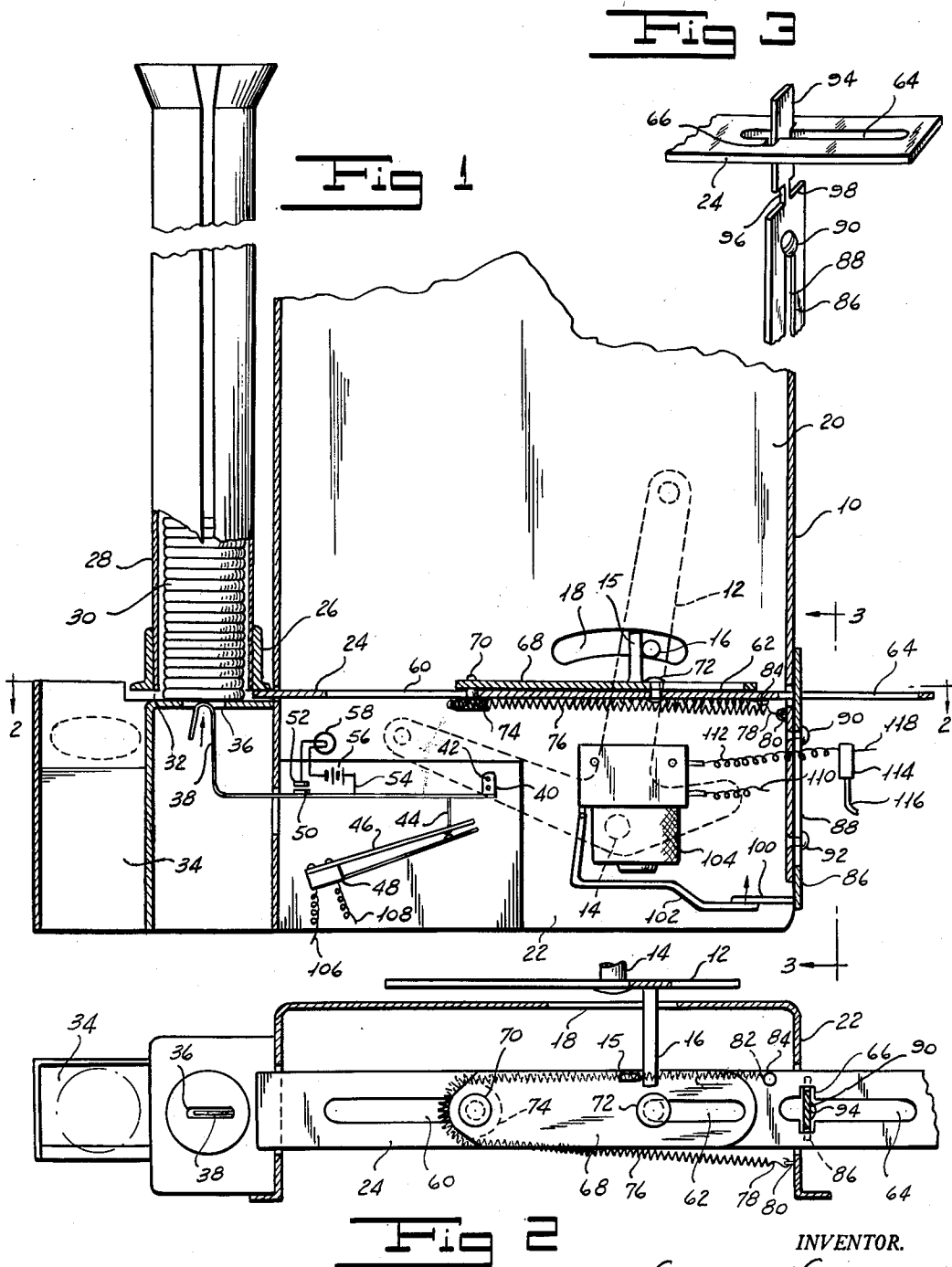


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ELECTRICAL CHANGEMAKER

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1

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ELECTRICAL CHANGEMAKER

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1 Claim. (Cl. 133—5)

My invention relates to an electrical changemaker and more particularly to an electrically controlled changemaker adapted to be used with vending machines of any suitable type.

In the prior art of vending machines many arrangements have been suggested for giving change when the coins deposited exceed the value of the merchandise being vended. For example, if cigarets are to be sold at twenty cents a pack it is desirable to be able to operate the vending machine upon the deposit of a quarter and to return to the purchaser a package of cigarets and a nickel in change. The constructions of the prior art for accomplishing this purpose have been cumbersome, complicated and expensive to manufacture. Then, too, due to the complexity of construction, derangements in use were common.

One object of my invention is to provide a simple changemaker adapted to give change in connection with the operation of a vending machine.

Another object of my invention is to provide a changemaker which is controlled electrically in a simple manner.

Another object of my invention is to provide an electrical changemaker which is inexpensive to manufacture and which is easily adapted to many various types of vending machines.

Another object of my invention is to provide an electrically controlled changemaker having few simple parts.

Another object of my invention is to provide an electrical changemaker in which means are provided for rendering the changemaker inoperative when a coin tube containing coins to be dispensed as change becomes depleted and to provide a signal to the user informing him that the supply of coins for change is exhausted.

Other and further objects of my invention will appear from the following description.

In the accompanying drawings which form part of the instant specification and which are to be read in conjunction therewith and in which like reference numerals are used to indicate like parts in the various views:

Figure 1 is a sectional view showing an electrical changemaker containing one embodiment of my invention.

Figure 2 is a sectional view taken on the line 2—2 of Figure 1.

Figure 3 is a fragmentary perspective view seen along the line 3—3 of Figure 1.

In general, my invention contemplates the provision of a coin tube provided with a reciprocating slide adapted to eject coins from the coin tube upon each operation thereof. The reciprocating slide is adapted to be operated from a reciprocating member actuated from a suitable portion of the delivery mechanism of the vending machine. The arrangement is such that the reciprocating actuating member will operate every time the vending machine is operated. A spring connection is provided between the reciprocating actuating member and the reciprocating dispensing member such that upon the operation of the actuating member the dispensing member will tend to operate under the influence of the spring member. The reciprocating dispensing member is normally immobilized by a locking member so that it cannot operate to dispense coins until it is released. A solenoid is provided to operate the locking member to release the dispensing member in response to a suitable sensing means in the coin register adapted to close a circuit to energize the solenoid whenever a coin requiring change is deposited. For example, if merchandise is to be sold for twenty cents, whenever a quarter is deposited the solenoid will be energized to give a nickel in change, it being understood that nickels are placed in the coin tube which holds the change supply. The reciprocating dispensing member may have the thickness of one nickel if one nickel's change is to be given, of two nickels if two nickels' change is to be given, or of three nickels if three nickels' change is to be given. For purposes of illustration and not by way of limitation, I will describe my device as giving one nickel's change in response to the deposit of a quarter. It is to be understood, of course, that the arrangement is quite flexible and a nickel's change can be given in response to the deposit of a dime in event of sales of a nickel.

More particularly referring now to the drawings, the framework 10 of a vending machine carries a bell crank 12 adapted to be rotated in a counter-clockwise direction by any suitable means about a shaft 14 whenever the vending machine is operated to dispense merchandise. A bell crank of this type is shown in my copending application Serial No. 114,614, filed September 8, 1949, now Patent No. 2,565,766.

A pin 16 is carried by one arm of the bell crank and projects through an arcuate slot 18 formed in the wall 20 of the housing of the vending machine. A changemaker casing 22 is secured to the wall 20 of the vending machine in any suitable manner. A reciprocating dispensing member 24 is mounted for reciprocating movement adjacent the top of the casing 22 and is adapted to project through the bottom of a base member 26 which houses the change coin tube 28 adapted to contain a supply of nickels 30 to be given in change. The nickels ejected by the coin dispenser member 24 pass through a slot 32 formed in the base member 26 and fall into a chute 34 communicating with the return coin chute of the vending machine, as is well known in the art. The bottom of the base member 26 is formed with an opening 36 into which extends the end of a spring member 38. This spring member has its end 40 secured to the casing 22 by means of rivets 42, or in any other suitable manner. A bracket 44 is carried by the spring member 38 and is adapted to contact the upper switch arm 46 of a switch member 48. A contact point 50 is carried by the member 38 adjacent a second contact point 52 carried by the casing 22 in any suitable manner. When nickels are in the coin chute the weight of the nickels will depress the spring member 38 to separate contact point 50 from fixed contact point 52 and to cause bracket 44 to close the switch 48 by depressing its arm 46. Contact point 50 is connected by a conductor 54 to one terminal of a battery 56. Contact point 52 is connected to the other terminal of the battery through an incandescent lamp 58. The arrange-

2

3

ment is such that when no nickels are in the coin tube 28 the switch 48 will open due to its arm 46 moving upwardly, and contact point 50 will make contact with contact point 52 energizing the incandescent lamp 58 by way of the battery 56. The incandescent lamp 58 serves as a signal advising a user that no coins are in the coin tube 28 and it may illuminate a sign at the front of the vending machine, reading "Use Nickels and Dimes only."

The reciprocating dispensing slide 24 is provided with a pair of slots 60 and 64. The slot 64 is provided with a cross slot 66. Directly above the coin dispensing slide 24 I mount an actuating member 68 formed with a slot 62. A pin 72 is carried by the reciprocating dispensing member 24 and extends through the slot 62. A pin 70 is carried by the actuating member 68 and extends through the slot 60. The lower end of pin 70 also carries a guide member 74 around which passes the bight of a coiled tension spring 76. One end 78 of the spring 76 is secured to the casing 22 by means of a lug 80. The other end 82 of the spring 76 is secured to the reciprocating dispensing member 24 by means of a lug 84. A locking member 86 is provided with a slot 88 through which rivets 90 and 92 carried by the casing 22 pass. The rivets and the slot serve to mount the locking member 86 for vertical reciprocal movement on the casing 22. The upper end of the locking member is formed with a locking portion 94, which extends through the cross slot 66 of the member 24 so that when the parts are in the position shown in Figure 3 the member 24 cannot reciprocate. The locking end 94 is secured to the body of the member 86 by means of a neck portion 96 the width of which is slightly less than the width of the slot 64. The arrangement is such that when the member 86 moves upwardly the shoulders 98 formed on the member 86 will strike the bottom of the member 24 to position the neck 96 in the slot 64, thus freeing the member 24.

The member 86 carries a lug 100 contacting an armature 102 of a solenoid 104. The solenoid is secured to the casing 22 in any suitable manner. The arrangement is such that when the winding of solenoid 104 is energized it will actuate the armature 102, lifting the lug 100 and hence the member 86. Conductor 106, which is connected to the leaf 46 of the switch 48, is connected to a source of potential. Conductor 108, which is adapted to be connected to conductor 106 by the switch 48 when it is closed, is connected to conductor 110 of the solenoid winding. The other end of the solenoid winding is connected by conductor 112 to a microswitch 114 having an operating arm 116. The microswitch is adapted to connect conductor 112 to conductor 118, which is connected to the other side of the potential source. Whenever microswitch 114 is operated by the operating arm 116 the solenoid 104 will be energized, freeing the dispensing slide 24. The arm 116 is adapted to be actuated by the deposit of a quarter in the machine or in any other suitable manner in response to the deposit of a quarter.

In operation, every time the vending machine is actuated the actuating slide 68 will be forced to move to the left due to the interaction of pin 16 with the pin 15 which is carried by and secured to the member 68. This movement is permitted relative to the slide 24 due to the slots 62 and 60, the pin 70 being carried along the slot 60 and the slot 62 moving relative to the pin 72, it being understood that the locking end 94 is positioned in the cross slot 66 to lock the slide 24. In this motion of the member 68 the spring 76 will be tensioned due to the fact that the guide 74 will be carried to the left, pulling on the bight of the spring. The end 78 of the spring is always anchored to the casing 22. The other end of the spring is secured to the slide 24 which, it will be remembered, is still locked. This motion occurs every time the machine operates and merely tensions the spring 76. Whenever the spring 76 is tensioned, however, it exerts a force tending to move the slide 24 to the left, that is, in a dispensing direction. As

4

long as the slide 24, however, remains locked, this movement will not be accomplished. Whenever the solenoid 104 is energized, the slide 24 will be freed, so that when the member 68 moves to the left it will carry the dispensing member 24 to the left through the section of the spring which is secured by lug 84 to the slide 24, effecting the movement of the slide 24 to the left and thus dispensing a coin from the coin tube. The other section of the spring, the end of which 78 is secured to the casing 22 by means of the lug 80, will also be tensioned biasing the actuating member 68 to move to the right, so that when the pin 16 moves to the right during the completion of the vending cycle the actuating member 68 will also move to the right under the influence of the spring. In this movement the pin 70 contacts the right-hand end of the slot 60 and the left-hand end of the slot 62 contacts the pin 72 constraining the slide 24 to move to the right along with the member 68. As soon as the cross slot 66 becomes aligned with the locking end 94 the member 86 will fall downwardly by gravity to resume its locking position.

It will be seen that I have accomplished the objects of my invention. I have provided a simple changemaker adapted to give change in connection with the operation of a vending machine which is controlled electrically in a simple manner. My changemaker is inexpensive to manufacture and is easily adapted to be used with various types of vending machines. It is simple in construction and has few moving parts. Means are provided for rendering the changemaker inoperative when a coin tube containing coins to be dispensed as change becomes depleted and at the same time inform a user that the supply of change is exhausted. The change coin dispensing member is normally locked when the machine is not operated. The arrangement, further, is such that if the coin dispensing slide were free when the machine was not operated to deliver merchandise, no change would be given. This is due to the fact that the tension of the spring 76 is not sufficient in its return position to operate the change giving slide. It is only when the spring is tensioned in connection with the operation of the machine that the coin slide will move when it is unlocked, to a sufficient degree to effect the operation of removing a coin from the coin tube by way of change.

It will be understood that certain features and subcombinations are of utility and may be employed without reference to other features and subcombinations. This is contemplated by and is within the scope of my claim. It is further obvious that various changes may be made in details within the scope of my claim without departing from the spirit of my invention. It is therefore to be understood that my invention is not to be limited to the specific details shown and described.

Having thus described my invention, what I claim is:

In a coin controlled vending machine having a part movable in response to the vending operation, an electrical changemaker adapted to be used to return coins representing the difference in price of merchandise sold and the coins deposited in the machine to initiate the operation thereof including in combination a coin tube adapted to hold coins to be given in change, a coin dispensing member adapted to eject coins from said coin tube, locking means for immobilizing said dispensing member, actuating means, means connecting said actuating means to said vending machine part whereby to operate said actuating means during each vending operation, an elongated spring, guide means carried by said actuating means, said elongated spring having one end thereof fixed and the other end thereof secured to said dispensing member and passing around said guide means whereby said spring will bias both said actuating means and said dispensing member to urge said dispensing member to dispensing position during each operation of the vending machine, electrical means responsive to coins of predetermined denomination, and means responsive to the operation of said elec-

5

trical means for moving said locking means to unlocking position.

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