AUTOMATIC COIN COLLECTOR

This invention relates to coin collectors for use in bottled drink vending machines and other coin operated devices having change makers and coin operated actuating mechanisms therein.

The present invention is directed to automatically dividing coins deposited in a coin operated machine and directing the divided coins to separated locked receptacles whereby the operator of the machine or the dealer may collect his share of the coins without the other being present.

An object of the invention is to provide, in a vending machine of the like, an automatic coin collector capable of accommodating nickels, dimes and quarters and proportionately directing the value of the coins received to two separate locked receptacles.

The manner in which this is accomplished is clearly set forth in the following description and the accompanying drawings, wherein:

FIGURE 1 is an elevational view of the coin chutes and locked receptacles of the invention and additionally showing a storage tube for nickels which is part of a conventional change maker.

FIGURE 2 is a diagrammatic view of the invention showing its relation to a conventional change maker which is also shown diagrammatically.

FIGURE 3 is a broken perspective view of the coin chutes and showing the arm of a solenoid operated deflector.

FIGURE 4 is a perspective view of a stepping relay included in the electric circuit of the invention.

FIGURE 5 is a perspective view of a typical plus and minus stepping relay also used in the electric circuit.

FIGURE 6 is a wiring diagram of the electric circuit used in conjunction with the invention.

The invention herein shown and described is installed in the housing of a coin operated device, not shown, such as a bottled drink vending machine where the unit sale price is ten cents.

A conventional change maker and mechanism actuator 10 is schematically illustrated in the upper portion of FIGURE 2 and in fragmentary view in the upper right portion of FIGURE 1.

Change makers 10, as herein referred to, are commercially available and the one shown is not, therefore, herein described in detail. The change maker 10, by a combination of electrical and mechanical elements, receives a quarter, a dime, or two nickels from the customer which he deposits in the receiver 11. In case of malfunction or if the electric current is shut off, or the vendor is empty of merchandise, the coins return down a rejection chute 12 to the change receptacle 13. If the sale is made, the proper change, in nickels only, is allowed to drop intothe receptacle 13 from a coin reservoir 14 in which all the nickels put into the machine accumulate as shown at 15.

The internal mechanism of the change maker, not shown, feeds the nickels into the reservoir 14 through a vertical slot 16. A blocking relay 17 allows three nickels to fall into the receptacle 13 every time a quarter is put into the machine.

The invention herein described includes three parallel coin slots 18, 19 and 20 running from the change maker 10 to a money receptacle 21 provided with a locking access door 22. All the quarters received by the change maker 10 are allowed to drop through the slot 18 on the far side of the illustration. All the dimes are routed through the middle slot 19, and the nickels into the reservoir 14. When the latter is full, the nickels automatically overflow and fall down the near slot 20 by way of the branch 23.

The dime chute 19 contains a coin deflector 24 operated by a solenoid 25 by means of a link 26. When the deflector 24 is caused by the solenoid 25, to project into the dime chute 19, any coin descending therein is diverted through a branch chute 27 into a second money receptacle 28 with a locked door 29. Attached to the branch chute 27 is a microswitch 30 having a hooked actuating arm 31 which extends into the chute through an access slot 32 in such a way that any coin entering the chute will close the switch 30 momentarily.

A stepping relay 33 having a coil 34 and an armature 35 works a ratchet wheel 36 by means of a pawl 37 attached to the armature. This relay 33 is wired to the change maker 10 in such a way that every complete cycle closes an internal switch 38 momentarily and actuates the relay, causing the ratchet wheel to rotate one notch. On the same shaft 39 with the ratchet wheel 36 there is a cam 40 having one rise for each six notches in the wheel. Built into the stepping relay 33 there is a switch 41 which closes on contact with the cam 40 and in opposition to the duration of one stepping cycle of the relay. The switch 40 closes a circuit which operates a plus and minus stepping relay 41. The plus and minus relay 41 consists of a pair of coils 42 and 43 which have respective armatures 44 and 45, each of which operates a ratchet wheel 46 through paws 47 and 48 but in opposite directions.

An impulse from the switch 40 rotates the wheel 46 one notch in a clockwise direction, as viewed in FIGURE 5, by actuating the coil 43 and the armature 45. A brush 49 makes contact with a ring conductor 50 which rotates with the wheel 46 and which conductor has a gap 51 equivalent to one notch or one position of the wheel 46.

When the wheel 46 has rotated one notch clockwise from the zero position the brush closes a circuit through the ring 50, which action activates the solenoid 25 and projects the coin deflector 24 into the dime chute 19.

The next dime received by the change maker 10 will be deflected into the branch chute 27 and thence to one of the money receptacles 28. On its way down, the dime closes the microswitch 30 by striking the arm 31 which causes the coil 42 and the armature 44 to rotate the ratchet wheel 46 in a counterclockwise direction, bringing it to its zero position and opening the circuit in the ring conductor 50. The ratchet wheel 46 will remain in this position until six more sales are made and the cam 39 once again closes the switch 40, again moving the plus and minus relay 41 one notch in a clockwise direction.

Since the machine pays its percentage in dimes only, but makes its sales from quarters and nickels and dimes, it is likely that the next sale after the coin deflector 24 is set for a payoff may not be from a dime, but from a quarter or two nickels. In that case the plus and minus relay 41 "holds" the signal for a payoff and if six more sales are made before a dime comes up, the ratchet wheel 46 moves over clockwise another notch.

Anytime that the change maker receives a dime it will drop through the chute 19 and be deflected into the branch 27, striking the microswitch arm 31 and moving the relay 41 one notch counterclockwise. Every dime that comes through it will move the relay back one notch until it reaches its zero position which means that the proper payoff has been made for the number of sales up to that time. It has been found that twenty-four notches on the ratchet wheel 46 will give the plus and minus relay 41 sufficient "memory" to follow the usual incidence of dimes among the coins deposited in the vending machine.

The invention is not limited to the exemplary con-
struction herein shown and described, but may be made in various ways within the scope of the appended claims.

What is claimed is:

In an automatic vending machine including a change maker capable of accepting nickels, dimes and quarters and having separate outlets therefor:

a nickel receiving chute, a dime receiving chute and a quarter receiving chute, all said chutes being vertically disposed and respectively connected with said nickel, dime and quarter outlets of said coin changer,

a first locked receptacle beneath and in communication with said chutes,

a downwardly and outwardly inclined chute connected with said dime chute,

a second locked receptacle beneath and in communication with said inclined chute,

a deflecting arm adjacent said dime chute, said arm being pivotally mounted for movement to a position to direct dimes in said chute,

a solenoid operatively connected with said deflecting arm,

a switch within said change maker positioned to be operated by a predetermined value in coins deposited therein,

a one-way stepping relay connected to receive impulses from said switch, said one-way stepping relay including

a cam switch mechanically connected with and rotated by said one-way stepping relay,

a momentary coin operated switch in said inclined chute, and

a two-way stepping relay including a ring conductor having a null therein and including a brush contact therewith, said stepping relay being connected with said cam switch of said one-way stepping relay and with said momentary switch in said inclined chute, said ring conductor and said brush contact being connected with said solenoid.

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