Aug. 15, 1961 H. W. BAKER, JR 2,996,163

ELECTROMECHANICAL COIN TOTALIZER

Filed July 27, 1956 4 Sheets-Sheet 1

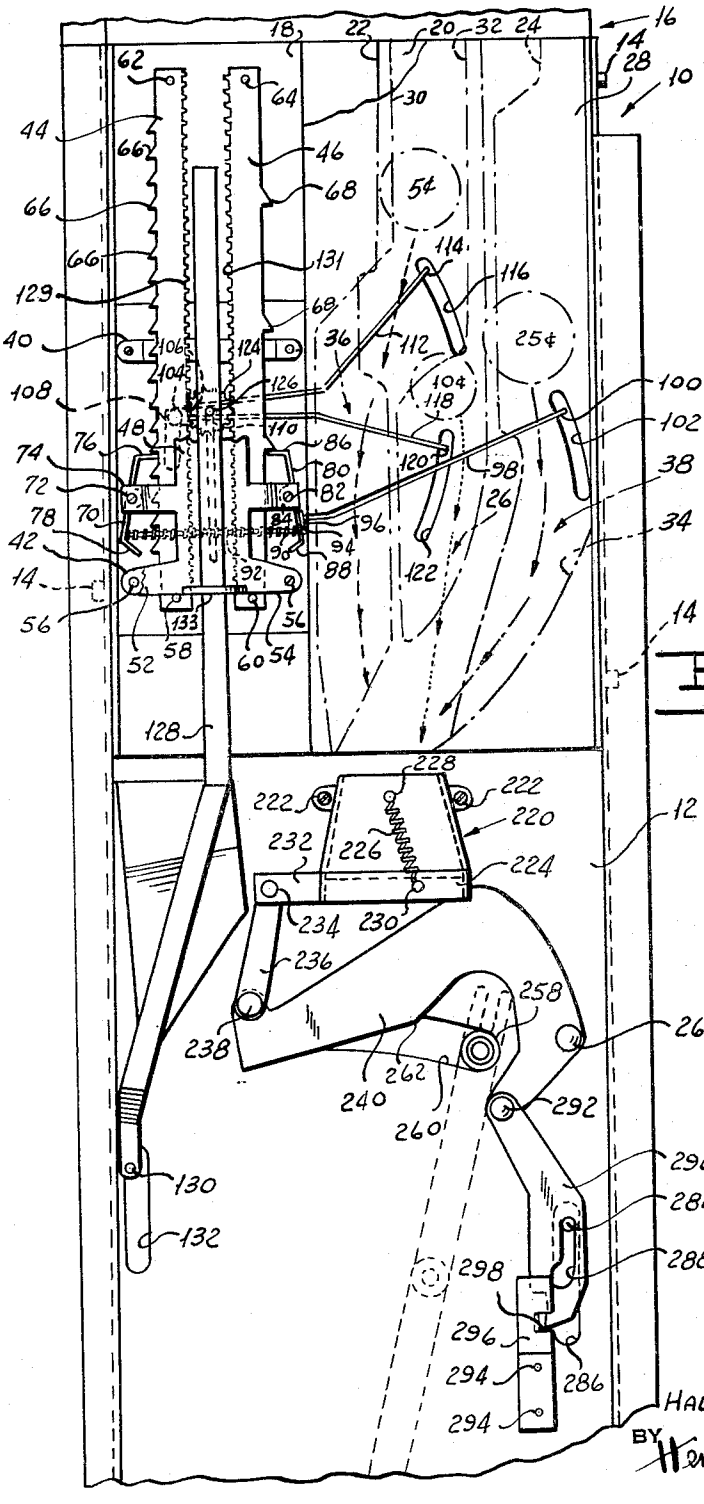


FIG 1

INVENTOR
HALSTED W. BAKER, JR
BY Henry L. Shenier
ATTORNEY

Aug. 15, 1961 H. W. BAKER, JR 2,996,163

ELECTROMECHANICAL COIN TOTALIZER

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Fig 2

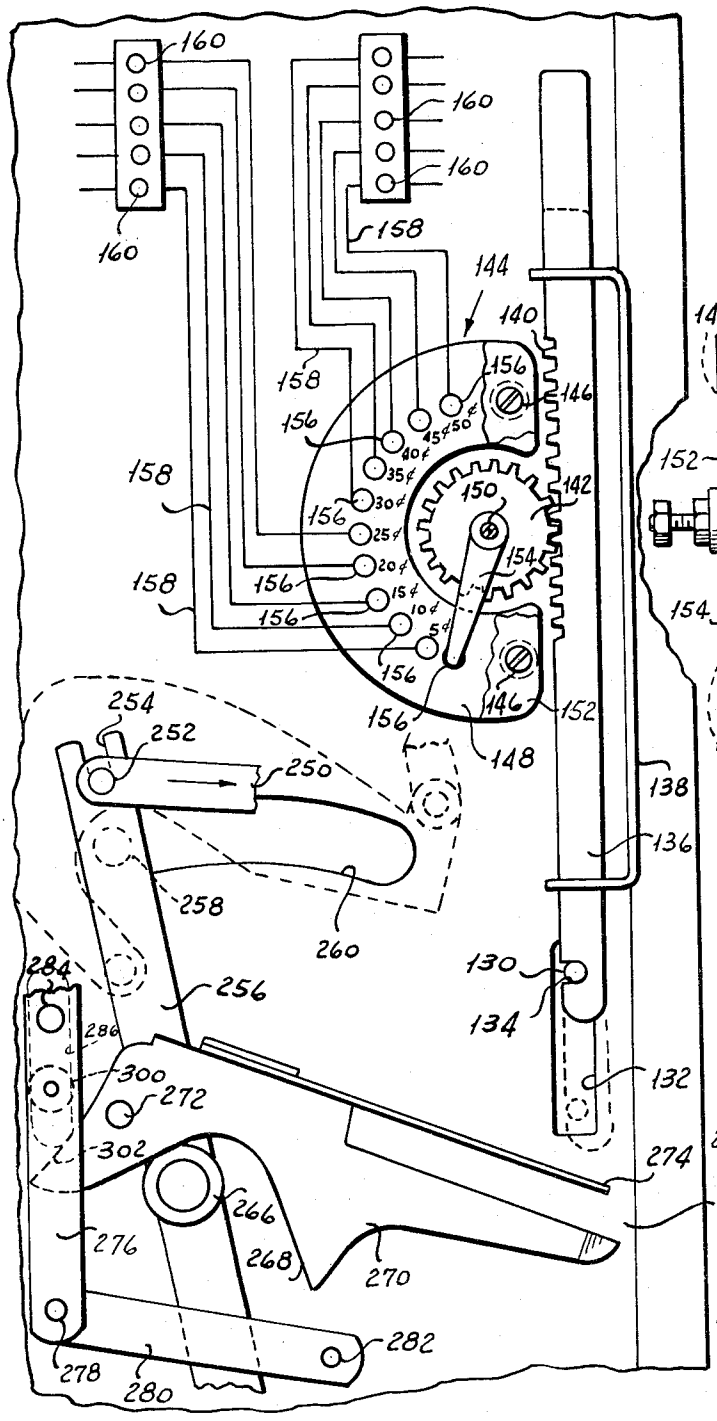
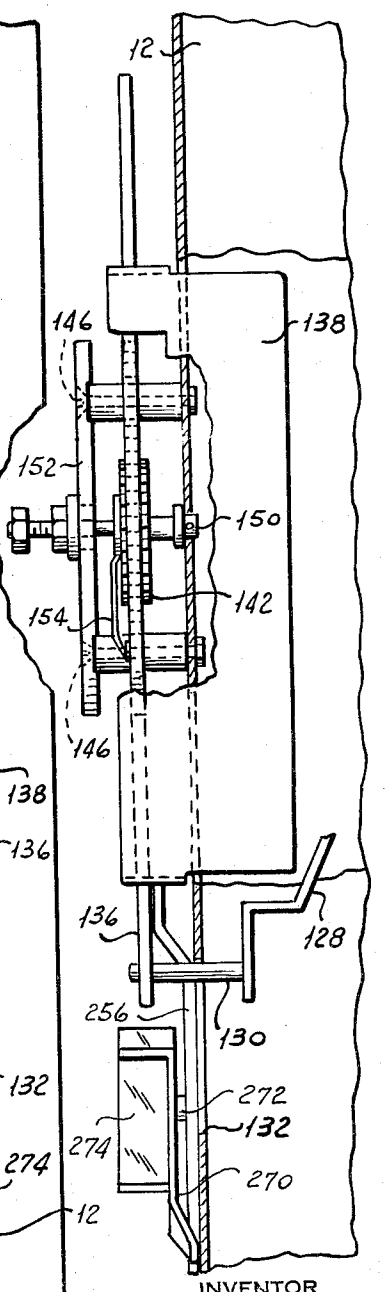


Fig 3



INVENTOR
HALSTED W. BAKER, JR.
BY Henry L. S Shenier
ATTORNEY

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ELECTROMECHANICAL COIN TOTALIZER

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Fig 5

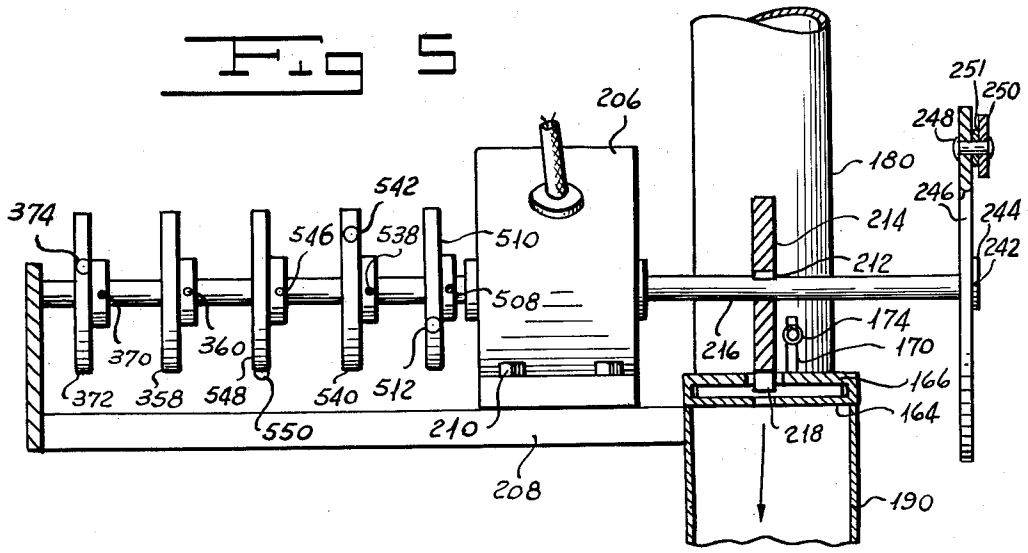
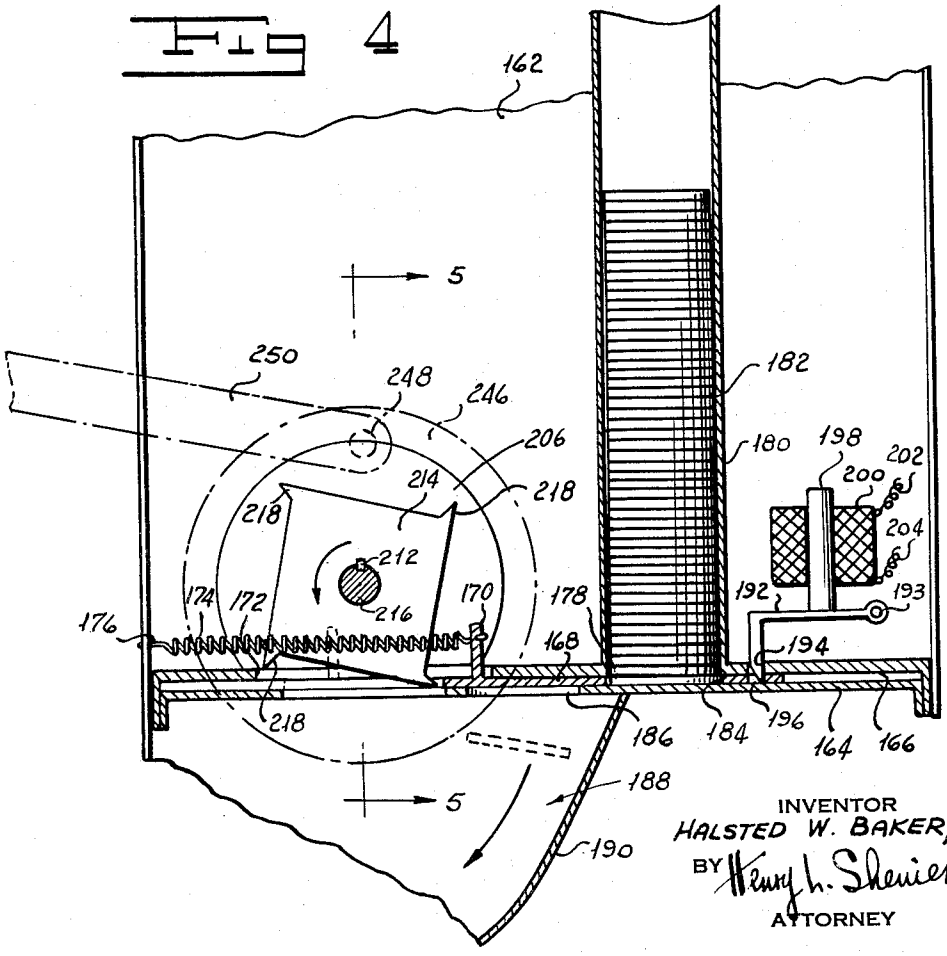


Fig 4

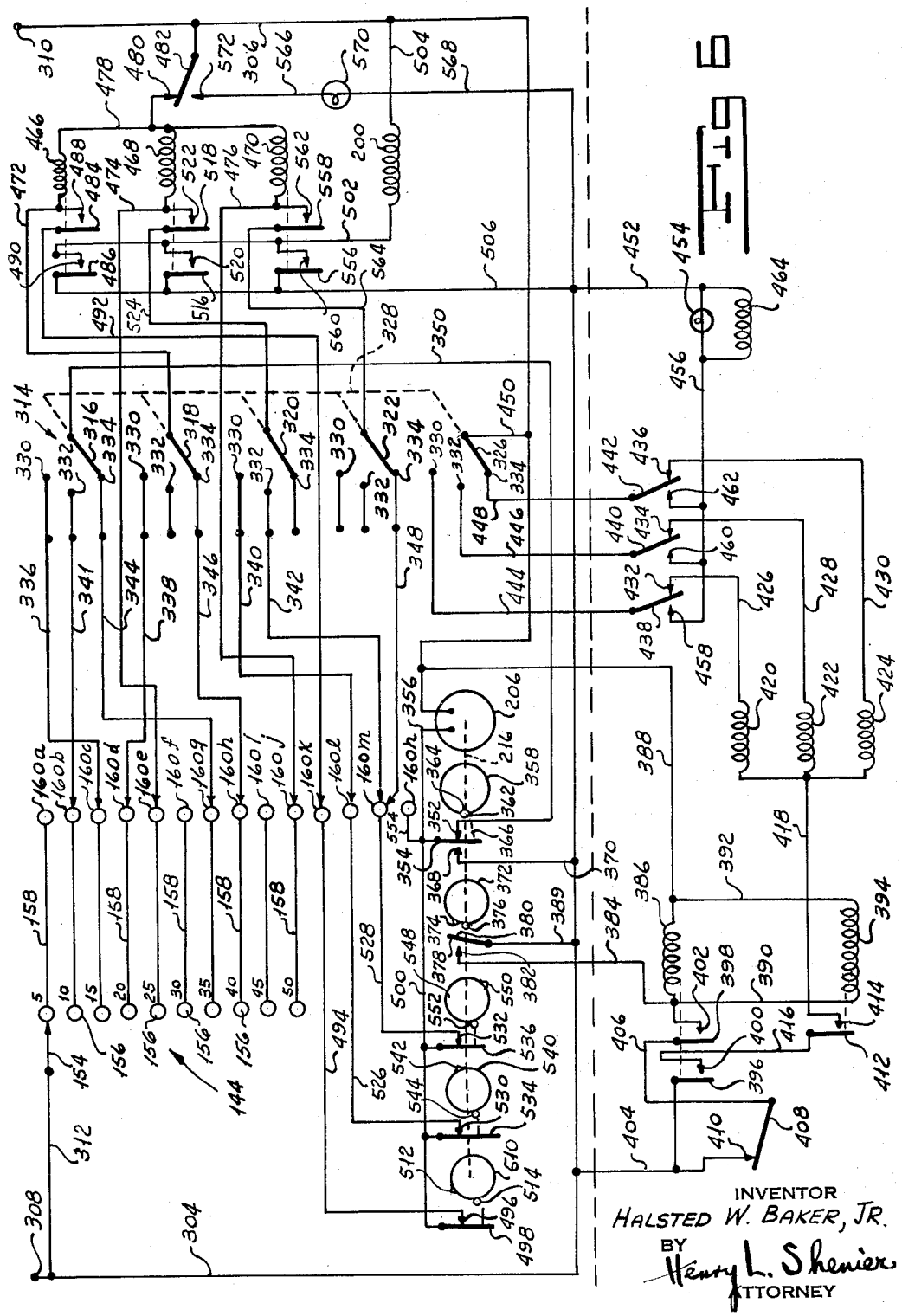


INVENTOR
HALSTED W. BAKER, JR
BY Henry L. Sheiner
ATTORNEY

Aug. 15, 1961 H. W. BAKER, JR 2,996,163

ELECTROMECHANICAL COIN TOTALIZER

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INVENTOR
HALSTED W. BAKER, JR.
BY Henry L. Shenier
ATTORNEY

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2,996,163

ELECTROMECHANICAL COIN TOTALIZER

Halsted W. Baker, Jr., Madison, N.J., assignor to Rowe Manufacturing Co., Inc., Whippany, N.Y., a corporation of New York

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4 Claims. (Cl. 194—37)

My invention relates to an electromechanical coin totalizer and more particularly to an electromechanical coin totalizer for use with merchandising machines for selectively dispensing a number of different brands or kinds of merchandise selling at various prices.

If the market demand is to be met, a merchandising machine must be capable of dispensing a number of kinds or brands of merchandise selling at various respective prices. For example, if an improved machine is adequately to dispense packages of cigarettes, it must provide the customer with a choice of a great number of different types of cigarettes, such as regular size, "king" size and filter-tip cigarettes of various brands. It will be appreciated that the various kinds and brands of cigarettes sell at different respective prices. The price at which a particular type or brand of cigarette is sold may be subject to change. These considerations are likewise true where a merchandising machine is to dispense other kinds of merchandise, such, for example, as various beverages selling at different prices. A coin totalizer for use in such a machine must register the deposited sums of money and condition the dispensing means of the machine to operate in response to the deposit in the totalizer of different respective sums in coins. Advantageously, the coin totalizer should provide means by which the price of any article of merchandise dispensed by the machine may readily be adjusted within wide limits. It is desirable that a coin totalizer be adapted to make change in the event a customer does not have the exact change required to purchase an article of merchandise dispensed by the machine. Further, the coin totalizer should be simple in construction and reliable in operation.

One object of my invention is to provide an electromechanical coin totalizer for use with a merchandising machine which dispenses different kinds or brands of merchandise selling at various prices.

Another object of my invention is to provide an electromechanical coin totalizer which permits ready adjustment of the price at which an article of merchandise is sold.

A further object of my invention is to provide an electromechanical coin totalizer which makes change.

A still further object of my invention is to provide an electromechanical coin totalizer which is simple in construction and reliable in operation.

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

In general, my invention contemplates the provision of an electromechanical coin totalizer including a totalizer switch and means for positioning the switch in response to the deposit in the totalizer of a sum in coins. To obtain an article of merchandise, a customer first operates a selector switch of the machine with which my totalizer is used to condition the machine to dispense a selected beverage or article of merchandise. Upon the deposit in the machine of a sum in coins aggregating the purchase price of the selected article the selector switch and the totalizer switch automatically complete the circuit of a drive motor which closes a vend switch to complete the circuit of the delivery solenoid associated with the selected beverage or article of merchandise. The totalizer switch reset means begins to reset the totalizer switch when the motor is energized. A cam operated follow-through switch bypasses the totalizer switch to maintain the dispensing and change-making circuits until one revolution of the motor is complete.

It is to be understood that the operation of the machine may be initiated by conventional push buttons. As is common in the art, I may provide one push button associated with each column of merchandise. The various columns may be set at various prices. With push-button operation of my coin register, coins are first deposited and then a selected push button operated.

My totalizer includes a change maker which receives a predetermined number of actuating impulses on each operation of the machine. A solenoid actuated latch normally locks the change maker against operation by the actuating impulses. When a sum in coins in excess of the purchase price of a selected article has been deposited in the machine, the selector and totalizer switches energize one of a number of change relay solenoid windings. Energization of a change relay winding momentarily completes the drive motor circuit. As the drive motor rotates, it operates its follow-through switch to hold the motor circuit for the remainder of the cycle of operation. The motor follow-through switch also completes through one of a plurality of interrupting switches a holding circuit for the energized change relay winding, which completes the circuit of the release solenoid for the change maker latch. Energization of the change maker latch release solenoid permits the change maker to be operated by the actuating impulses. A motor drive cam opens the interrupting switch associated with the energized change relay winding at a point in the operating cycle at which the correct amount in change has been made. The remainder of the operating cycle takes place in the same manner as that when no change is to be made. My totalizer is arranged to permit adjustment of the sale price of any article in a rapid and expeditious manner. It includes means for informing a customer that the supply of change in the change maker is exhausted. Reset means responsive to the delivery of an article of merchandise resets my coin totalizer circuit relays.

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 fragmentary elevation of one side of my electromechanical coin totalizer.

FIGURE 2 is a fragmentary elevation of the other side of my electromechanical coin totalizer.

FIGURE 3 is a fragmentary end elevation, with parts broken away, of my electromechanical coin totalizer.

FIGURE 4 is a fragmentary sectional elevation of the change marker of my electromechanical coin totalizer.

FIGURE 5 is a sectional view of my electromechanical coin totalizer, taken along the line 5—5 of FIGURE 4.

FIGURE 6 is a schematic view of the electric circuit of my electromechanical coin totalizer.

More particularly referirng now to FIGURE 1 of the drawings, my coin totalizer, indicated generally by the reference character **10**, includes a flanged mounting plate **12** carrying projections **14** by means of which the totalizer may conveniently be mounted in the machine with which it is to be used. A coin separator and slug ejector, indicated generally by the reference character **16**, may be of any type known to the art which separates nickels, dimes, and quarters deposited in the machine and which tests deposited coins and ejects spurious coins.

A pair of plates **18** and **20** supported by plate **12** and maintained in spaced relationship by appropriately shaped spacers **22** and **24** form a dime coin passage indicated generally by the reference character **26**. The path of a dime passing downwardly between plates **18** and **20** along

the path defined by spacers 22 and 24 is indicated by a dotted line in FIGURE 1. I mount a third plate 28 in spaced relation with plate 20 by appropriately shaped spacers 30, 32 and 34. Plates 20 and 28 together with spacers 30, 32 and 34 define respective nickel and quarter coin passages, indicated generally respectively by the reference characters 36 and 38. For purposes of convenience, I have indicated the path of a nickel passing downwardly between plates 20 and 28 along the path defined by spacers 30 and 32 by a broken line. The path of a quarter passing downwardly between plates 20 and 28 along the path defined by spacers 32 and 34 is indicated by a dot-dash line. I mount the assembly including plates 18, 20 and 28 and spacers 22, 24, 30, 32 and 34 on support plate 12 by any convenient means to position coin passages 26, 36 and 38 to receive, respectively, dimes, nickels and quarters from the outlet passages of separator and slug ejector 16.

To the left of plate 28, as viewed in FIGURE 1, plate 18 carries a pair of spaced guide members 40 and 42. Members 40 and 42 slidably support respective racks 44 and 46, retained in members 40 and 42 by a plate 48. Pairs of respective ears 52 and 54, one pair of which is shown, formed on plate 48, are secured to guides 40 and 42 by any convenient means such as screws 56. Respective pins 58 and 60 carried by the lower ends of racks 44 and 46 as viewed in FIGURE 1 engage the lower edge of plate 48 to limit the upward movement of racks 44 and 46 in a manner which will be described hereinafter. The upper ends of racks 44 and 46 may carry respective pins 62 and 64 to limit the downward movement of the racks. Rack 44 is formed with a plurality of spaced escapement teeth 66 along its outboard edge as viewed in FIGURE 1. Rack 46 is formed with escapement teeth 68 along its outboard edge. Adjacent escapement teeth 68 are spaced apart a greater distance than are the teeth 66. As will be explained in detail hereinafter, this spacing of the escapement teeth on the respective racks is an analogue of value of coins adapted to space the rack.

Respective escapement mechanisms associated with racks 44 and 46 permit predetermined movements of the racks downward under the influence of gravity. I pivotally mount a first escapement latch 70 on a pin 72 carried by a lug 74 formed on plate 48. Latch 70 includes respective upper and lower arms 76 and 78. I pivotally mount a second escapement latch 80 on a pin 82 carried by a lug 84 formed on plate 48. Escapement latch 80 includes respective upper and lower arms 86 and 88. An elongated screw 90 passes through an opening in the lower end of latch 80 and has its end threadably engaged with latch 70. A spring 92 carried by the shank of screw 90 forces the lower ends of latches 70 and 80 apart to pivot the respective latches so that upper latch portions 76 and 86 engage the escapement rack teeth 66 and 68. This pivotal movement is limited by the engagement of head 94 of screw 90 with latch 80. Under the influence of spring 92 the upper arms 76 and 86 of the respective escapement latches 70 and 80 respectively engage a tooth 66 of rack 44 and a tooth 68 of rack 46. It will be seen that upper arms 76 and 86 positioned by spring 92 restrain racks 44 and 46 from movement downward under the influence of gravity.

I provide means for pivoting or rotating the respective latches 70 and 80 in response to the deposit in the totalizer of coins to permit predetermined downward movements of racks 44 and 46 under the influence of gravity. A screw 96 or the like secures a feeler 98 to latch 80 below its pivot pin 82. A lateral projection 100 formed on feeler 98 extends through an arcuate slot 102 in plate 28 into the quarter coin passage 38 defined by plates 20 and 28 and spacers 32 and 34. A quarter passing downward through passage 38 engages projection 100 to move feeler 98 to rotate escapement latch 80 against the action of spring 92 in a clockwise direction as viewed in FIGURE 1. As the escapement latch pivots, arm 86 moves out of engagement with a tooth 68 to permit rack 46 to feed downward under the influence of gravity. Arm 88 arrests movement of rack 46 by engaging the tooth 68 released by arm 86. After the quarter passes by the projection 100, spring 92 resets latch 80 and arm 86 engages the tooth 68 following the one it released when feeler 98 moved. It will be seen that a quarter passing downward through passage 38 actuates latch 80 to permit a predetermined movement downward of rack 46.

A pin 104 carried by plate 18 pivotally mounts a bell crank having arms 106 and 108. Any convenient means such as a screw 110 secures a feeler 112 to arm 106. I form feeler 112 with a lateral projection 114 extending through an arcluate slot 116 in plate 28 into the nickel coin passage 36 defined by plates 20 and 28 and spacers 30 and 32. A nickel passing downward through passage 36 engages projection 114 to move arm 112 to pivot the bell crank including arms 106 and 108 in a clockwise direction as viewed in FIGURE 1. When the bell crank pivots, its arm 108 engages arm 76 to pivot latch 70 in a counterclockwise direction as viewed in FIGURE 1. When latch 70 pivots, arm 76 releases a tooth 66 and rack 44 feeds downward under the influence of gravity. Arm 78 moves in to engage an escapement tooth 66 to arrest the downward travel of the rack 44. After the nickel passes projection 114, spring 92 resets latch 70, and arm 76 engages the escapement tooth 66 following the one it released. It will be seen that passage of a nickel downward through passage 36 permits a predetermined movement of rack 44. I space adjacent teeth 68 by a distance five times the distance separating adjacent teeth 66. It will be seen that a quarter permits rack 46 to move through five times the distance through which a nickel permits rack 44 to move.

Projection 114 on feeler 112 extends through an opening in plate 20 similar to opening 116 in plate 28 to extend into the dime coin passage 26 defined by plates 18 and 20 and spacers 22 and 24. A dime passing downward through passage 26 engages projection 114 to permit a predetermined movement downward of rack 44 in the same manner as did a nickel passing downward through passage 36. Screw 110 mounts a second feeler 118 on arm 106 for movement with it. Feeler 118 is formed with a lateral projection 120 extending through an arcuate opening 122 in plate 28 and through similar arcuate openings in spacer 32 and in plate 20 to extend into the dime coin passage 26 formed by plates 18 and 20 and spacers 22 and 24. After a dime passes by projection 114 and latch 70 and the associated bell crank return, the dime travels downward through passage 26 to engage projection 120 to pivot the bell crank including arms 106 and 108 in a clockwise direction as viewed in FIGURE 1. This action permits a second predetermined movement downward of rack 44.

It will be seen that passage of a nickel through coin passage 36 permits a predetermined movement downward of rack 44. A dime passing through passage 26 permits twice the movement of rack 44 as did a nickel. Passage of a quarter through passage 38 permits a movement of rack 46 which is five times the movement of rack 44 in response to the passage of a nickel through passage 36.

A pinion 124 pivotally mounted on a pin 126 carried by a bent link 128 totalizers or aggregates the respective movements of racks 44 and 46. I dispose pinion 124 between racks 44 and 46 to be engaged by both respective gear teeth 129 and 131 formed on the racks. A lug 133 formed on plate 48 has a slot which slidably mounts link 128. It will be seen that if either of the racks 44 or 46 moves downward as viewed in FIGURE 1, it drives pinion 124 along the other rack to move pivot pin 126 downward the same amount. After the deposit of a sum in coins in the machine to permit movement of respective racks 44 and 46, pivot pin 126 has moved downward a distance corresponding to the sum of the coins deposited

in the machine. The lower end of link 128, as viewed in FIGURE 1, carries a pin 130 which extends through a slot 132 formed in plate 12.

Referring now to FIGURES 2 and 3, pin 130 engages a recess 134 formed in the lower end of a drive link 136 slidably mounted in a bracket 138 secured to plate 12 by any convenient means such as welding or the like. As link 128 moves downward as viewed in FIGURES 1 to 3, pin 130 drives link 136 downward. Gear teeth 140 formed on link 136 engage the pinion 142 of a totalizer switch, indicated generally by the reference character 144. Screws 146 fix the contact plate 148 and cover plate 152 of switch 144 on plate 12. A pin 150 pivotally carried by plate 152 and by side 12 carries pinion 142 and switch contact arm 154 for rotation with it. Switch 144 includes a plurality of contacts 156 adapted to be engaged by contact arm 154. In the embodiment of my invention as shown, switch 144 includes eleven contacts corresponding respectively to deposits in the totalizer of from zero to fifty cents in five-cent increments.

Respective conductors 158 connect the contacts 156 corresponding to deposits of from five to fifty cents to terminals 160 of the electrical circuit of my coin totalizer to be described in detail hereinafter. In response to the deposit of coins in the totalizer, drive link 136 positions switch arm 154 to complete electrical circuits to dispense a selected article of merchandise and to make change, if necessary, in a manner to be described.

Referring now to FIGURES 4 and 5, a support panel 162 of the machine with which my totalizer is used carries, by any convenient means such as welding or the like, a change maker slide support plate 164. A retaining plate 166 carried by panel 162 retains a change maker slide 168 on plate 164. One end of slide 168 carries a pin 170 which rides in a slot 172 formed in plate 166. A spring 174 fixed between pin 170 and a pin 176 carried by panel 162 normally urges slide 168 for movement to the left as viewed in FIGURE 4. An opening 178 in plate 166 supports a coin tube 180 containing a supply of coins, such as nickels, for making change. Slide 168 is formed with an opening 184 for receiving a coin 182 from tube 180 when the slide is in the full-line position shown in FIGURE 4. When slide 168 moves to the broken-line position shown in FIGURE 4, opening 184 registers with an opening 186 formed in plate 164 and the coin 182 passes out of opening 184 through the opening 186 into a change delivery chute, indicated generally by the reference character 188, formed by a baffle 190.

The change maker includes a latch 192 pivotally mounted on a pin 193 carried by panel 162. One end of latch 192 passes through an opening 194 in plate 166 to engage a notch or opening 196 in slide 168 to retain the slide in its full-line position against the action of spring 174. I fix a solenoid armature 198 to latch 192 for movement therewith. A solenoid winding 200 is adapted to be energized through conductors 202 and 204 to draw armature 198 upward as viewed in FIGURE 4 to lift latch 192 out of engagement with notch 196.

When a selection has been made and coins aggregating at least the purchase price of a selected article have been deposited in the totalizer, the totalizer electrical circuit, to be described in detail hereinafter, energizes a motor 206 mounted on a bracket 208 by any convenient means such as bolts 210. A key or the like 212 fixes a change maker slide actuating wheel 214 on the shaft 216 of motor 206 for rotation with it. Wheel 214 includes teeth 218 adapted to engage the left end of slide 168, as viewed in FIGURE 4, to move the slide to the right against the action of spring 174. Wheel 214 includes a number of teeth 218 equal to the maximum number of coins which are to be given in change on any individual operation of the machine. In the embodiment of my totalizer shown, a maximum of four coins in change are given. Before an operation of my totalizer, wheel 214 is in the position

shown. If change is to be made, solenoid 200 is energized to lift latch 192 out of opening 196. With the latch disengaged, as a tooth 218 of wheel 214 passes by the left end of slide 168 as the wheel rotates in the direction of the arrow in FIGURE 4, slide 168 moves to the left under the influence of spring 174 to drop a coin 182 through opening 186 into chute 188. As wheel 214 continues to rotate, another tooth 218 engages slide 168 to move it to the right, as viewed in FIGURE 4, against the action of spring 174 to receive another coin in its opening 184. If solenoid 200 is not energized at this time, latch 192 again falls into opening 196 and no further change is given during the operation of the machine. If solenoid 200 remains energized, additional coins in change up to three coins are given in change to a customer. It will be appreciated that if a quarter is the largest denomination coin which can be received by the machine, the maximum amount of change which need be given is, for any deposit, four nickels, where the article sale price is a nickel.

Referring again to FIGURE 1, after having passed through the respective coin passages 36, 26, 38, nickels, dimes and quarters pass into an escrow bucket, indicated generally by the reference character 220, fixed to plate 12 by any convenient means such as screws 222. Bucket 220 includes a base 224 retained in a position to close the bottom of bucket 220 by a spring 226 fixed between a pin 228 on bucket 220 and a pin 230 on base plate 224. Base plate 224 is adapted to be pivoted about its left edge as viewed in FIGURE 1 to direct coins from the bucket into a suitable coin receptacle (not shown) of a type known to the art. Plate 224 is adapted to be tilted about its right edge, as viewed in FIGURE 1, to direct coins contained in the bucket to a coin return chute in a manner known to the art. I form base plate 224 with an arm 232 pivotally connected by a pin 234 to a link 236. A pin 238 pivotally connects the end of link 236 remote from pin 234 to one end of a coin bucket actuating lever 240.

Referring now to FIGURES 1, 2, 4 and 5, a pin 242 mounts the hub 244 of a crank plate 246 on shaft 216 for rotation with it. Plate 246 carries a pin 248 which pivotally supports one end of a link 250, the other end of which carries a pin 252 which engages the bifurcated upper end 254 of a coin dumping and reset arm 256 mounted on a fixed pivot (not shown). A spacer 251 between link 250 and plate 246 ensures that there is sufficient clearance to permit link 250 to pass by the hub 244 of crank plate 246 as the plate rotates. Arm 256 carries a first roller 258 passing through an arcuate slot 260 in plate 12. As motor shaft 216 rotates to drive crank plate 246, link 250 oscillates arm 256 to move roller 258 to engage a cam surface 262 formed on the underside of lever 240, as viewed in FIGURE 1. A pin 264 pivotally mounts lever 240 on plate 12. As roller 258 engages surface 262 it pivots lever 240 in a clockwise direction, as viewed in FIGURE 1, to drive link 236 to pivot base plate 224 about its left end, as viewed in FIGURE 1, to direct coins in bucket 220 to a suitable receptacle.

As arm 256 pivots to the right as viewed in FIGURE 2, a second roller 266 pivotally carried by the arm engages a cam surface 268 formed on the underside of a reset lever 270 pivotally mounted on a pin 272 carried by plate 12. Engagement of roller 266 with surface 268 pivots lever 270 in a counterclockwise direction as viewed in FIGURE 2 to engage a leaf spring 274 carried by lever 270 with pin 130 to reset racks 44 and 46 and totalizer switch arm 154.

The machine with which my totalizer is used includes a coin return rod 276 mounted for vertical sliding movement on plate 12 by any convenient means (not shown). A pin 278 pivotally connects rod 276 to an arm 280 carried by a pin 282 on plate 12. Rod 276 carries a pin

284 which passes through a slot 286 in plate 12 to engage a slot 288 formed in a link 290 pivotally connected by a pin 292 to the end of lever 240 remote from pin 238. Coin return rod 276 is adapted to be freed in a manner to be explained hereinafter when the supply of a particular article of merchandise is exhausted. Movement of the freed coin return rod downward, as viewed in FIGURE 2, carries pin 284 downward in slot 288 to cam link 290 slightly to the right, as viewed in FIGURE 1. Continued movement of pin 284 downward pivots lever 240 in a counterclockwise direction, as viewed in FIGURE 1, to pivot base plate 224 about its right edge, as viewed in FIGURE 1, to direct coins in bucket 220 to a coin return chute (not shown). Plate 12 carries, by means such as rivets 294, a bracket 296 formed with stop means 298 which engage the lower end of link 290 to prevent a dishonest customer from actuating the coin bucket operating lever 240 by jarring the machine to return coins after the machine is conditioned to operate before the coins have been accepted. Operation of the freed coin return bar 276 cams link 290 clear of stop means 298.

Rod 276 pivotally supports a roller 300 for engaging a surface 302 of lever 270 as the rod moves downward. Engagement of roller 300 with surface 302 pivots lever 270 to return racks 44 and 46 and totalizer switch arm 154 when the coin return rod 276 is actuated.

Referring now to FIGURE 6, the electrical circuit of my totalizer includes a pair of conductors 304 and 306 connected respectively to terminals 308 and 310 of a suitable source of electrical potential. Conductor 312 connects totalizer switch arm 154 to conductor 304. As has been explained hereinabove, arm 154 is adapted to be actuated in response to the deposit of coins in the machine to engage one of the respective contacts 156 of the totalizer switch. As is also explained hereinabove, respective conductors 158 connect contacts 156 to respective terminals 160. The machine with which my coin totalizer is to be used may include a selector switch indicated generally by the reference character 314 including respective contact arms 316, 318, 320, 322 and 326 ganged by suitable mechanical means indicated by reference character 328. If three different kinds or brands of articles are to be dispensed by the machine each selling at a different price, a respective group of three contacts 330, 332 and 334 is associated with each of the arms 316, 318, 320, 322 and 326. It will be seen that switch 314 has three positions and in any one of the positions each of the arms 316, 318, 320, 322 and 326 engages a corresponding terminal 330, 332, or 334 of its group.

We connect predetermined terminals of the groups associated with arms 316, 318, 320 and 322 to the proper ones of terminals 160 to dispense the articles of merchandise at a set price and to make change as required, in a manner which will be explained hereinafter. For purposes of convenience, I have designated the terminals 160 connected to the respective contacts 158 corresponding to the deposit in the totalizer of from 5 cents to 50 cents in 5-cent increments by respective reference characters 160*a* to 160*j*. My totalizer also includes contacts 160*k* to 160*n* to which certain of the selector switch contacts are connected to provide proper change circuits. The connection between the contacts 330, 332, or 334 corresponding to the selector switch arms and terminals 160*a* to 160*n* may be set for sale prices of from 5 cents to 50 cents in 5-cent increments. The pattern of connections shown in FIGURE 6 is arranged to dispense an article of merchandise corresponding to terminals 330 at a price of 15 cents. An article of merchandise corresponding to terminals 332 is sold at a price of 10 cents. An article of merchandise corresponding to terminals 334 is sold at a price of 35 cents. The proper connections for selling an article of merchandise at various prices are shown in the following table:

TABLE I

Connections of contacts 330, 332, or 334 corresponding to various selector switch arms to terminals 160a–160n for various sale prices

Price	Selector Switch Arm			
	316	318	320	322
5¢	160*a*	160*b*	160*n*	
10¢	160*b*		160*m*	
15¢	160*c*	160*d*	160*l*	
20¢	160*d*		160*k*	
25¢	160*e*	160*f*		
30¢	160*f*	160*g*		160*n*
35¢	160*g*	160*h*		160*m*
40¢	160*h*	160*i*		160*l*
45¢	160*i*	160*j*		160*k*
50¢	160*j*			

It will be understood that conductive leads 336, 341, 344, 338, 346, 340 and 342 are provided with readily detachable terminals so that they may be shifted to make contact with any of terminals 160*a* to 160*m*, inclusive. In accordance with the pattern of connections set forth in the table, a conductor 336 connects contact 330 associated with arm 316 to terminal 160*c*. A conductor 338 connects the contact 330 associated with arm 318 to terminal 160*d*. A conductor 340 connects contact 330 associated with arm 320 to terminal 160*l*. Contact 330 associated with arm 322 is left unconnected for this sale price of the article corresponding to terminals 330. Respective conductors 341 and 342 connect contacts 332 corresponding to arms 316 and 320 to terminals 160*b* and 160*m*. Contacts 332 corresponding to arms 318 and 322 are left unconnected. Respective conductors 344, 346 and 348 connect the contacts 334 corresponding to switch arms 316, 318 and 322 to terminals 160*g*, 160*h*, and 160*m*. The contact 334 associated with arm 320 is left unconnected. Other various sale prices of from 5-cent to 50-cent increments can be set for the various units of the machine in accordance with the above table.

A conductor 350 connects the contact arm 316 of switch 314 to one contact 352 of a motor follow-through switch including a contact arm 354 connected by a conductor 356 to one terminal of motor 206. Conductor 306 is connected to the other motor terminal. Arm 354 normally engages contact 352. When a sum in coins corresponding to the purchase price of an article of merchandise has been deposited in the totalizer, the circuit of motor 206 is completed from terminal 308 through conductor 304, through conductor 312, through the totalizer switch 144, through selector switch arm 316, through conductor 350, through contact 352, through arm 354, through conductor 356, through motor 206 and through conductor 306 to terminal 310. As soon as motor 206 begins to rotate, a follow-through cam 358 fixed on shaft 216 by means such as a set screw 360 urges a cam follower 362 out of a recess 364 formed in cam 358. Follower 362 actuates a linkage 366 to force arm 354 out of engagement with contact 352 and into engagement with a second contact 368. A conductor 370 connects contact 368 to conductor 304 to maintain the circuit of motor 206 for a single rotation of shaft 216. This follow-through circuit is necessary since, as soon as motor 206 begins to rotate, it drives link 250 to begin resetting the totalizer switch 144 to interrupt the circuit through the totalizer switch. It is to be understood that when a sum in coins equaling the purchase price of an article of merchandise has been deposited in the totalizer, arm 154 engages the contact 156 connected to the contact 160 to which the contact 330, 332, or 334 corresponding to the selected article of merchandise is connected.

A set screw 370 mounts a second cam 372 on shaft 216 for rotation with it. A projection 374 on cam 372 actuates a follower 376 connected to a switch arm 378 by a linkage 380. As shaft 216 rotates, cam 372 moves

arm 378 to engage a switch contact 382 connected by a conductor 384 to one terminal of a dispensing relay winding 386. I connect the other terminal of winding 386 to conductor 306 by a conductor 388. A conductor 389 connects arm 378 to conductor 304. Respective conductors 390 and 392 connect a selector switch latch solenoid 394 in parallel with winding 386. Solenoid 394 operates a selector switch latch (not shown) of a type known in the art to prevent a change of selection after a dispensing operation has been initiated. Thus, a dishonest person cannot obtain two articles of merchandise during one operation of the machine. When cam 372 closes switch 378 it completes the circuit of windings 386 and 394 from terminal 308 through conductor 304; through conductor 389; through contact arm 378; through conductor 384; through parallel connected windings 386 and 394; through conductor 388; and through conductor 306 to terminal 310. The momentary energization of winding 386 by the engagement of arm 378 with contact 382 actuates respective contact arms 396 and 398 to engage contacts 400 and 402. A conductor 404 connects arm 396 to conductor 304. Conductor 406 connects arm 398 to a contact arm 408 of a reset switch normally in engagement with a contact 410 connected to conductor 404. I connect contact 402 to the terminal of winding 386 to which conductor 384 is connected. It will be seen that the engagement of arm 398 with contact 402 completes a holding circuit for windings 386 and 394 from terminal 308 through conductor 304; through conductor 404; through arm 408; through conductor 406; through arm 398; through windings 386 and 394 to conductor 388. Energization of winding 394 engages a contact arm 412 with a contact 414. A conductor 416 connects arm 412 to contact 400. A conductor 418 connects contact 414 to one terminal of each of the respective delivery solenoids 420, 422 and 424 of the machine with which my totalizer is associated. Respective conductors 426, 428 and 430 connect solenoids 420, 422 and 424 to respective contacts 432, 434 and 436 of empty switches including contact arms 438, 440 and 442 normally in engagement with the respective contacts 432, 434 and 436. Respective conductors 444, 446 and 448 connect arms 438, 440 and 442 to the respective selector switch contacts 330, 332 and 334 associated with selector switch arm 326, which is connected by a conductor 450 to conductor 306. Energization of windings 386 and 394 to engage respective arms 396 and 412 with contacts 400 and 414 completes the circuit of the delivery solenoid 420, 422, or 424 corresponding to the selected kind of merchandise from terminal 308 through conductor 304; through conductor 404; through arm 396; through conductor 416; through arm 412; through conductor 418; through a solenoid 420, 422, or 424; through a conductor 426, 428, or 430; through an arm 438, 440, or 442; through a conductor 444, 446, or 448; through the contact 330, 332, or 334 engaged by arm 326; through arm 326; through conductor 450; and through conductor 306 to terminal 310. It is to be understood that the solenoid 420, 422, or 424, which is energized is determined by the position of switch arm 326 to engage one of the contacts 330, 332, or 334. Arm 326 is positioned when a customer makes his selection. Energization of a solenoid 420, 422, or 424 actuates a dispensing mechanism (not shown) of any type known in the art to deliver a selected article of merchandise to a customer. As the article dispensed passes down the machine delivery chute (not shown), it actuates arm 408 to move the arm out of engagement with contact 410 to interrupt the holding circuit of winding 386 to permit arms 396, 398 and 412 to reset.

The machine with which my totalizer is used includes means for informing a customer that the supply of merchandise of the kind he desires is exhausted. A conductor 452 connects one terminal of a signal lamp 454 to conductor 304. A conductor 456 connects the other terminal of signal lamp 454 to contacts 458, 460 and 462 associated with respective switch arms 438, 440 and 442. If the supply of a particular kind or brand of merchandise is exhausted, the associated empty switch contact arm 438, 440, or 442 is moved mechanically in a manner known to the art out of engagement with its respective contact 432, 434, or 436 and into engagement with a respective contact 458, 460, or 462. This action prevents completion of the circuit of the associated delivery solenoid 420, 422, or 424 and completes the circuit of signal lamp 454 from terminal 308 through conductor 304; through conductor 452; through lamp 454; through conductor 456; through the operated contact arm 438, 440, or 442; through conductor 444, 446, or 448; through arm 326; through conductor 450; and through conductor 306 to terminal 310. I connect a solenoid 464 in parallel with lamp 454 to be energized to free the totalizer coin return mechanism when the supply of the selected article of merchandise is exhausted.

When a sum in coins in excess of the purchase price of an article of merchandise has been deposited in the totalizer, the circuit of motor 206 is completed through one of a plurality of respective change making relay windings 466, 468 and 470. A conductor 472 connects one terminal of winding 466 to selector switch contact arm 318. A conductor 474 connects one terminal of winding 468 to terminal 160*e*; a conductor 476 connects one terminal of winding 470 to terminal 160*j*. A conductor 478 connects the other terminal of windings 466, 468 and 470 to a contact 480 normally engaged by the contact arm 482 of a change tube empty switch. Arm 482 is connected to conductor 306. From Table I it can be seen that the contacts 330, 332 and 334 associated with arm 318 are shown connected to such predetermined ones of terminals 160*a* to 160*j* that winding 466 is energized when a sum exceeding by 5 cents the purchase price of a selected article has been deposited in the totalizer. For example, if the purchase price of an article is 5 cents, the corresponding terminal 330, 332, or 334 associated with arm 318 is connected to the terminal 160*b* which corresponds to the deposit of a dime in the totalizer. It will be obvious that where the sale price is, for example, a dime, the corresponding terminal 330, 332, or 334 associated with arm 318 need not be connected to terminal 160*c* since the occasion would not arise for the giving of only a single nickel in change for this sale price. In other words, no single coin exceeding this purchase price by only a nickel could be inserted in the totalizer. Where a sum in coins requiring a nickel in change has been deposited in the totalizer, the circuit of winding 466 is complete from terminal 308 through conductors 304 and 312, through arm 154, through a conductor 158 and a terminal 160, through a conductor connected to the proper contact 330, 332, or 334 associated with arm 318, through arm 318, through conductor 472, through winding 466, through conductor 478, through arm 482, and through conductor 306 to terminal 310. Energization of winding 466 engages respective contact arms 484 and 486 with contacts 488 and 490. A conductor 492 connects arm 484 to terminal 160*k*. A conductor 494 connects terminal 160*k* to a contact 496 of an interrupting switch including an arm 498. A conductor 500 connects arm 498 to conductor 356. I connect contact 488 to conductor 472.

It will be remembered that upon the deposit in the totalizer of a sum in coins exceeding the purchase price of a selected article by 5 cents, a circuit is completed from terminal 308 to conductor 472. Energization of winding 466 to engage arm 484 with contact 488 completes the circuit of motor 206 from conductor 472 through arm 484; through conductor 492; through conductor 494; through arm 498; through conductors 500 and 356; through motor 206; and through conductor 306 to terminal 310. Energization of motor 206 permits completion of a delivery cycle in the same manner as that described in connection with the deposit in the totalizer of a sum in coins equal to the purchase price of an

article. It will be appreciated that engagement of arm 484 with contact 488 bypasses the selector and totalizer switches to provide a holding circuit for relay winding 466.

A conductor 502 connects contact 490 to one terminal of the change slide latch solenoid 200, the other terminal of which is connected by a conductor 504 to conductor 306. A conductor 506 connects arm 486 to conductor 304. As has been explained hereinabove, energization of solenoid 200 lifts latch 192 to permit wheel 214 to actuate slide 168 to dispense coins in change from tube 180. If solenoid 200 remains energized for a complete revolution of shaft 216, four nickels in change are given the customer. It will be remembered that winding 466 is energized when only a single nickel in change is to be given. I provide means for interrupting the circuit of winding 466 to de-energize solenoid 200 after a single operation of slide 168. A set screw 508 fixes a cam 510 on shaft 216 for rotation with it. A projection 512 on cam 510 actuates a follower 514 before shaft 216 completes a quarter of one revolution to move arm 498 out of engagement with contact 496 to interrupt the holding circuit for winding 466. This interruption permits arm 486 to move out of engagement with contact 490 to interrupt the circuit of latch solenoid 200. This permits only a single operation of slide 168 to give one nickel in change.

Winding 468 is energized upon the deposit in the totalizer of a quarter by reason of the connection of winding 468 to terminal 160*e* by conductor 474. Energization of winding 468 engages respective arms 516 and 518 with contacts 520 and 522. A conductor 524 connects arm 518 to arm 320 of totalizer switch 314. Respective conductors 526 and 528 connect contacts 530 and 532 of interrupter switches including arms 534 and 536 to terminals 160*l* and 160*m*. As can be seen by reference to Table I, I connect the contacts 330, 332 and 334 associated with arm 320 to certain of terminals 160*k*, 160*l*, or 160*m* to connect one of the interrupter switch arms 498, 534, or 536 in the holding circuit of winding 468 to give from one to three nickels in change. If four nickels in change are to be returned, as, for example, on the deposit of a quarter, when a 5-cent purchase price is set, I connect the contact 330, 332, or 334 associated with arm 320 to terminal 160*n*. If the price of the article being dispensed is 15 cents, so that two nickels are to be given in change, the terminal 330, 332, or 334 associated with arm 320 is connected to terminal 160*l*. Energization of winding 468 engages arm 518 with contact 522 to complete the circuit of motor 206 from terminal 308 through conductor 304; through conductor 312; through arm 154; through conductor 474; through arm 518; through conductor 524; through arm 320; through a conductor, such as conductor 340, to terminal 160*l*; through conductor 526; through arm 534; through conductor 500; through conductor 356; through motor 206; and through conductor 306 to terminal 310. Engagement of arm 518 with contact 522 also completes the holding circuit for winding 468. Energization of winding 468 also engages arm 516 with contact 520 to complete the circuit of the change slide latch solenoid 200. A set screw 538 fixes a cam 540 on shaft 216 for rotation with it. A projection 542 on cam 540 actuates a follower 544 to move arm 534 out of engagement with contact 530 to interrupt the holding circuit of winding 468 before shaft 216 completes a half revolution. This action permits wheel 214 to actuate slide 168 twice to deliver two nickels in change. It will be remembered that when motor 206 begins to rotate, it completes its own follow-through circuit by moving arm 354 into engagement with contact 368.

If a quarter has been deposited and three nickels in change are to be given, the circuit of motor 206 is completed through the interrupting switch including arm 536. A set screw 546 mounts a cam 548 on shaft 216 for rotation with it. A projection 550 on cam 548 actuates a follower 552 to move arm 536 out of engagement with contact 532 to interrupt the holding circuit of winding 468 before shaft 216 completes three-quarters of a revolution. This action permits slide 168 to deliver three nickels in change. If a quarter has been deposited in the totalizer and four nickels in change are to be given, the circuit of motor 206 is initially completed through arm 518 and through a conductor 554 which connects terminal 160*n* to conductor 356. This also provides the holding circuit for winding 468. It will be seen that the holding circuit of winding 468 in this case is not interrupted during the revolution of shaft 216. Consequently, slide 168 delivers four nickels in change. When motor 206 completes a revolution, follower 362 drops into recess 364 to open the motor circuit.

When two quarters have been deposited in the totalizer, arm 154 engages the contact 156 connected to terminal 160*j* to complete the circuit of change making relay winding 470 from terminal 308 through conductor 304; through conductor 312; through arm 154; through winding 470; through arm 482; and through conductor 306 to terminal 310. Energization of winding 470 engages respective arms 556 and 558 with contacts 560 and 562. A conductor 564 connects arm 558 to selector switch arm 322.

As can be seen by reference to Table I, I connect the contacts 330, 332 and 334 associated with arm 322 to certain ones of the terminals 160*k* to 160*n* to give from one to four nickels in change as required. If only a single nickel is to be returned, relay winding 466 is energized in a manner described hereinabove. Energization of winding 470 also engages arm 556 with contact 560 to energize solenoid 200. If two nickels are to be given in change, the holding circuit for winding 470 is completed through the interrupting switch including arm 534. If three nickels in change are to be given, the holding circuit of winding 470 is completed through the interrupting switch including arm 536. If four nickels in change are to be given, the holding circuit for winding 470 is completed through conductor 554. After the initial energization of motor 206 through one of the interrupting switches including respective arms 498, 534 and 536 or through conductor 554, cam 358 forces arm 354 into engagement with contact 368 to complete the holding circuit for motor 206 for one revolution. Upon the deposit in the totalizer of any sum in coins in excess of the purchase price of an article to energize motor 206 in the manner described, the delivery operation of the machine takes place in the manner described hereinabove in connection with the deposit in the totalizer of a sum in coins equal to the purchase price of the article.

I provide my totalizer with means for indicating to the customer that the supply of change is exhausted and that he should use exact change. Respective conductors 566 and 568 connect a signal lamp 570 between a contact 572 associated with arm 482 and conductor 304. When the supply of coins such as nickels 182 in tube 180 is exhausted, switch arm 482 pivots to engage contact 572 to complete the circuit of signal lamp 570 from conductor 304 through conductor 568; through the lamp 570; through conductor 566; and through arm 482 to conductor 306.

In operation of my electromechanical coin totalizer, a customer deposits a sum in coins in the machine with which my totalizer is used. Coin separator and slug ejector 16 delivers quarters, dimes and nickels into the respective coin passages 38, 26 and 36. Passage of a quarter downward through passage 38 actuates arm 98 to permit a predetermined downward movement of rack 46 to drive pinion 124 downward as viewed in FIGURE 1. This action moves link 128 downward to permit drive link 136 to move downward as viewed in FIGURE 2 to pivot arm 154 to engage the contact 156 corresponding

to the deposit of a quarter. Passage of a nickel downward through passage 36 actuates arm 112 to permit a predetermined downward movement of rack 44. This movement permits drive link 136 to move to step arm 154 from one contact 156 to the following contact in a clockwise direction as viewed in FIGURE 2. Passage of a dime downward through passage 26 moves arm 154 through a distance of two contacts 156 in a clockwise direction as viewed in FIGURE 2. It will be seen that in response to the passage of coins downward through passages 38, 26 and 36, arm 154 moves to engage a contact 156 corresponding to the sum in coins passing through the passages.

In the selector switch arrangement shown, as soon as a sum in coins equal to the purchase price of a selected article of merchandise has been deposited, the circuit of motor 206 is completed through the totalizer and selector switches 144 and 314 in the manner described hereinabove. It will be understood by those skilled in the art that I may interrupt the circuit by a push button so that the machine will not operate until a push button has been actuated. As motor 206 rotates, cam 358 engages arm 354 with contact 368 to complete the motor holding circuit. Upon continued rotation of shaft 216, cam 372 engages arm 378 with contact 382 to complete the circuits of the relay windings 386 and 394. Energization of windings 386 and 394 engages respective arms 396, 398 and 412 with contacts 400, 402 and 414 to complete the circuit of a delivery solenoid 420, 422, or 424 corresponding to the selected kind of merchandise. The energized solenoid operates the delivery mechanism (not shown) of the machine with which my totalizer is used in a manner known to the art. The delivered article of merchandise moves reset switch arm 408 out of engagement with contact 410 to permit relay windings 386 and 394 to reset. If the supply of a selected kind of merchandise is exhausted, the associated arm 438, 440, or 442 moves to engage its contact 458, 460, or 462 to complete the circuit of signal lamp 454 and of the coin return relay solenoid 464 to inform the customer and to permit him to actuate the coin return mechanism.

As shaft 216 rotates, it drives crank plate 246 to drive link 250 to pivot arm 256 to the right as viewed in FIGURE 2. As arm 256 pivots, roller 266 engages surface 268 to pivot lever 270 to engage spring 274 with pin 130 to return pinion 124 and racks 44 and 46. This action also returns link 136 and switch arm 154 driven by the link. Movement of arm 256 also engages roller 258 with surface 262 to pivot lever 240 to move base plate 224 to permit coins in bucket 220 to pass to a suitable receptacle (not shown).

If the customer wishes his money returned, as when the supply of the selected kind of merchandise is exhausted, he moves the freed coin return bar downward as viewed in FIGURE 2. Pin 284 carried by the link operates link 290 in a manner explained hereinabove to pivot lever 240 to move base plate 224 to direct the money in bucket 220 to a coin return chute (not shown). Actuation of bar 276 to return coins engages roller 300 with surface 302 of lever 270 to pivot the lever to reset racks 44 and 46 and switch arm 154.

If a selection is made and a coin or coins aggregating a sum exceeding the purchase price of the selected article by 5 cents have been deposited in the machine, a nickel in change must be given. Upon such a selection and deposit, the circuit of change maker relay winding 466 is complete through the totalizer and selector switches, through the winding 466, and through the change tube empty switch including arm 482. Energization of winding 466 momentarily completes the circuit of motor 206 through the interrupting switch including arm 498 and through switch arm 484. This circuit also comprises the holding circuit for winding 466. As motor 206 starts to rotate, it engages the arm 354 with contact 368 to complete the motor follow-through circuit. The dispensing operation then takes place in the manner described in connection with the deposit in the machine of a sum in coins equaling the purchase price of a selected article. Energization of winding 466 also completes the circuit of the change slide latch solenoid 200 through contact arm 486. Energization of winding 200 permits wheel 214 to actuate slide 168 to deliver nickels in change. After a predetermined rotation of shaft 216 cam 510 moves arm 498 out of engagement with contact 496 to open the holding circuit of winding 466 to permit arm 486 to move out of engagement with contact 490 to open the circuit of winding 200. Cam 510 engages arm 498 at a time to permit only a single nickel in change to be delivered by slide 168.

If a quarter has been deposited in the machine, rack 46 moves pinion 124 to position arm 154 to engage the contact 156 corresponding to the deposit of a quarter in the machine. The only situations in which more than a single nickel in change need be given are those in which either a single quarter or two quarters have been deposited in the machine. That is, a customer having change of a quarter would not, for example deposit 20 cents in the machine to obtain a 10-cent item so as to require two nickels in change. If a quarter has been deposited in the machine, the circuit of winding 468 is completed through a correct one of the interrupting switches including arms 498, 534 and 536 or through conductor 554 to ensure that the correct change, which may be from one to four nickels, is given the customer. As is explained hereinabove, the terminals 330, 332 and 334 associated with selector switch arm 330 are connected to proper ones of the terminals 160*k* to 160*n* to achieve this result. Energization of winding 468 momentarily completes the circuit of drive motor 206 to initiate a dispensing operation in the manner described hereinabove. The engagement of arm 518 with contact 522 also completes a holding circuit for winding 468 through one of the interrupting switches including arms 498, 534 and 536, or through conductor 554, if one, two, three or four nickels in change respectively are to be given. If two nickels are to be given, cam 540 interrupts the holding circuit of winding 468 after slide 168 has delivered two nickels. If three nickels are to be given, cam 548 interrupts the holding circuit of winding 468 after three nickels have been delivered by slide 168. If four nickels are to be given, the holding circuit through conductor 554 is not interrupted. When the delivery operation is complete, the electrical and mechanical parts of my totalizer are reset in the manner described hereinabove.

If two quarters have been deposited in the machine, rack 46 drives pinion 124 to position arm 154 to engage the contact 156 corresponding to the deposit in the machine of 50 cents. This action completes the circuit of switch relay winding 470 through the terminal 160*j*. Energization of winding 470 engages arm 558 to complete the circuit of motor 206 through arm 322 and through an appropriate one of the interrupting switches including arms 498, 534 and 536 or through conductor 554. This circuit also forms the holding circuit for winding 470. A delivery operation of the machine then takes place in the manner described hereinabove. As has been explained, I connect the contacts 330, 332 and 334 to respective ones of terminals 160*k* to 160*n* to connect the proper one of the interrupting switches including arms 498, 534 and 536 or conductor 554 into the holding circuit 470 in accordance with the amount of change which must be given to the customer.

Energization of winding 470 also completes the circuit of the change slide latch solenoid 200 through arm 556. Energization of this solenoid permits slide 168 to deliver the proper number of coins in change. The operation of the interrupting switches to open the hold-

ing circuit of winding **470** is the same as the operation to open the circuit of winding **468**.

In the event that the supply of a selected kind of merchandise is exhausted, the corresponding arm **438**, **440**, or **442** moves into engagement with a contact **458**, **460**, or **462** to energize signal lamp **454** to inform the customer that the supply is exhausted. This action also energizes solenoid **464** to free the coin return mechanism.

If the supply of coins such as nickels **182** in tube **180** is exhausted, arm **482** moves to engage contact **572** to energize lamp **570** to inform the customer that he should use the exact change necessary to make a purchase.

It is to be understood that while I have shown a form of my totalizer including only three different selections of merchandise, I may provide any desired number. Furthermore, while the form of my totalizer shown includes prices of from 5 cents to 50 cents in 5-cent intervals, I may arrange my circuit to provide any number of different prices. As has been explained hereinabove, for the purposes of convenience, I have set my circuit up to dispense three different kinds of articles of merchandise which sell at three different respective prices. I have set the sale price of the article of merchandise to which contacts **330** correspond at 15 cents. The article of merchandise corresponding to contacts **332** is set to sell at 10 cents. The article of merchandise corresponding to terminals **334** is set to sell at 35 cents. It is to be understood that these prices set up may readily be changed by changing the connection between the groups of contacts **330**, **332**, **334** and the terminals **160***a* to **160***n*, in accordance with Table I.

It will be seen that I have accomplished the objects of my invention. I have provided an electromechanical coin totalizer which may be arranged to sell a number of different kinds or brands of merchandise at various respective prices. My coin totalizer is extremely flexible in that the price at which a particular article is sold may readily be changed. My totalizer is simple in construction and certain and reliable in operation. My coin totalizer may be set up to sell an article of merchandise at a price of from 5 cents to 50 cents in 5-cent increments. My totalizer automatically makes change up to four nickels.

It will be understood that certain features and subcombinations such as fall within the scope of my claims are of utility and may be employed without reference to other features and subcombinations. It is further obvious that various changes may be made in details within the scope of my claims 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:

1. In a merchandising machine having electrically operated means for dispensing an article of merchandise, a switch for energizing said electrical means, said switch comprising a plurality of contacts and a switch arm adapted successively to engage said contacts, means for moving said switch arm including a vertically positioned gravity influenced register bar and an operative connection between said register bar and said switch arm, a pinion carried by said gravity influenced registar bar, a pair of racks adapted to engage said pinion and support the same, said racks being formed with escapement teeth, said racks being formed with different respective intertooth spacings, a pair of escapements responsive to coins deposited in said machine for supporting said racks, means responsive to a coin of one denomination for actuating one of said escapements, means responsive to a coin of a second denomination for actuating the other of said escapements, said first escapement permitting one of said racks to drop said pinion through a first predetermined distance in response to the deposit of a coin of said first denomination and said second escapement being constructed to permit said second rack to drop said pinion through a second predetermined distance in response to the deposit of a coin of said second denomination.

2. In a merchandising machine having a source of electrical potential having a pair of terminals and dispensing means comprising electrical means for initiating the dispensing operation, a coin responsive control mechanism including a totalizer switch comprising a plurality of contacts corresponding to deposits in the machine of various respective sums in coins and a contact arm, means connecting said arm to one of said source terminals, means responsive to the deposit of coins in said machine for stepping said totalizer switch contact arm to engage said totalizer switch contacts, an article switch including a first contact, a first contact arm adapted to engage said first contact, means connecting said first contact and said first contact arm between a totalizer switch contact corresponding to the deposit in said totalizer of a sum in coins aggregating the purchase price of an article of merchandise and said electric means, means connecting said electric means to the other of said source terminals whereby said electric means is energized when said totalizer switch contact arm engages the totalizer switch contact corresponding to said purchase price in response to the operation of said totalizer switch stepping means, a second article switch contact, a second article switch contact arm adapted to engage said second article switch contact, a first normally open switch, operating means for said first normally open switch, means connecting said second article switch contact and said second article switch contact arm between a totalizer switch contact corresponding to a sum exceeding said purchase price by a certain amount and said switch operating means, means connecting said switch operating means to the other of said source terminals, said totalizer switch arm stepping means engaging said totalizer arm with said totalizer contact corresponding to a deposit exceeding said purchase price by said certain amount upon the deposit in the totalizer of said sum exceeding said purchase price by said certain amount to energize said switch operating means to close said normally open switch, means responsive to closing of said normally open switch for energizing said electric means and means responsive to the energization of said switch operating means for making change in said certain amount.

3. In a merchandising machine having a source of electrical potential and dispensing means comprising electric means for initiating a dispensing operation of the machine, coin responsive control mechanism including a first normally open switch, a totalizer switch having a contact arm and a plurality of contacts adapted to be engaged by said arm, said contacts corresponding to deposit in the machine of various sums in coins, means responsive to the deposit of coins in said machine for stepping said contact arm to engage said contacts, a first article switch, means connecting said first article switch to one of said totalizer switch contacts to condition the machine to dispense an article selling for a certain sum, a first series circuit including said electric means and said totalizer switch contact arm and the totalizer switch contact corresponding to the deposit of said certain sum and said first article switch for connecting said electric means across said source in response to the engagement of said contact arm with said contact corresponding to a deposit of said certain sum, a second article switch, a second series circuit including said electric means and said first normally open switch and said switch contact arm and the totalizer switch contact corresponding to a deposit of a sum exceeding said certain sum and said second article switch for connecting said electric means across said source, a change slide solenoid, means for energizing said solenoid comprising a second normally open switch and switch operating means responsive to the engagement of said contact arm with said totalizer switch contact corresponding to the deposit of a sum exceeding

said certain sum for closing said first and second normally open switches.

4. In a merchandising machine having a source of electrical potential and dispensing means comprising electric means for initiating a dispensing operation of the machine, coin responsive control mechanism including a first normally open switch, a totalizer switch having a contact arm and a plurality of contacts adapted to be engaged by said arm, said contacts corresponding to deposit in the machine of various sums in coins, means responsive to the deposit of coins in said machine for stepping said contact arm to engage said contacts, a first article switch, means connecting said first article switch to one of said totalizer switch contacts to condition the machine to dispense an article selling for a certain sum, a first series circuit including said electric means and said totalizer switch contact arm and the totalizer switch contact corresponding to the deposit of said certain sum and said first article switch for connecting said electric means across said source in response to the engagement of said contact arm with said contact corresponding to a deposit of said certain sum, a second article switch, a second series circuit including said electric means and said first normally open switch and said switch contact arm and the totalizer switch contact corresponding to a deposit of a sum exceeding said certain sum and said second article switch for connecting said electric means across said source, change maker means comprising a change slide latch solenoid, means comprising a second normally open switch for providing a circuit for energizing said solenoid, switch operating means responsive to the engagement of said contact arm with said totalizer switch contact corresponding to the deposit of a sum exceeding said certain sum for closing said first and second normally open switches, means comprising said first normally open switch and a normally closed interrupting switch for completing a holding circuit for said switch operating means and means responsive to the operation of said electric means for opening said normally closed interrupting switch a predetermined time after the energization of said electric means to interrupt the holding circuit and to de-energize the change slide latch solenoid.

References Cited in the file of this patent

UNITED STATES PATENTS

1,934,914	Dahlstrom	Nov. 14, 1933
2,050,678	Weber	Aug. 11, 1936
2,076,564	Hoban	Apr. 13, 1937
2,376,403	Thompson et al.	May 22, 1945
2,377,413	Fry	June 5, 1945
2,418,370	Simmon	Apr. 1, 1947
2,438,503	Holt	Mar. 30, 1948
2,542,034	Keefe	Feb. 20, 1951
2,581,502	Wallin	Jan. 8, 1952
2,585,718	Adams et al.	Feb. 12, 1952
2,615,545	Dolman	Oct. 28, 1952
2,646,154	Fremon	July 21, 1953
2,647,947	Nelson	Aug. 25, 1953
2,650,149	Munz et al.	Aug. 25, 1953
2,680,051	James	June 1, 1954
2,719,528	Gabrielsen	Oct. 4, 1955

FOREIGN PATENTS

17,348	Great Britain	of 1908
343,918	Great Britain	Feb. 23, 1931
354,418	Great Britain	Aug. 13, 1931
375,264	Great Britain	Dec. 24, 1932
403,366	Great Britain	Dec. 11, 1933
503,257	Great Britain	Apr. 4, 1939
601,498	Great Britain	May 6, 1948