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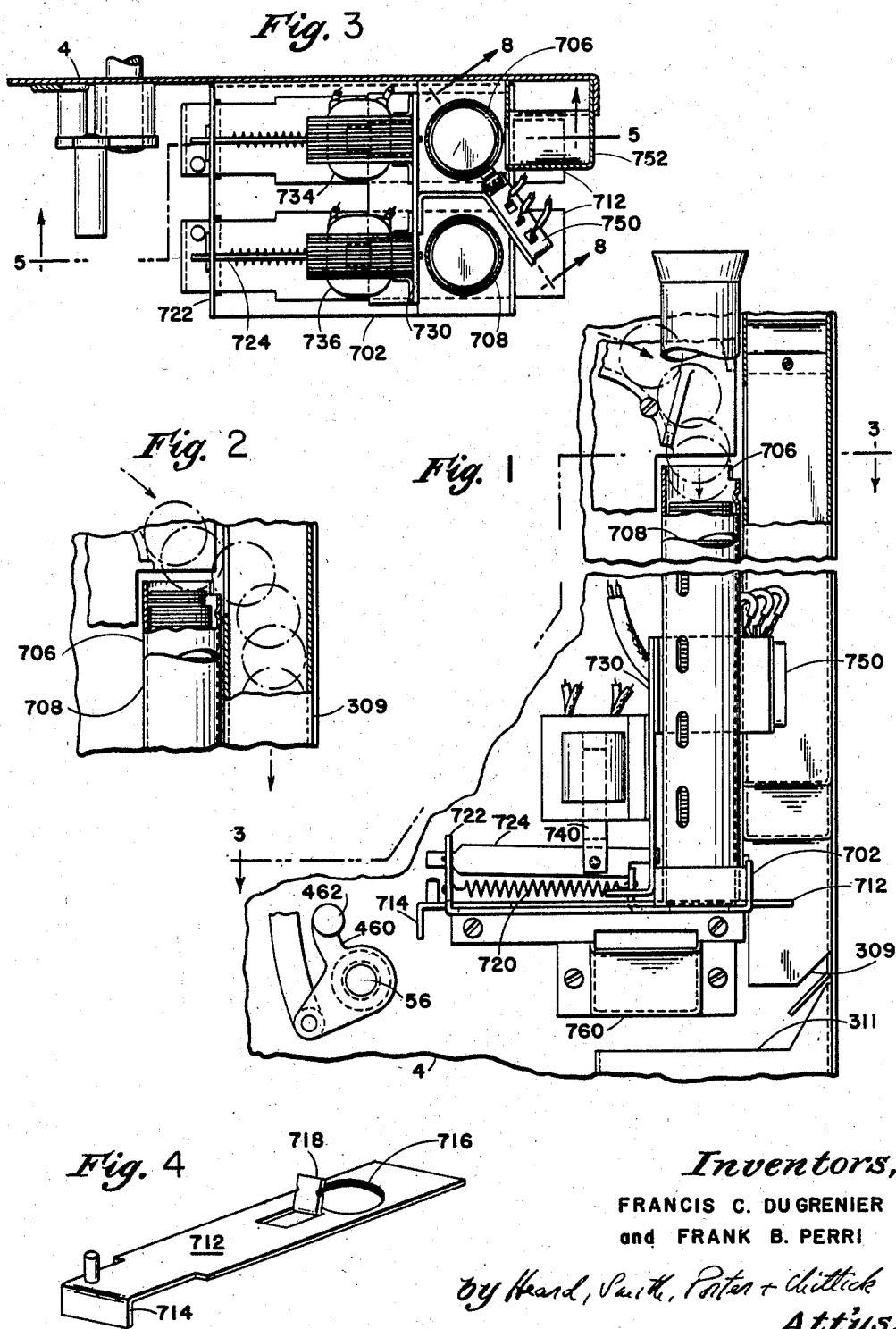
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CHANGE MAKER FOR VENDING MACHINE

Original Filed Feb. 18, 1954

2 Sheets-Sheet 1



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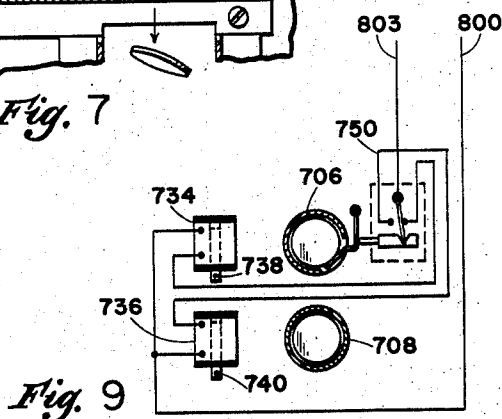
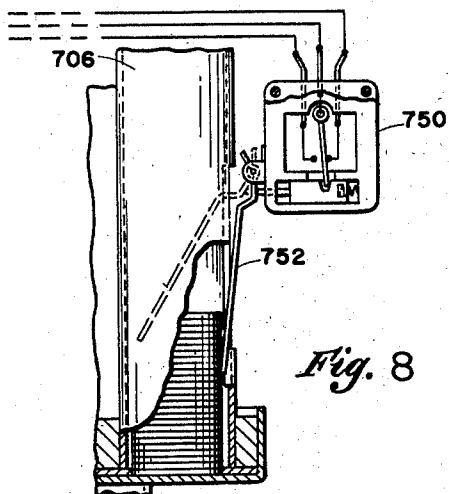
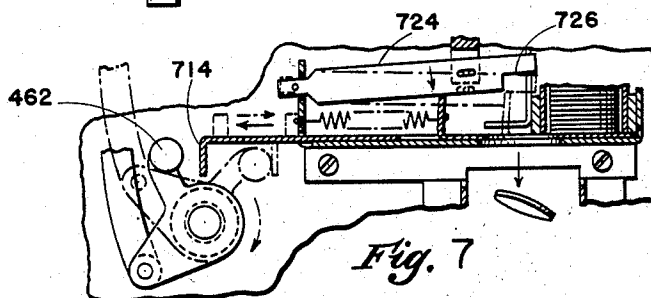
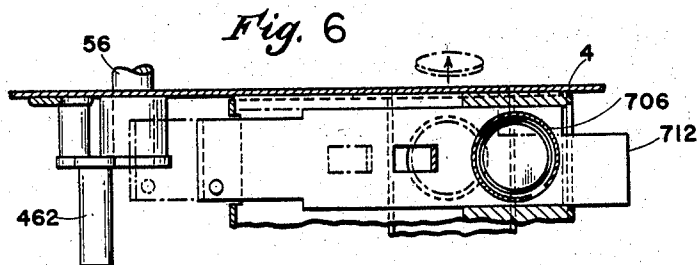
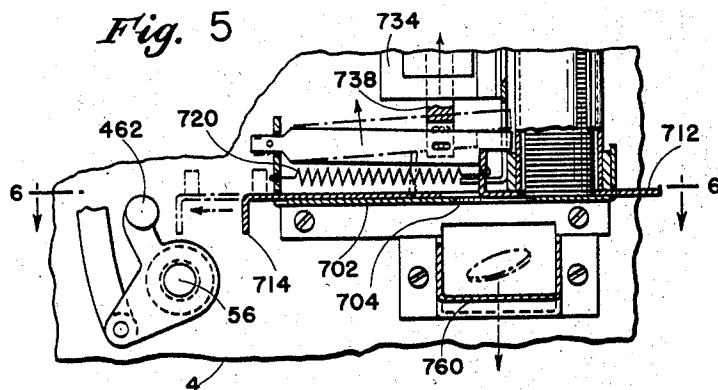
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CHANGE MAKER FOR VENDING MACHINE

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CHANGE MAKER FOR VENDING MACHINE

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Original application February 18, 1954, Serial No. 411,109. Divided and this application March 29, 1954, Serial No. 419,188

4 Claims. (Cl. 133—2)

This invention relates to vending machines which on the insertion of proper coins and actuation of a selector mechanism will dispense a selected article through appropriate delivery mechanism.

More particularly this invention relates to a change maker mechanism for use with vending machines whereby, for example, when a customer inserts a quarter into the machine to obtain an article of merchandise having a price of 20¢, the machine will return a nickel in change to him. This eliminates the necessity for the customer to have the exact change to obtain an article from the machine.

This invention is a division of our copending application for Electric Vending Machine Serial No. 411,109 filed February 18, 1954 which is a continuation-in-part of our application Serial No. 140,464 filed January 25, 1950 for Electric Vending Machine, now abandoned.

Briefly this invention relates to a change maker mechanism for use with a vending machine, and has as its principal object provision of a change maker comprising a plurality of coin columns, at least one of which preferably being adapted to be automatically filled during the operation of the vending machine, means for automatically actuating the change maker mechanism during the interval that the vending machine is being operated, and means for automatically converting from one coin column to another coin column when the former is empty.

Before explaining in detail the present invention it is to be understood that the invention is not limited in its application to the details of construction and arrangement of parts illustrated in the accompanying drawings, since the invention is capable of other embodiments and of being practiced or carried out in various ways. It is also to be understood that the phraseology or terminology employed herein is for the purpose of description and not of limitation and it is not intended to limit the invention claimed herein beyond the requirements of the prior art.

Other objects and many of the attendant features and advantages of the invention appear in the following specification and accompanying drawings, in which,

Fig. 1 is a front elevation of the change maker assembly as mounted on one of the side panels of a vending machine;

Fig. 2 is a fragmentary detail of Fig. 1, showing how coins spill over into the coin box chute of the machine when the automatic coin tube is full;

Fig. 3 is a plan sectional view taken on line 3—3 on Fig. 1;

Fig. 4 is a perspective detail of the coin ejector slide of the change maker;

Fig. 5 is a vertical section taken on line 5—5 on Fig. 3, showing the parts of the change maker in normal position, broken lines indicating the position of the coin ejector slide when released;

Fig. 6 is a fragmentary plan section taken on line 6—6 on Fig. 5;

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Fig. 7 is a fragmentary detail section similar to that of Fig. 5, showing the coin being released from the change maker and illustrating how the coin release slide is reset;

Fig. 8 is a fragmentary sectional view taken on line 8—8 on Fig. 3, showing the operation of the switch associated with the change maker for shifting from the manually filled to the automatically filled coin tube of the change maker; and,

Fig. 9 is a circuit diagram for the change maker unit.

In order to facilitate comprehension of the present invention and to facilitate reference to the aforementioned parent application Serial No. 411,109, like numerals are employed in the different views to indicate like elements and the numerals employed to identify the various elements of the change maker assembly are identical to the numerals employed in the aforementioned parent application Serial No. 411,109 to identify these same elements.

The change maker mechanism of this invention is preferably mounted on a side panel of the vending machine in order to have the machine as compact as possible. In the drawings, the change maker assembly is shown secured to a panel 4 which is preferably a side panel of the vending machine and corresponds to side panel 4 of the vending machine described in parent application No. 411,109. In Figs. 1 and 3 there is illustrated a preferred embodiment of this invention comprising two cylindrical coin columns 706 and 708 mounted side by side by bracket 702 on side panel 4. These coin columns have an inside diameter of size sufficient to receive nickels. Bracket 702 also serves as the floor of the change maker and is provided with a pair of holes 704 through which coins may be dropped into the delivery chute of the machine. The first column 706 is automatically fed nickels deposited in the machine, as illustrated in Figs. 1 and 2, and described in the aforementioned parent application. When column 706 is full, additional coins directed to the column strike the topmost coin in the column and spill over into a chute 309 leading to a cash box 311 located at the bottom of the machine. The second column 708 is manually fed with coins and acts as a surplus reservoir for nickels, being cut into operation if and when the first column 706 is nearly empty of nickels.

The change maker as here shown comprises two complete or duplicate sets of mechanism. It will be understood that the first set associated with column 706 is the one normally operated and the second set associated with column 708 is a reserve or auxiliary mechanism to be used only when the first column 706 is exhausted of its supply of nickels.

Each mechanism includes a horizontal sliding bar 712 slidably mounted for horizontal movement on floor bracket 702. One sliding bar 712 at its rear end passes under coin column 706. The other passes under column 708.

As best shown in Fig. 4, each sliding bar 712 carries on its forward end a downwardly extending flange 714 and at its rear end is provided with a hole 716. A vertically extending locking tab 718 is provided on each sliding bar 712.

Associated with each sliding bar 712 is a coiled spring 720 attached at one end to locking tab 718 and at the other end to the front vertical portion 722 of bracket 702. Pivotaly mounted above each sliding bar 712 is a pivoted locking lever 724. Each lever 724 is pivotaly mounted at the front vertical portion 722 of bracket 702, and extends horizontally above sliding bar 712. Provided at the rear end of each locking lever 724 is a notch 726 which engages locking tab 718 of sliding bar 712 beneath the locking lever. Locking lever 724 holds sliding bar 712 against the pull of spring 70 in its rearward position with hole 716 in registration with tube 706 or

708, whereby hole 716 is filled by the bottom coin in coin column 706 or 708.

Mounted on the vertical plate 730 of bracket 702 above sliding bars 712 are solenoids 734 and 736 having armatures 738 and 740 respectively. The lower ends of these armatures are pivotally connected to the free ends of pivoted locking levers 724. As will be explained hereinafter, when solenoid 734 is energized, its armature 738 is withdrawn, lifting locking lever 724 and releasing sliding bar 712 associated with tube 706. When solenoid 736 is energized, bar 712 associated with tube 708 is released in the same manner.

A single pole double throw switch 750 is mounted on vertical plate 730. This switch has one switch terminal connected to solenoid 734 and its other terminal connected to solenoid 736. Its common terminal is connected by lead 803 through suitable switch means associated with the vending machine to one side of a source of power. Solenoids 734 and 736 are both connected by lead 800 to the other side of the source of power. Switch 750 carries a downwardly extending feeler 752 which normally extends through a hole or slot in the wall of coin tube 706 adjacent its bottom. When tube 706 contains sufficient nickels, feeler 750 is held substantially out of the tube by the nickels as shown in Fig. 8. In this position switch 750 provides a direct electrical connection between lead 803 and solenoid 734. When tube 706 is exhausted or nearly exhausted so that no column of nickels exists to hold feeler 752 out of tube 706, lead 803 is then electrically connected by switch 750 to solenoid 736, and switch 750 is then open to solenoid 734. When solenoid 734 or 736 is energized, its armature is drawn upwardly, thus releasing sliding bar 712 beneath tubes 706 or 708, permitting the sliding bar to be drawn forward by coiled spring 720. As sliding bar 712 travels forwardly it carries with it a coin in hole 716. When hole 716 comes into registration with hole 704, the coin will drop through hole 704 into a delivery chute 760 mounted in side panel 4 and leading to the conventional main delivery chute of the vending machine.

If coin column 706 is exhausted (or nearly exhausted) feeler 752 will be unsupported by a column of coins and will operate switch 750, electrically connect solenoid 736 to lead 803 and at the same time electrically disconnect solenoid 734. Thus when energy is supplied through leads 803 and 800, solenoid 736 is energized and change is obtained from column 708. In this way, coins are delivered first from coin column 706, until it is exhausted or nearly so, and then from surplus coin column 708.

The change maker is operated when, for example, 25¢ in coins are inserted, and a selector button for merchandise priced at 20¢ is pressed. When this occurs, electric current is directed for a brief interval of time through switch 750 from means associated with the vending machine through solenoids 734 or 736 to actuate the change maker mechanism.

When the change maker has been operated to deliver change in a vending operation, it is reset by mechanism operating on depending flange 714 of sliding bar 712. As shown in Figs. 1, 3, 5, 6, and 7, a shaft 56 extends through side panel 4 of the machine. This shaft is oscillated by motor means (not shown) associated with the vending machine, and has at its end a bell crank having an arm 460 provided with a pin or handle 462. As the operating shaft 56 is oscillated by the motor means of the vending machine during a vending operation, handle 462 moves toward sliding bar 712 and comes into contact with its depending flange 714. Thereupon handle 462 cams in sliding bar 712 from its dotted line position in Fig. 5 to its dotted line position in Fig. 7, and the particular solenoid 734 or 736 being de-energized, locking lever 724 again drops into locking position in front of locking tab 718 on sliding bar 712, and the mechanism is thus ready for the next change making operation.

While the apparatus as shown in its preferred embodiment

is adapted to store and dispense nickels in change, it will be understood that coin columns 706 and 708 and the mechanism associated therewith for dispensing coins from the coin columns may be modified to accommodate coins of size and denomination different from nickels. It will also be understood that the change maker apparatus may comprise more than two coin columns each having their own coin release mechanism. In this case, coin column 708 would also be provided with a switch similar to switch 750, the additional switch having its common terminal connected to switch 750 and its two other terminals connected to solenoid 736 and a similar solenoid associated with an additional coin column, thereby providing alternate paths of current flow through solenoid 736 and the additional solenoid to lead 800. By such an arrangement, if column 706 is empty, column 708 will be used, but if column 708 is also empty then coins will be released from the additional column.

Obviously many modifications and variations of the present invention are possible in the light of the above teachings. Therefore, it is to be understood that the invention is not limited in its application to the details of construction and arrangement of parts specifically illustrated and that within the scope of the appended claims it may be practiced otherwise than as specifically described or illustrated.

We claim:

1. In an electrical coin operated vending machine, a changemaker having first and second tubes for receiving and retaining coins in a horizontal stacked relation subject to being dispensed from a bottom opening therein, first means for dispensing coins from said first tube, second means for dispensing coins from said second tube, first and second latch means normally locking said first and second coin-dispensing means respectively, first and second means each including a solenoid for releasing said first and second latch means respectively, first and second means for operating said first and second coin-dispensing means upon release of said first and second latch means respectively, an electrical circuit for energizing said first and second solenoids to release said first and second latch means, said electrical circuit comprising first and second conductors leading to a source of electrical power in the machine and a switch, said switch comprising first and second switch terminals each connected to one side of one of said first and second solenoids, and a movable contact arm connected to said first conductor for alternately connecting said first and second switch terminals to said first conductor, said second conductor being connected to the other side of said first and second solenoids, said first tube having a side opening adjacent its delivery end, a pivoted feeler finger carried by said switch for shifting said contact arm from one to the other of said first and second switch terminals, said feeler finger being normally urged into a first position wherein it extends through said side opening into said tube and being displaceable by coins in said tube and held in a second position substantially outside of said tube when the coins in said tube reach the level of said side opening, said contact arm being connected to said second switch terminal when said feeler finger is in said first position and connected to said first switch terminal when said feeler finger is in said second position, whereby said first solenoid may be energized only when coins are present in said first tube to the level of said opening and said second solenoid may be energized only when the stack of coins in said first tube falls below the level of said opening.

2. The combination of claim 1, further including means for directing coins deposited in the machine to said first tube, thereby to replenish said first tube and maintain said feeler finger in said second position.

3. The combination of claim 1, wherein said feeler finger is operable independent of said first and second coin dispensing means.

4. In an electrical coin operated vending machine, a

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change maker mechanism having first and second tubes to receive stacks of the same kind of coin, a slide beneath each of the tubes having a hole therein to receive one coin, moving means forming part of the vending machine and acting on said slides to move them in a first direction into position with the hole under the stack of coins, a spring acting to move each slide in the opposite direction, a latch engaging each slide and restraining it against movement by the spring, a solenoid connected to each latch and acting when energized to withdraw the latch and release the slide, a circuit for said solenoids, a switch in said circuit operating to pass current alternately to said solenoids, and a feeler on the movable member of the switch, said feeler being gravitationally balanced to extend into said first tube and being movable substantially clear of said first tube under the weight of coins deposited in said first tube, said switch being closed to one

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solenoid and open to the other solenoid when said feeler resides within said tube and being open to said one solenoid and closed to said other solenoid when said feeler is moved clear of said first tube.

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