

[54] PRICE SELECTION VENDING MACHINE
ARRANGEMENT
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[58] Field of Search 174/4, 10, 9

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[57] ABSTRACT
A vending machine electrical control system provides for setting a selected price in each of a plurality of modules by means of a simplified circuit using a common price selection relay arrangement for all modules and a price selection switch for each of the modules.

8 Claims, 3 Drawing Figures

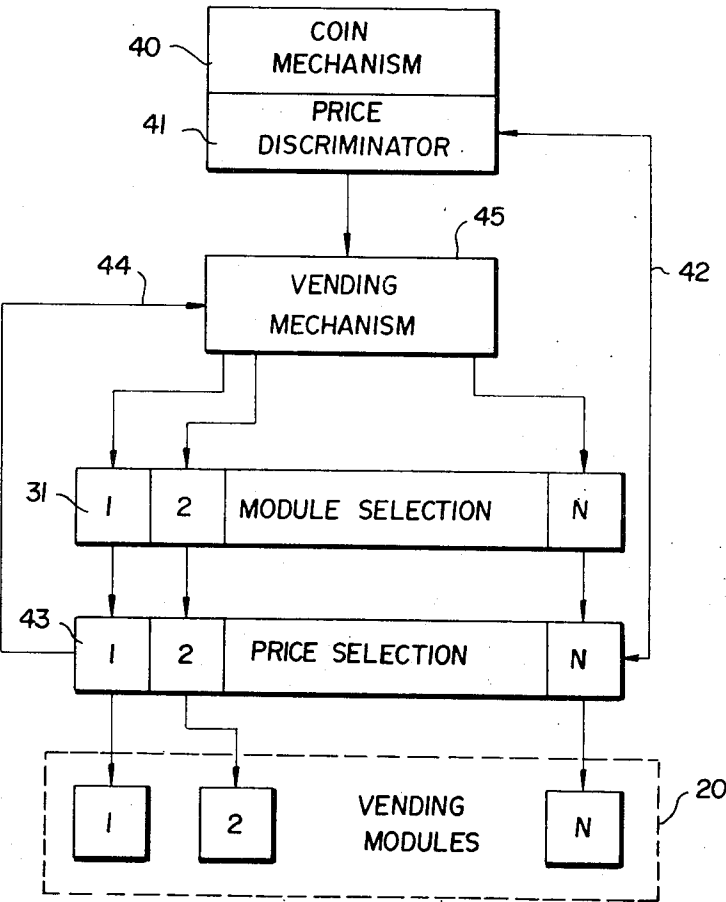


FIG. 1

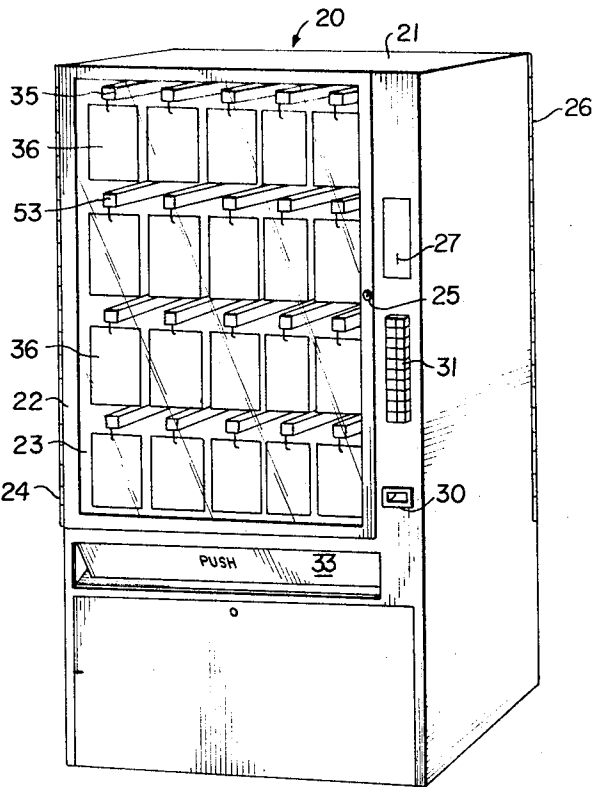
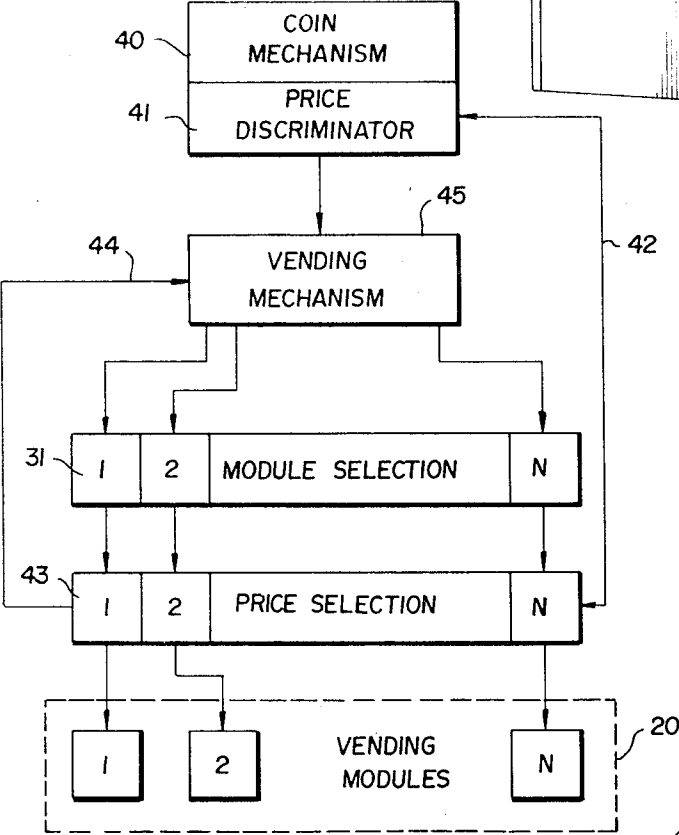
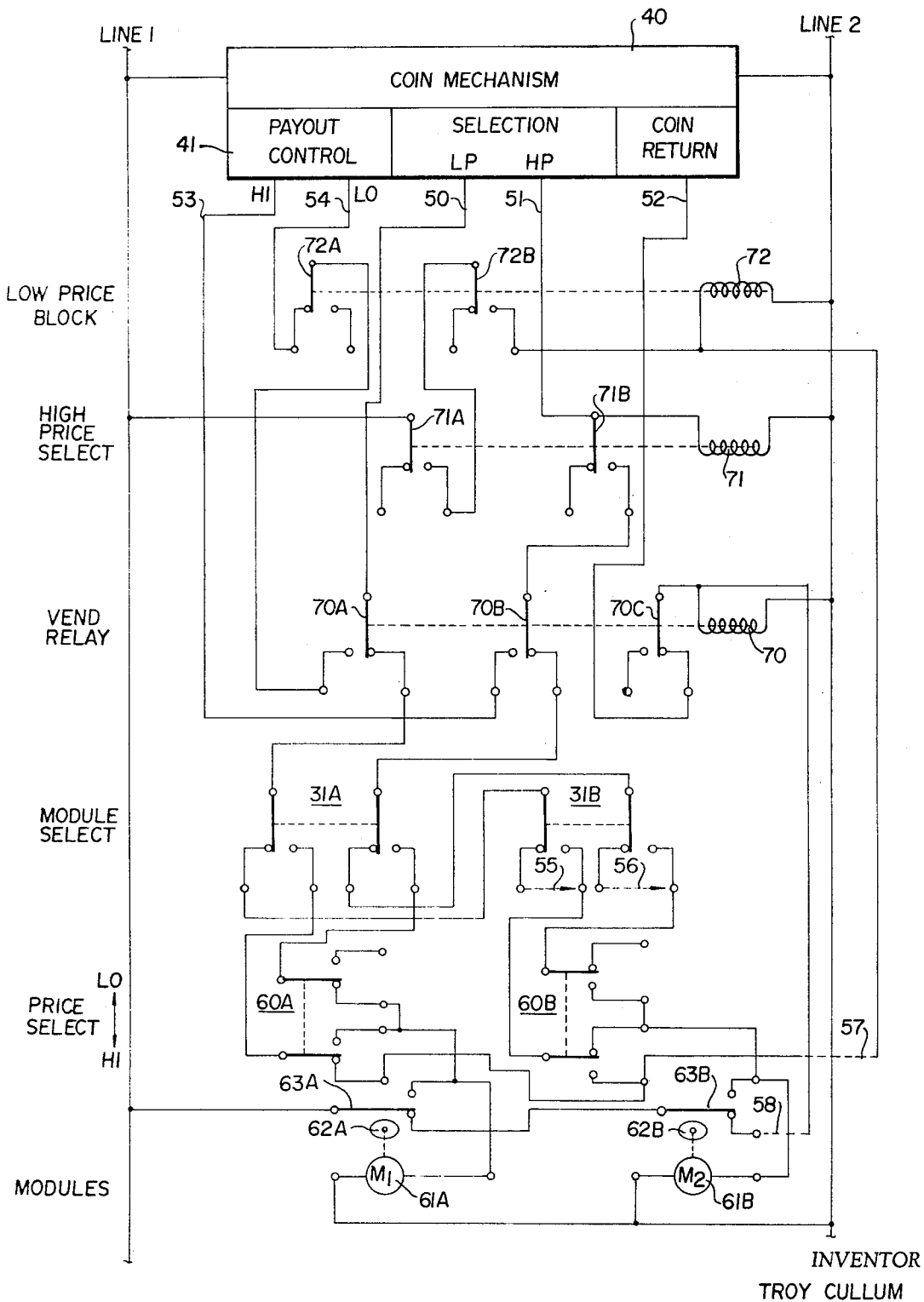


FIG. 2



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FIG3

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PRICE SELECTION VENDING MACHINE ARRANGEMENT

This invention relates to vending machine control circuits and more particularly it relates to control circuits for multiple-module vending machines for setting a vending price at each module.

Typical multiple-module vending machines are known in the art and are exemplified by that described in the copending U. S. application, S. N. 47,257, filed June 19, 1970, by William A. Patrick for Improved Vending Machine. In such machine, a plurality of modular vending units, each having an operating motor, are assembled in a cabinet to vend various items such as candy bars, bags of potato chips and sweet rolls, etc., as designated by a selection switch accessible at the front panel.

When items of various prices need be vended, such as 10 cents and 25 cents, different schemes have been used to set the vending price for various modules. In most such schemes, it has been necessary to provide a price control relay for each module, which is complex and expensive. Furthermore, it has not been possible in many cases to individually select a price at each module regardless of location in the cabinet. Thus, the vending machines have not given proper loading flexibility to account for size, weight, fragility and preferred location for promotion of the items to be dispensed.

Accordingly, it is a main object of the invention to provide an improved vending machine affording individual price selection at all locations.

A further object of the invention is to provide electrical pricing control circuits in a multiple-modular vending machine which permits individual pricing at every vending module without necessitating a pricing relay for every module.

In accordance with the invention, therefore, a preferred embodiment for multiple-module vending machines provides for a switch for each vending module to establish one of two price choices, and a common simple relay control circuit discriminating the price for all the separate modules.

Further features, objectives and advantages will be found throughout the following more detailed description with reference to the accompanying drawing, wherein:

FIG. 1 is a perspective sketch of a multiple-module type vending machine.

FIG. 2 is a block diagram of a price selection control arrangement provided in accordance with this invention, and

FIG. 3 is a wiring diagram of the price selection control circuits afforded in accordance with the teachings of this invention.

A multiple-module vending machine 21 is shown in FIG. 1 having 20 modular vending units arranged within a front window in four rows of five modules identified with conveyors 35, 53 etc., upon which potato chip bags 36 or the like may be arranged. Upon selection of a switch button 31 when money is placed in slot 27, a self-contained motor of a selected module is caused to drop off the bag to fall to the bottom for access through door 33. A back hinge 26 on the rear panel gives access to the motor control circuits and modules. The front door with glass panel 23 is hinged at 24 for opening with a key at lock 25 to replace bags. Inside the front door may be located a bank of price selection switches (not shown) so that the arrangement

of bags 36 can be changed with different products at different locations even when the prices vary. Thus, lower row 22 can be used for fragile articles that need not, therefore, be dropped so far when released by the vending motor. It also may be desirable to mount some items near the top 21 at eye level in order to provide a better chance for selection. Coin return slot 30 is provided for receiving change or a return of the coin if a selection is sold out as provided by conventional coin changing equipment.

In FIG. 2 the conventional coin mechanism, such as may be purchased from National Rejectors, Inc., of St. Louis, Mo., is shown as block 40, and is accompanied by a price discriminator portion which will relay control signals on line 42 that indicate whether coins of either of two predetermined price schedules have been deposited. Typical prices are 10 cents and 25 cents. If the proper price is indicated at lead 42 for a selection made at selection switch bank 31 as identified for each module 1, 2, -N by a corresponding price selection switch for each module arrayed in bank 43, then a feed back signal at lead 44 to vending relay mechanism 45 causes the vending mechanism to operate; and, thus, operate a motor for a selected module 1, 2, -N in vending section 20.

The general mode of operation follows in the control circuit shown in FIG. 3, where operating voltages are supplied on lines 1 and 2. The price discrimination section 41 of the coin mechanism provides not only the output selection signals for low-priced items (LP) on lead 50 and high-priced items (HP) on lead 51 but is provided with input control leads 42 for controlling when a return of the deposited money may occur and leads 53, 54 for respectively controlling the counting out of change when the high - and low - priced selections are made. Thus, the only selection process that need be made is the actuation of a module selection switch 31A or 31B, etc., which is caused to move from the position shown in the drawing when a selection is made of any available module. Dotted leads 55, 56 indicate that the other switches 31C, etc., are connected in the same sequences. Similarly, broken leads 57, 58 allow for insertion of similarly wired elements so that the same circuit connections are used for any number of modules desired even through only two representative modules are shown connected in FIG. 3.

For each module selection switch is a corresponding price selection switch 60A, etc., and a vending motor 61A, etc., which is connected to vend one bag by means of operation through a timed motor cycle. This is effected by momentarily energizing the motor by the module select switch and control circuit operation, so that cams 62A, etc., will rotate to hold the motor energized through switches 63A, etc., until the vend cycle is complete. These switches are wired so that only one vending motor may be operated at a time.

A normally energized vend relay 70 is deactuated through switches 63A, etc., whenever a motor is running, so that the coin return is deactivated on lead 52.

If a high-price amount is put into coin mechanism 40, the high-price select relay 71 is energized by a signal at lead 51 to change its contact positions 71A and 71B. For a low-price selection, the relay 71 contacts remain as shown and a low-price signal on lead 50 is processed through the control circuits so that when vend relay 70 is released and low-price block relay 72 is not energized, the payout control line 54 may be actuated for

making change. Thus, if 25 cents is deposited and a 10 cent selection button 31A, etc., is selected, the change is made except when low-price block relay is energized.

To exemplify operation of the system, price select switch 60A is shown set for a high-price article and price select switch 60B is shown set for a low-price article. These switches may be toggle switches accessible from the front when the door is opened to load the modules and are semi-permanently set until the price of the article on the particular vending module is changed for some reason.

HIGH-PRICE SELECTION OPERATION

Now, first consider the operation when the high-price article is selected by momentary contact of the selection switch 31A with the contacts opposite those shown in the drawing by a purchaser making a selection. The left-hand switch portion of selector switch 31A serves to energize the low-price block relay 72 as indicated by a signal from the coin mechanism at lead 50 that at least this lower price amount is deposited. It is to be noted that conventional coin mechanisms now commercially available will give flexibility in setting various low-and high-price values and will meter out change from deposited coins under the payout control section of the coin mechanism. The energization of the low-price block relay 72 serves by medium of contacts 72A to prevent any payout of change based on the lower price selection by opening the lead 54.

The right-hand section of module sheet switch 31A serves to energize motor 61A and through cam 62A to finish a vending cycle only if there is enough money deposited to energize the high-price selection lead 51 in coin mechanism 40, which in turn energizes high-price select relay 71 and completes the circuit by means of contact 71B changeover.

When the motor is energized, and contact 63A is opened the vend relay 70 is de-energized to open the coin return lead 52 and prevent the return of the money deposited, as accomplished by contacts 70C. Contacts 70B connect high-price selection lead 51 (because relay 71 is energized) to the high-price payout control lead 53 to permit change to be processed based on the high-price.

Thus, the sequence of operation for a high-price selection is as follows:

1. Coins are deposited.
2. A selection switch is depressed momentarily.
3. The motor is started through a vend cycle if enough money is deposited.
4. The vend relay is de-energized throughout the vend cycle preventing return of the coins deposited.
5. Low-price block relay is actuated so that change is made for the high-price amount.
6. After the vend cycle, the vend relay is energized in preparation for a new cycle.

LOW-PRICE SELECTION OPERATION

If module select button switch 31B is momentarily closed to change the contact positions, and the corresponding price select switch 60B is in the low-price position, as shown, the same general sequence takes place except that change is counted out based upon the low-price selection.

Thus, the left-hand section of module select switch 31B makes a circuit when the low-price lead 50 is actuated by deposit of at least that amount in coin mecha-

nism 40, to start the vend cycle with energization of motor 61B. In this mode of operation, the low-price block relay 72 cannot be energized and the low-price payout is permitted by the vend relay 70 under control of contact set 70A, via contact set 72A on the energized low-price block relay 72. Even if the higher price amount is deposited, the coin mechanism will operate to return the greater amount of change indicated by the low-price payout control lead 54.

Thus, the operating sequence is the same as before except that in step 5, the change is made for the low-price amount.

It is to be understood that the forms of the invention herewith shown and described are to be taken as preferred examples and that various changes may be resorted to without departure from the spirit of the invention or the scope of the subjoined claims.

What is claimed is:

1. In vending machines of a multiple-module type, the price selection arrangement comprising in combination,

momentary selection switches for identifying selected ones of said modules for a vending operation, motor controlled vending means for each module causing a vend cycle to be completed in response to operation of a corresponding said momentary selection switch,

a price selection switch for each module designating for each module any one of at least two different price schedules,

a coin mechanism identifying the receipt of payment of different prices of said schedules,

a switching mechanism common to all modules establishing a different vending condition for each of the different price schedules,

and a control circuit operated by said switching mechanism to operate the motor of one of the modules identified by one of the selection switches conditionally only when the coin mechanism identifies payment of the price established by the price selection switch for that module.

2. An arrangement as defined in claim 1 wherein the control circuit comprises a relay operable in two different states as a corresponding two of said price schedules are identified by said coin mechanism.

3. An arrangement as defined in claim 1 wherein said means causing a vend cycle comprises for each module a vending motor momentarily actuated when the module is selected by one of said selection switches and means on said motor to complete the vending cycle after said momentary actuation.

4. An arrangement as defined in claim 1 wherein the switching mechanism includes a vending relay operable momentarily when the control circuit identifies a price schedule corresponding to that selected for the module by one of said selection switches.

5. An arrangement as defined in claim 1 wherein the coin mechanism makes change and including relay control circuits operable by said price selection switch for the selected module thereby providing change.

6. A control circuit in vending machine for vending selected ones of a plurality of items having at least two prices wherein each item is vended under control of a corresponding module having a motor operated through a vending cycle in response to momentary contact of a corresponding item selection switch identifying a particular one of said items, comprising in combi-

nation, coin identifying means providing switching control paths for different coins deposited, a price switch for each item identifying its price, relay controlled switching means common to all modules and responsive to set up different control circuits for different prices as controlled by said price switch, a momentary selection switch for each item connected with its corresponding pricing switch to operate said switching control means, and a price comparison circuit operated by said relay controlled switching means to initiate said vending cycle in response to said momentary selection switch only when the coins deposited exceed the price of the selected item.

7. A vending machine comprising in combination, electric control circuit means including an electrically operated coin mechanism having circuits therein for controlling payout from deposited coins for at least two different item prices, electrically actuated cyclic means for vending a plurality of different items in response to a momentary switch selection where some of the items have different ones of said two prices, a set of momentary switches in said electric control means operable to actuate said cyclic control means to vend selected items, a pricing switch in said electric control circuit means for each item establishing a selected one of said

prices, and further electrical control circuits including said pricing switches and said circuits controlling payout in said coin mechanism connected for operation by said momentary switch selection to initiate a vending cycle to dispense a selected said item identified by an actuated one of said momentary switches only when at least the selected price is deposited in the coin mechanism wherein the coin mechanism makes change in response to the circuits controlling payout and including relay control circuits controlled by the price selection switch for the selected item controlling the payout of change.

8. A machine as defined in claim 7 wherein said further electrical control circuits consist of a single low price relay connected to operate said coin mechanism for controlling payout for any of said plurality of items identified by the position of its respective said pricing switch as a lower price item of said two prices and a single high price relay connected to operate said coin mechanism for controlling payout of any of said plurality of items identified by the position of its respective said pricing switch as a high price item of said two prices.

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