM 50c as memorized number of 50 unit coin, and a control returns to step 136. If the memorized number X50 is not greater than zero, a control moves to 10 unit coin pay-out sub-routine, and it is determined by control portion 50 whether memorized number X10 of a 10 unit coin is greater than zero or not (step 139). If the memorized number X10 is greater than zero, control portion 50 operates coin return mechanism 60 to pay out a 10 unit coin (step 140), and the number 1 is subtracted from the memorized number X10 of 10 unit coin (step 141). The subtracted memorized number is newly memorized in RAM 50c as memorized number of 10 unit coin, and a control returns to step 139. If the memorized number X10 is not greater than zero, a control returns to step 109 as shown in FIG. 4.

At step 126 as shown in FIG. 4, each memorized numbers X10, X50, X100 and X500 of coins is not greater than zero, a control moves to 10 unit coin supplying sub-routine as shown in FIG. 7(a), and it is determined by control portion 50 whether memorized number X10 of 10 unit coin is less than zero or not (step 142). If the memorized number X10 is less than zero, it is determined by control portion 50 whether switch "OFF" is turned on or not (step 143). If switch "OFF" is not turned on, control portion 50 operates indication portion 92 to indicate character "L10" representing that 10 unit coins are being supplied (step 144), and it is determined by control portion 50 whether a 10 unit coin is deposited based on a signal from coin selecting portion 80 or not (step 145). If a 10 unit coin is not deposited, a control returns to step 142. Otherwise, the number 1 is added to memorized number X10 of 10 unit coin, and the added memorized number is newly memorized in RAM 50c as memorized number X10 (step 146). Thereafter, a control returns to step 142. At step 142, if the memorized number X10 is not less than zero or at step 143, if

switch "OFF" is turned on, a control moves to 50 unit coin supplying sub-routine as shown in FIG. 7-(b).

It is determined by control portion 50 whether memorized number X50 of 50 unit coin is less than zero or not (step 147). If the memorized number X50 is less than zero, it is determined by control portion 50 whether switch "OFF" is turned on or not (step 148). If switch "OFF" is not turned on, control portion 50 operates indication portion 92 to indicate character "L50" representing that 50 unit coins are being supplied (step 149), and it is determined by control portion 50 whether 50 unit coin is deposited based on a signal from coin selecting portion 80 or not (step 150). If a 50 unit coin is not deposited, a control returns to step 147. Otherwise, the number 1 is added to memorized number X50 of 50 unit coin, and the added memorized number is newly memorized in RAM 50c as memorized number X50 (step 151). Thereafter, a control returns to step 147. At step 147, if the memorized number X50 is not less than zero or at step 148, if switch "OFF" is turned on, a control moves to 100 unit coin supplying sub-routine as shown in FIG. 7-(c).

It is determined by control portion 50 whether memorized number X100 of 100 unit coin is less than zero or not (step 152). If the memorized number X100 is less than zero, it is determined by control portion 50 whether switch "OFF" is turned on or not (step 153). If switch "OFF" is not turned on, control portion 50 operates indication portion 92 to indicate character "L100" representing that 100 unit coins are being supplied (step 154), and it is determined by control portion 50 whether a 100 unit coin is deposited based on a signal from coin selecting portion 80 or not (step 155). If a 100 unit coin is not deposited, a control returns to step 152. Otherwise, the number 1 is added to memorized number X100 of 100 unit coin, and the added memorized number is newly memorized in RAM 50c as memorized number X100 (step 156). Thereafter, a control returns to step 152. At step 152, if the memorized number X100 is not less than zero or at step 153, if switch "OFF" is turned on, a control moves to 500 unit coin supplying sub-routine as shown in FIG. 7(d).

It is determined by control portion 50 whether memorized number X500 of 500 unit coin is less than zero or not (step 157). If the memorized number X500 is less than zero, it is determined by control portion 50 whether switch "OFF" is turned on or not (step 158). If switch "OFF" is not turned on, control portion 50 operates indication portion 92 to indicate character "L500" representing that 500 unit coins are being supplied (step 159), and it is determined by control portion 50 whether a 500 unit coin is deposited based on a signal from coin

selecting portion 80 or not (step 160). If a 500 unit coin is not deposited, a control returns to step 157. Otherwise, the number 1 is added to memorized number X500 of 500 unit coin, and the added memorized number is newly memorized in RAM 50c as memorized number X500 (step 161). Thereafter, a control returns to step 157. At step 157, if the memorized number X500 is not less than zero or at step 158, if switch "OFF" is turned on, a control moves to step 109 as shown in FIG. 4.

As mentioned above, when the sales are collected, if the number of the coins which should be retained in change retaining tubes 41-44 is not changed, the increment of the coins retained in change retaining tubes 41-44 is automatically paid out by turning switches. "OFF" and "H" of inventory switch 90 on. Simultaneously, with respect to the decrement of the coins retained in change retaining tubes 41-44, since the denomination of the coins corresponding to the decrement is indicated by indication portion 92, respectively, the decrement is solved by depositing the denomination coins corresponding to the indication to each change retaining tubes 41-44 through coin inlet 10 until the indication is disappeared.

This invention has been described in detail in connection with a preferred embodiment. This embodiment, however, is merely for example only and the invention is not restricted thereto. It will be easily understood by those skilled in the art that other variations and modifications can easily be made within the scope of this invention, as defined by the appended claims.

Claims

1. A coin handling mechanism for a vending machine including a controller (91) for controlling operation of the vending machine, comprising:
 - a plurality of change retaining means (41 - 44) for retaining each deposited denomination coin;
 - coin paying-out means (60) for paying out coins from the change retaining means according to output signals from the controller (91);
 - overflow detecting means (41a - 44a) for detecting each change retaining means (41 - 44) full of each of the deposited denomination coins;
 - input-output detecting means (50) for counting the number of each of the denomination coins outputted from or inputted into each change retaining means (41a - 44a) according to the results of paying out of the coin paying-out means (60), deposited denomination coins, and output signals of the overflow detecting means (41a - 44a);
 - operational memory means (50c) for add-

ing the number of each denomination coin deposited into a corresponding change retaining means (41 - 44) to a prior number of each denomination coin previously memorized, and for subtracting the number of each denomination coin paid out of a corresponding change retaining means (41 - 44) from a prior number of each denomination coin previously memorized;

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coin number correcting means, based on the number of each denomination coin memorized by the operational memory means (50c), for outputting a signal to instruct the coin paying-out means (60) to pay out particular denomination coins, of which the number memorized is larger than zero, from said change retaining means (41 - 44) until the number of the particular denomination coins memorized becomes zero and for outputting a signal to instruct to output an indication signal to indicate the lack of a particular denomination coin retained in the change retaining means (41 - 44), of which the number memorized is less than zero.

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2. The coin handling mechanism according to claim 1, characterized by coin testing means (12) for testing the authenticity and type of deposited coins,

the plurality of change retaining means (41 - 44) being responsive to said coin testing means (12), and the output-input detecting means (50) being responsive to the output signals of the coin testing means (12).

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3. The coin handling mechanism according to claim 1 or 2, characterized by switching means including a plurality of switches,

the number of coins memorized in the operational memory means (50c) being set to zero based on output signals from the switching means, and

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the coin number correcting means being based on output signals of the switching means.

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4. The coin handling mechanism according to one of claims 1 to 3, characterized by indication means for indicating the lack of a particular denomination coin based on the indication signals from the coin number correcting means.

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FIG. 1/7

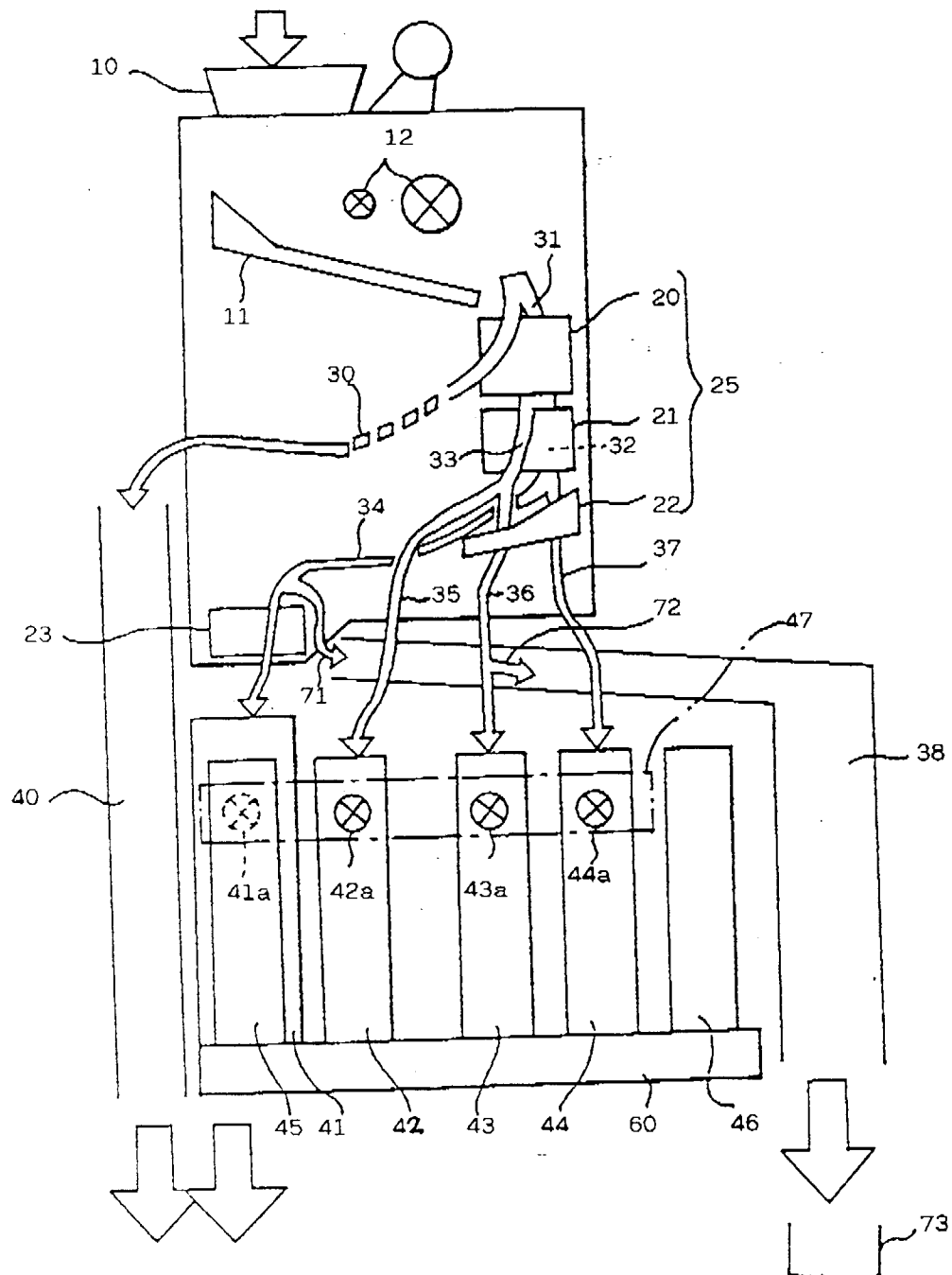


FIG. 2/7

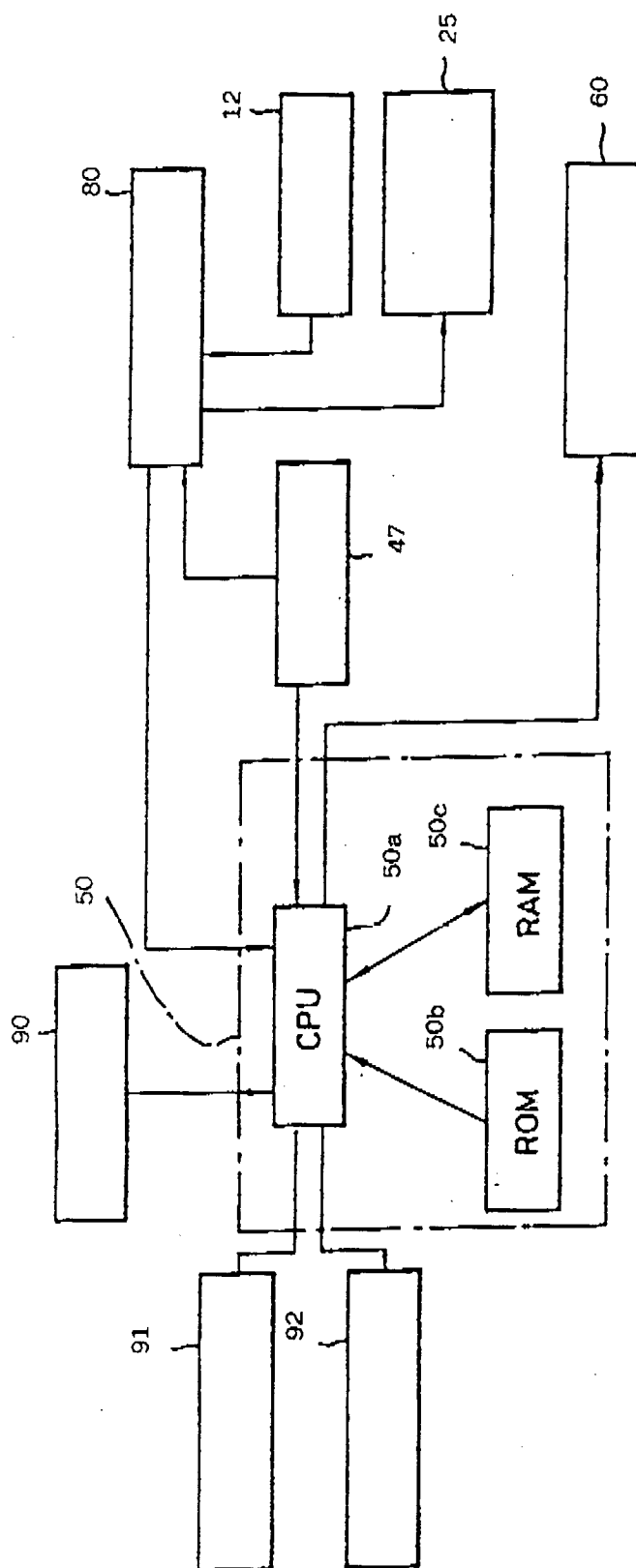


FIG. 3/7

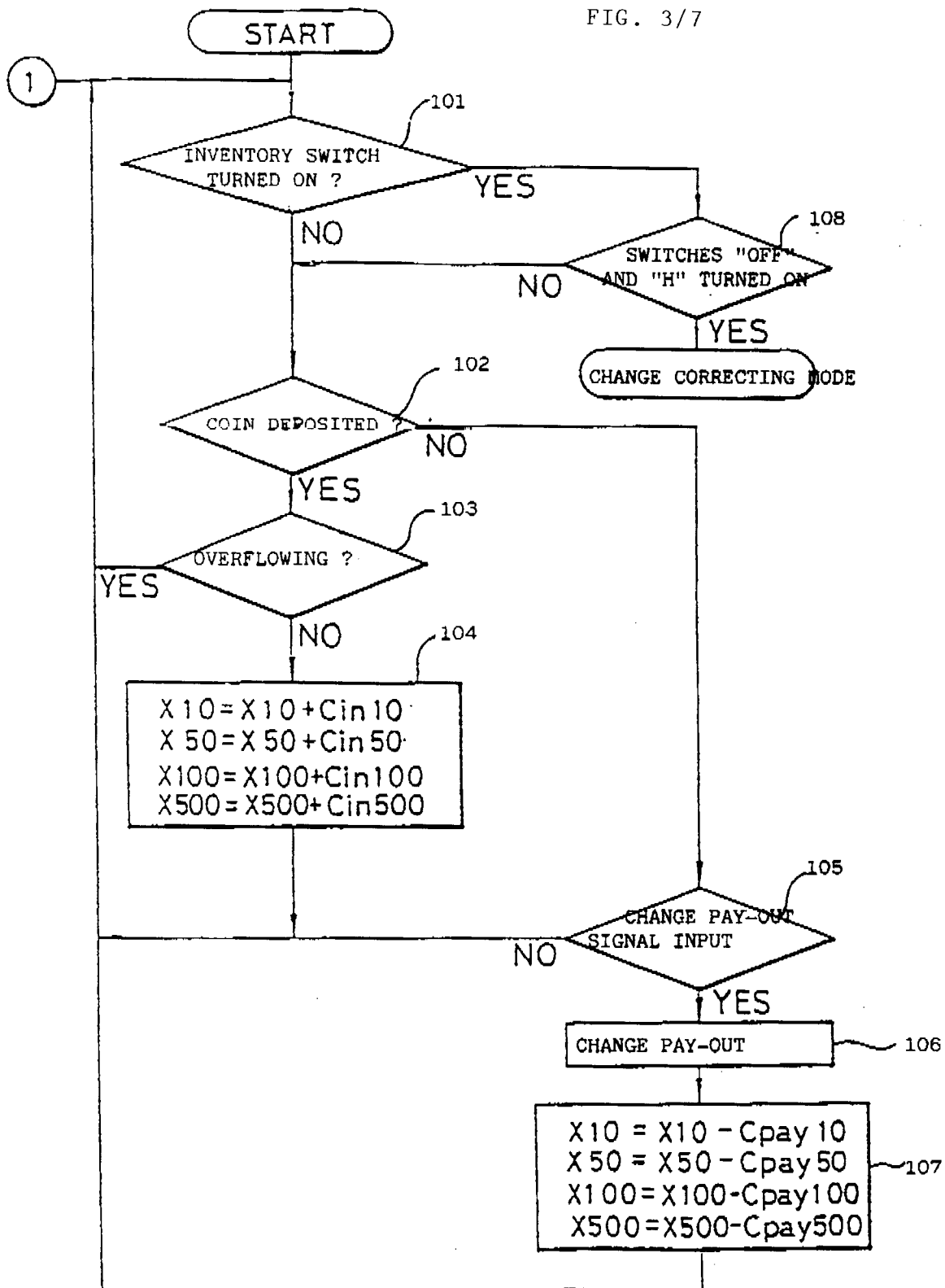


FIG. 4/7

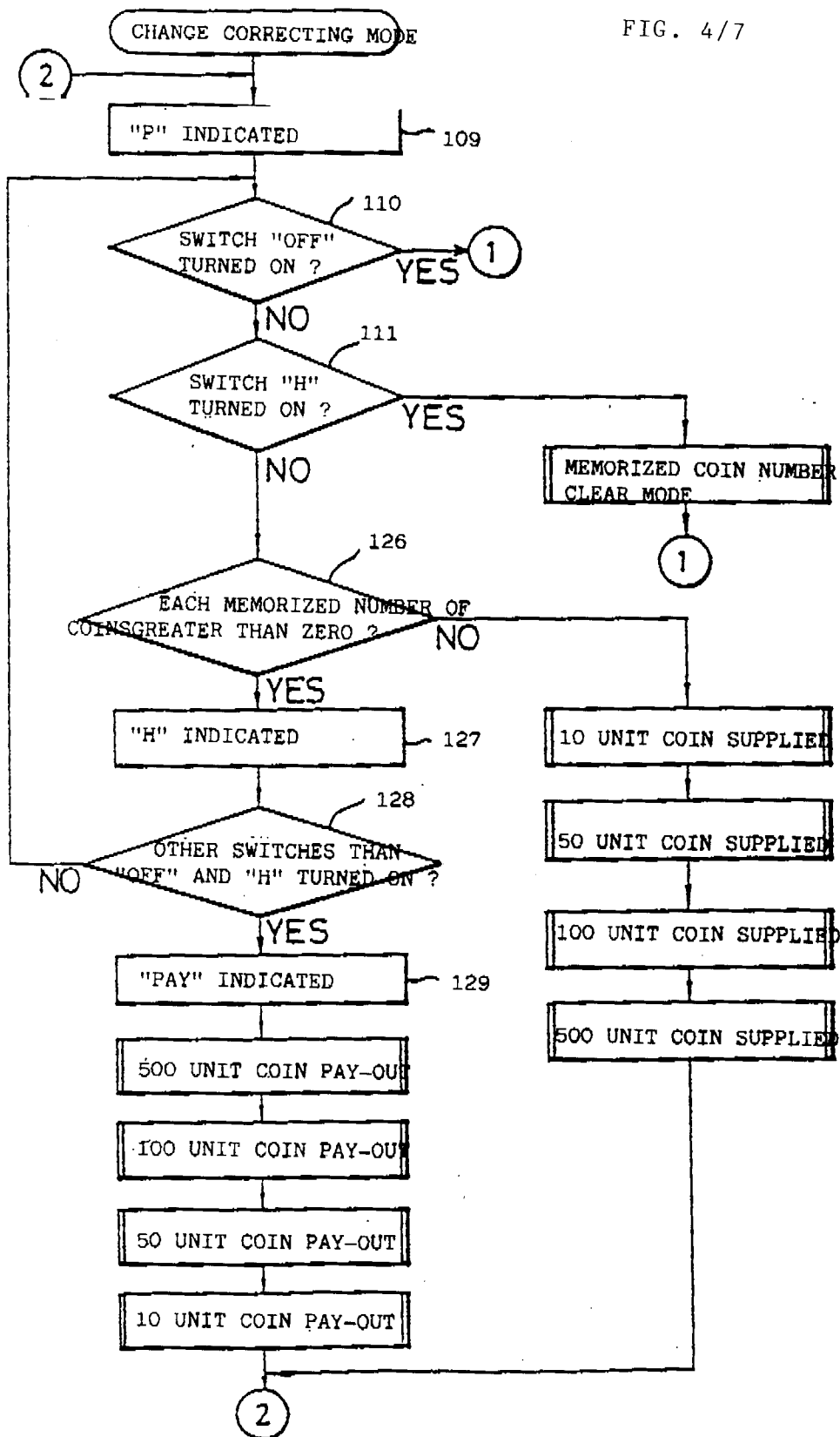


FIG. 5/7

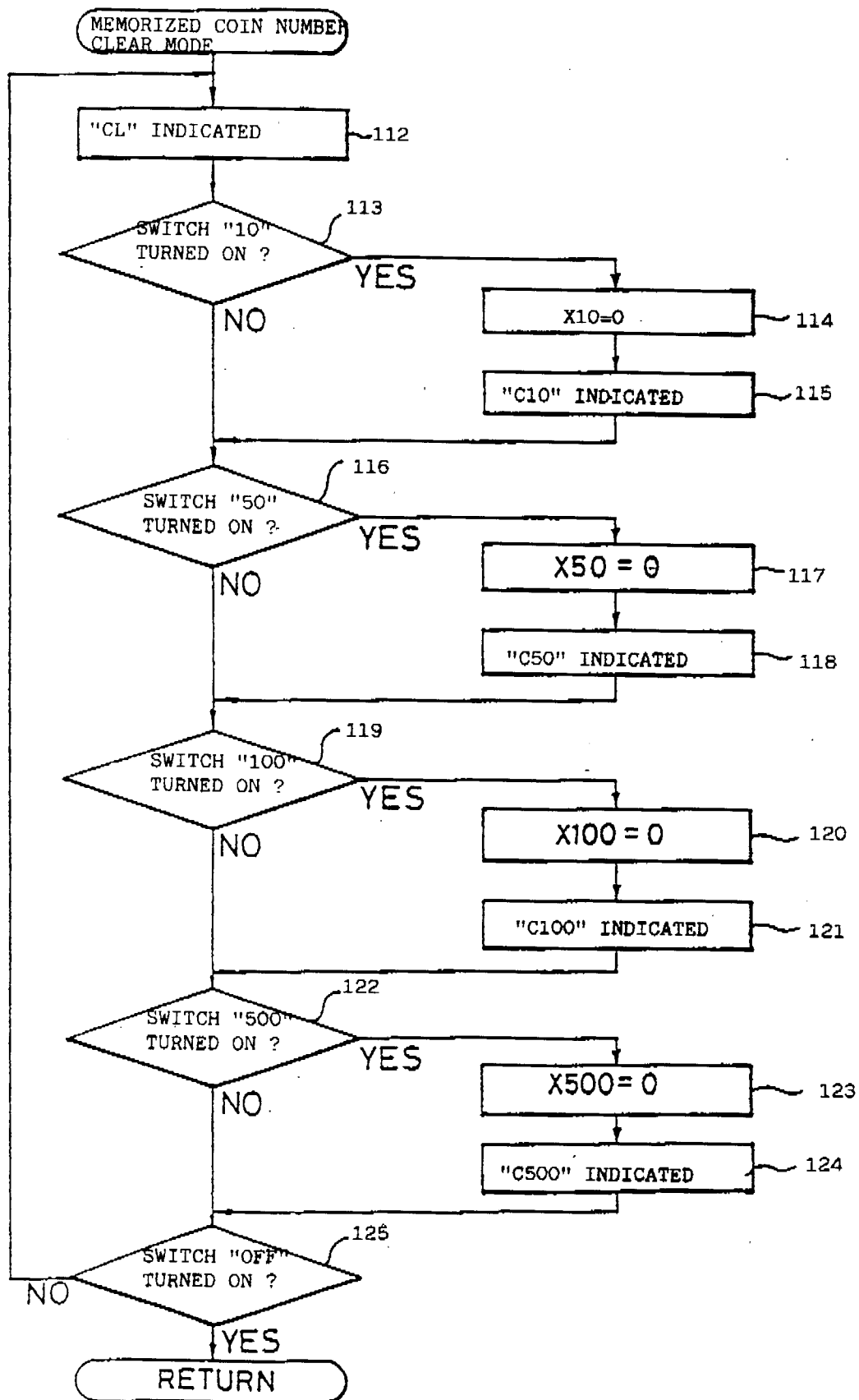


FIG. 6/7

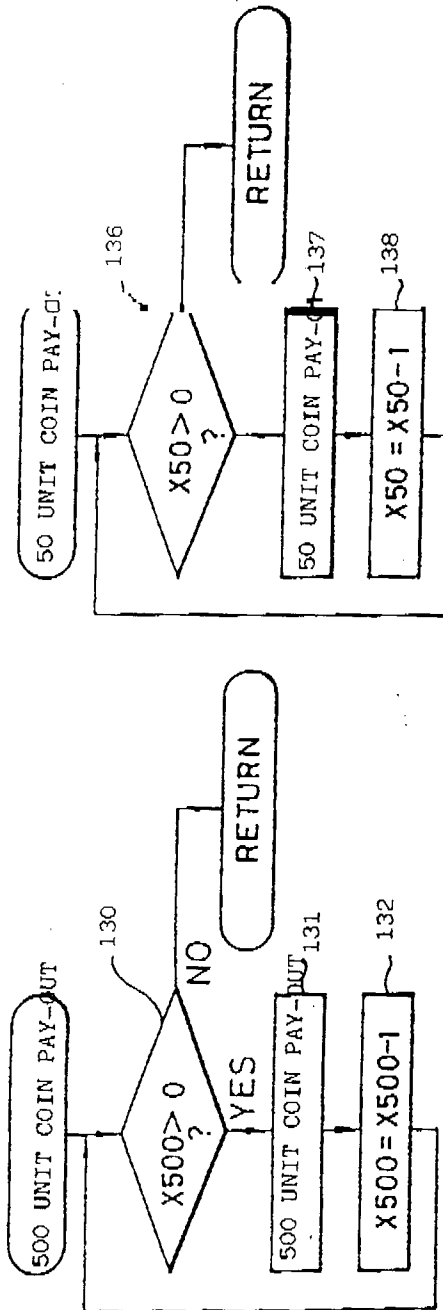


FIG. 6(a)

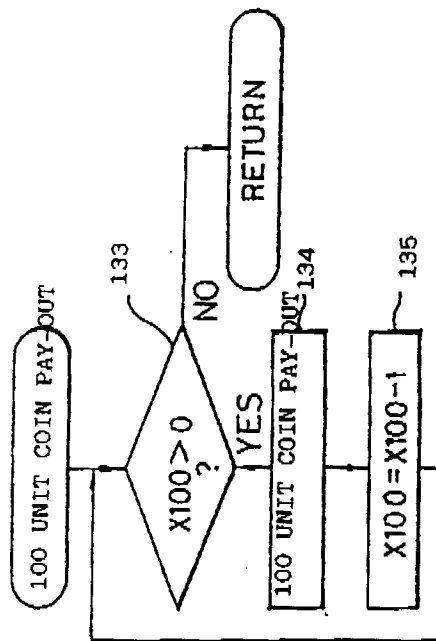


FIG. 6(b)

FIG. 6(c)

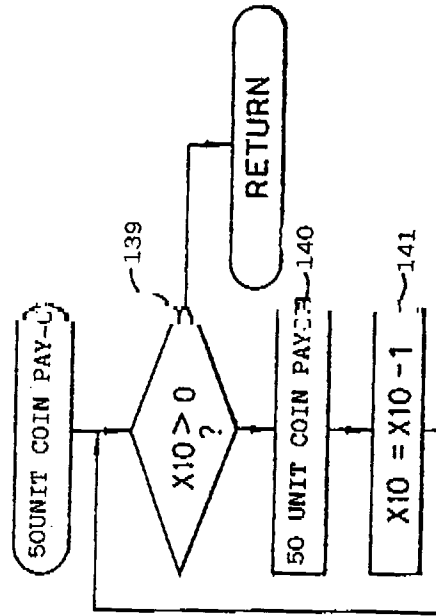


FIG. 6(d)

FIG. 7/7

