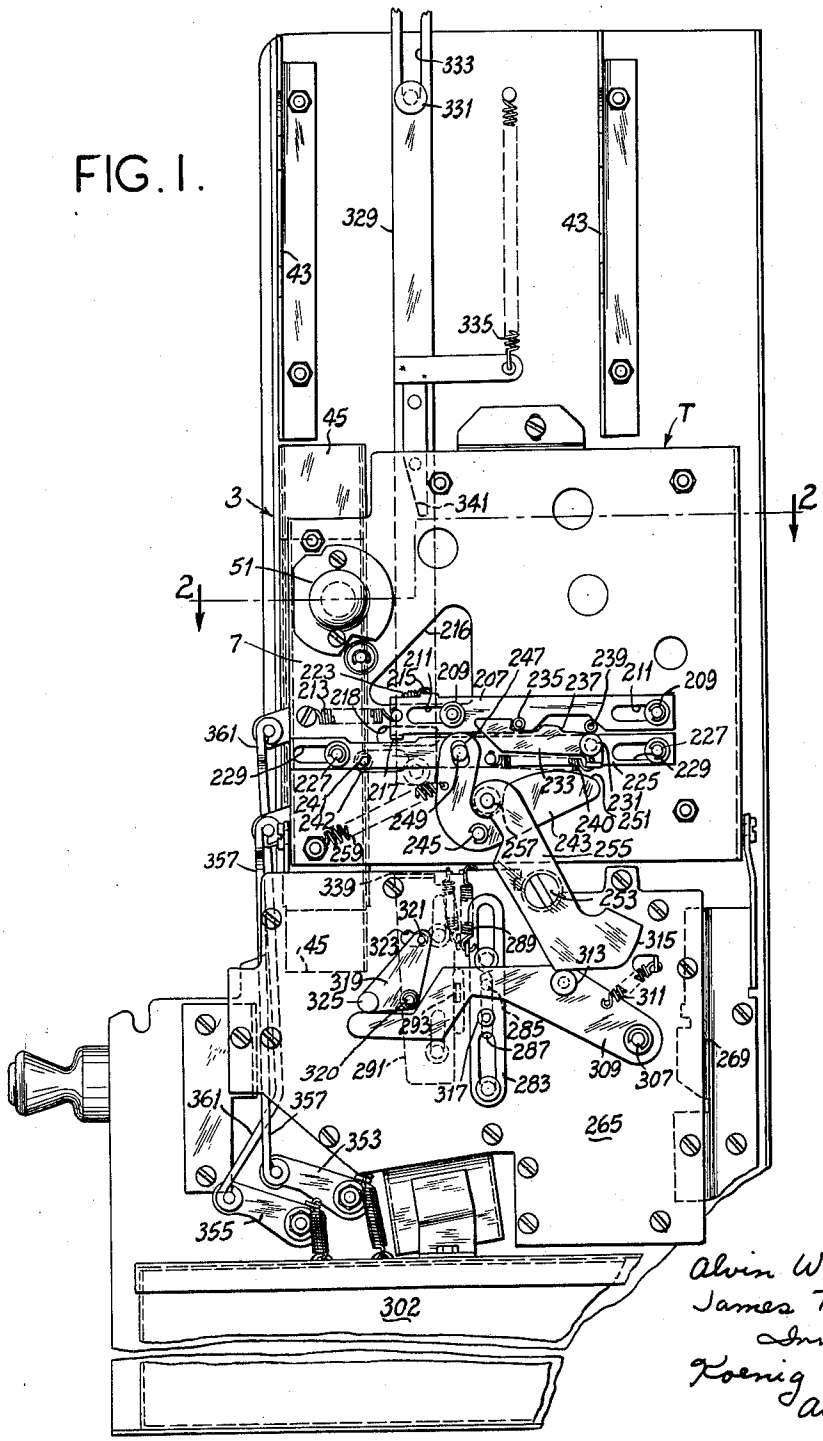
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COIN APPARATUS

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FIG. 1.




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FIG. 2.

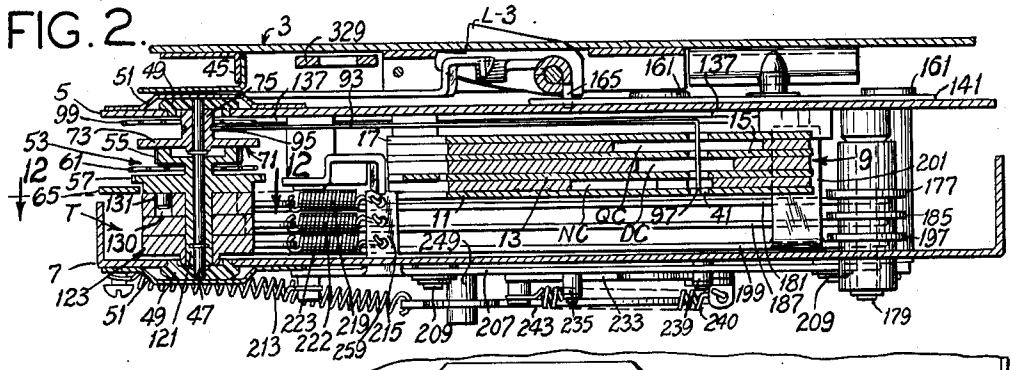
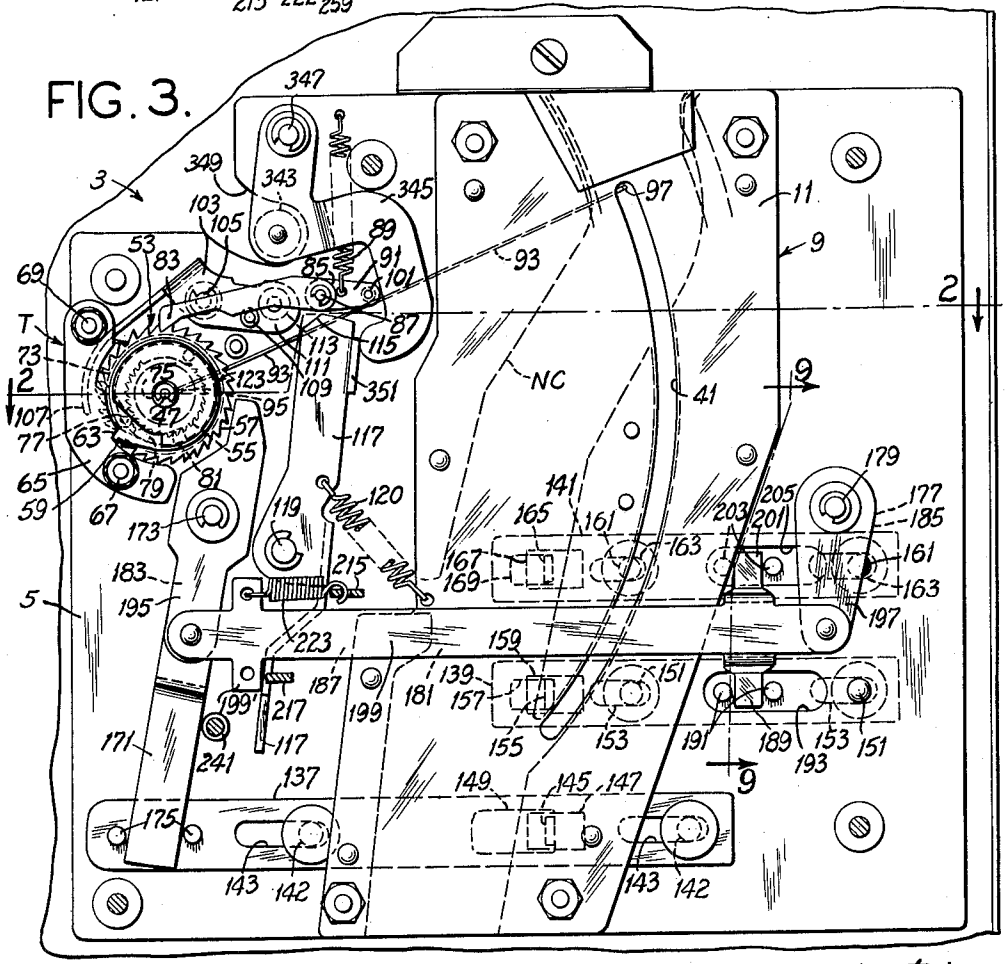



FIG. 3.




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COIN APPARATUS

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FIG. 5.

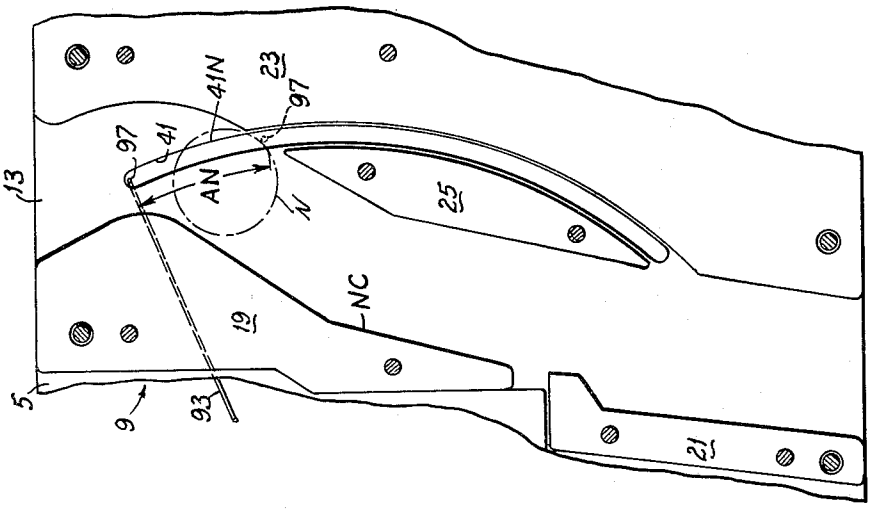
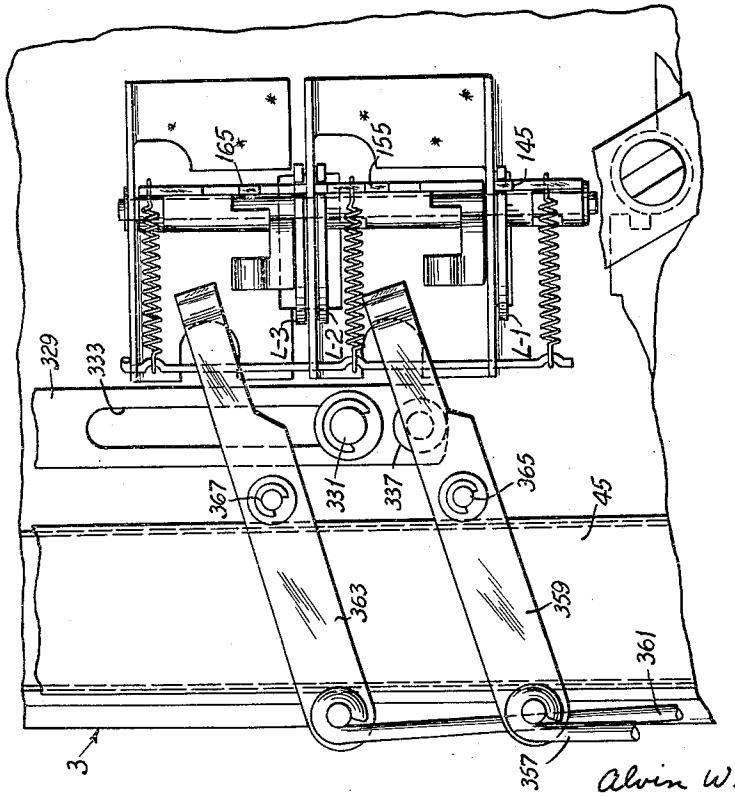



FIG. 4.




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COIN APPARATUS

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FIG. 7.

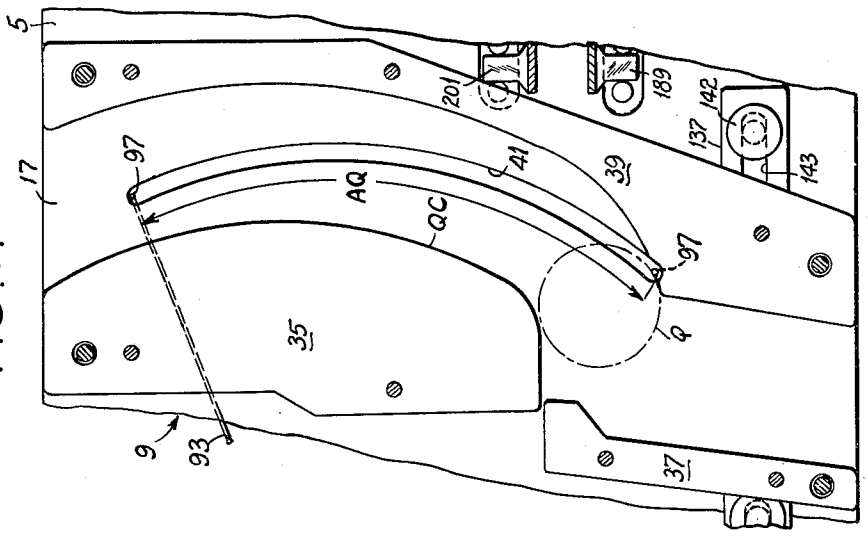
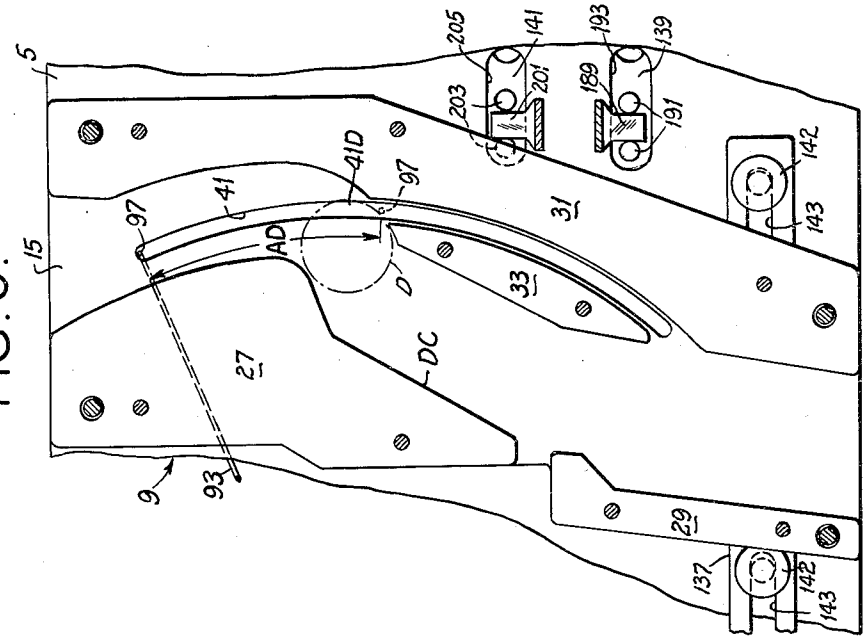



FIG. 6.




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COIN APPARATUS

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FIG. 10.

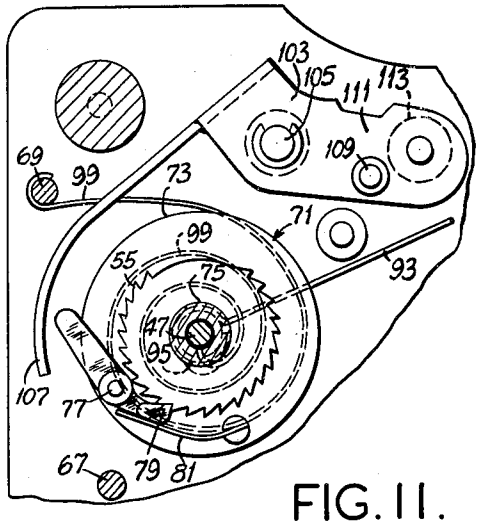



FIG. 8.

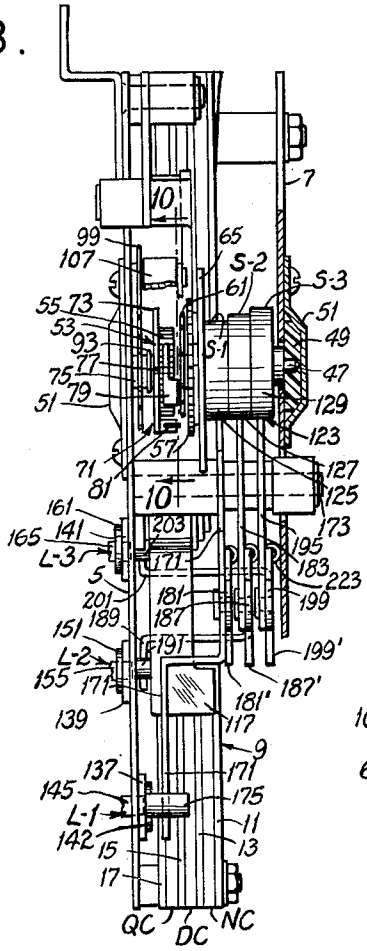



FIG. 11.

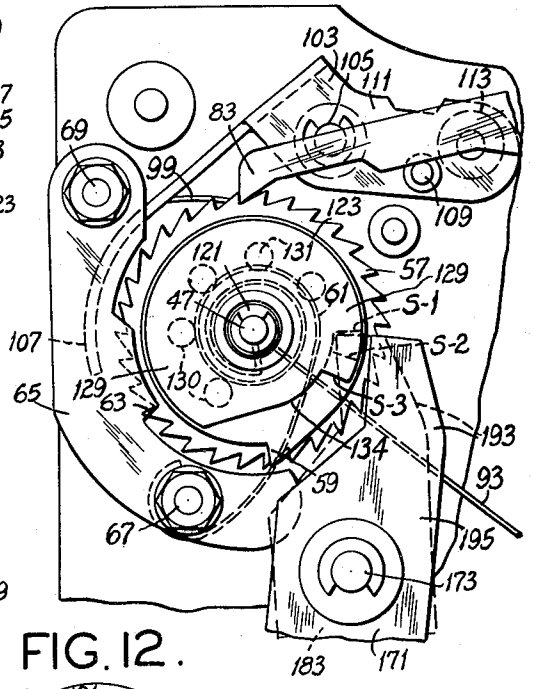



FIG. 9.

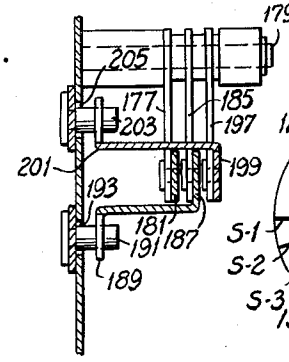
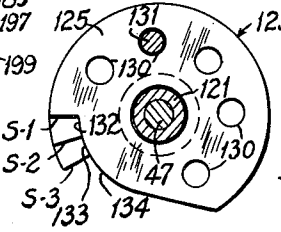



FIG. 12.




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COIN APPARATUS

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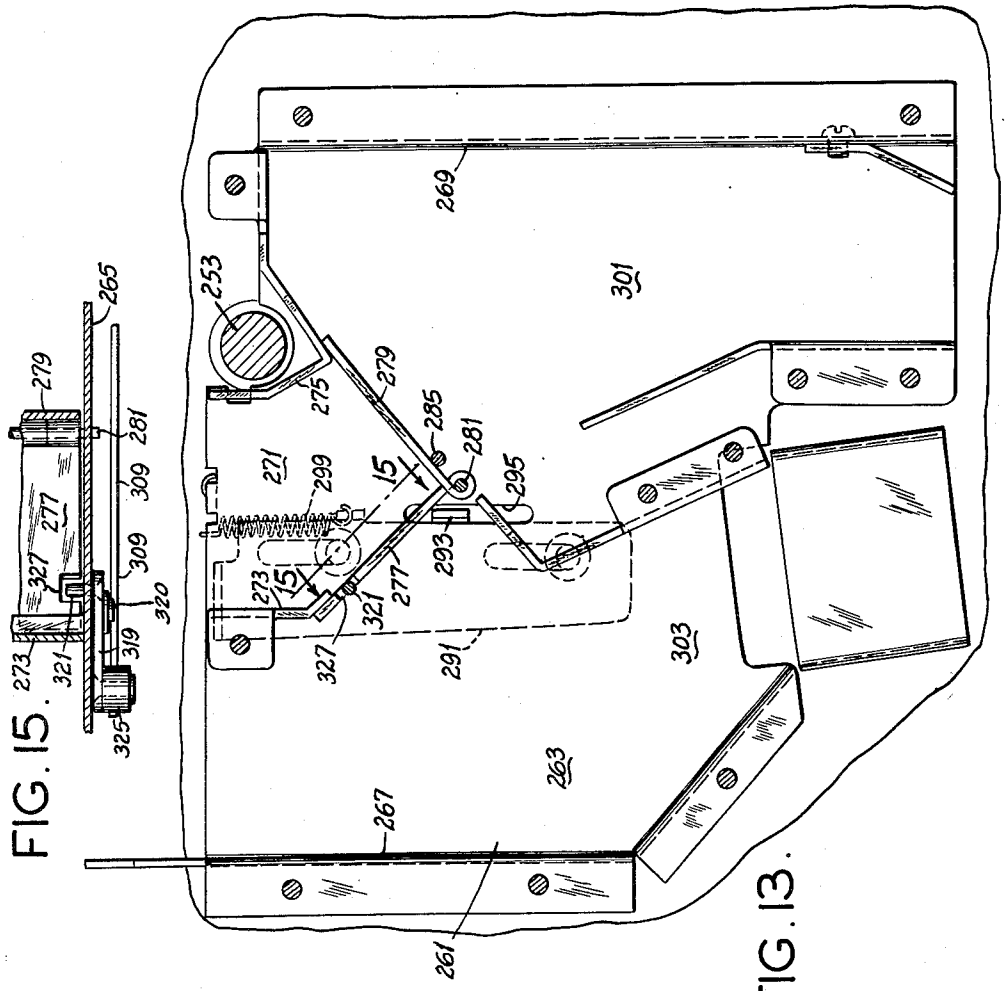



FIG. 13.

FIG. 15.

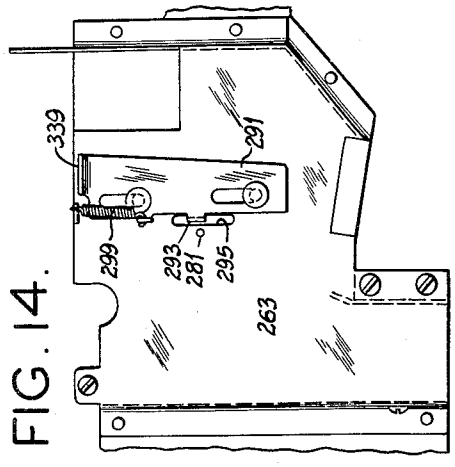



FIG. 14.

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United States Patent Office 3,028,940
Patented Apr. 10, 1962



3,028,940

# COIN APPARATUS

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Filed Dec. 20, 1956, Ser. No. 629,749
17 Claims. (Cl. 194—19)

This invention relates to coin apparatus and more particularly to such apparatus for controlling the operation of a vending machine or the like.

The invention is an improvement upon the coin apparatus shown in the copending coassigned application of Alvin W. Holstein et al., Serial No. 589,918, filed June 7, 1956, issued at Patent 2,993,581 July 25, 1961, and is illustrated herein as it pertains to a vending machine of the type shown in said patent. This vending machine comprises dispensing mechanism adapted to be locked out of operation by one or more of three latches designated L–1, L–2 and L–3. These latches are adapted to be released by mechanism controlled by a totalizer unit (designated 205 is Patent 2,993,581) for totalizing the value of coins deposited in the machine. Below the totalizer unit is a lower coin unit (designated 481 in Patent 2,993,581) for receiving coins after they have passed through the totalizer. The totalizer unit shown in Patent 2,993,581 comprises a spring-powered coin-driving wheel which is released whenever a coin is deposited to effect a registration of the totalizer. In contrast to this, the totalizer unit of the present invention is powered entirely by the weight of a coin, and its construction is simpler and more economical than that of the prior unit. Also, the weight-of-coin-powered totalizer unit of the present invention is of such construction as to effect accurate registrations, to avoid the possibility of coins piling up in the unit without any necessity for the use of an overinsertion switch, and to avoid the possibility of effecting any totalizing by jarring the vending machine in which the unit is used. Other objects and features will be in part apparent and in part pointed out hereinafter.

The invention accordingly comprises the constructions hereinafter described, the scope of the invention being indicated in the following claims.

In the accompanying drawings, in which one of various possible embodiments of the invention is illustrated,

FIG. 1 is a view in elevation showing a coin apparatus of this invention;

FIG. 2 is a horizontal section through the totalizer unit of the apparatus taken on line 2—2 of FIGS. 1 and 3, on the scale of FIG. 3;

FIG. 3 is a view in elevation of the totalizer unit with an outside plate thereof removed, on a larger scale than FIG. 1;

FIG. 4 is an enlarged fragment of FIG. 1 with the totalizer unit removed;

FIGS. 5, 6 and 7 are vertical sections showing the nickel, dime and quarter chutes, respectively, of the totalizer unit;

FIG. 8 is a left side view of FIG. 3, with parts broken away and shown in section;

FIG. 9 is a vertical section taken on line 9—9 of FIG. 3;

FIG. 10 is a vertical section taken on line 10—10 of FIG. 8;

FIG. 11 is an enlarged fragment of FIG. 3, illustrating a moved position of parts;

FIG. 12 is a vertical section taken on line 12—12 of FIG. 2;

FIG. 13 is a view of the lower coin unit of the apparatus with an outside plate thereof removed and with parts shown in section;



FIG. 14 is a view of the back of FIG. 13 half the scale of FIG. 13; and,

FIG. 15 is a section taken on line 15—15 of FIG. 13.

Corresponding reference characters indicate corresponding parts throughout the several views of the drawings.

Referring to the drawings, there is indicated at 3 the right side wall of a vending machine corresponding to that shown in Patent 2,993,581. At L–1, L–2 and L–3 (see FIG. 4) are indicated latches corresponding to latches L–1, L–2 and L–3 shown in Patent 2,993,581. At T is indicated a totalizer unit of this invention (which replaces the unit 205 of Patent 2,993,581). The totalizer unit T is mounted on the outside of side wall 3 spaced outward from the latches. It comprises vertical inside and outside mechanism plates 5 and 7. These plates are spaced one another and parallel to the side wall 3. A coin chute assembly generally designated 9 is mounted between plates 5 and 7. This assembly provides a nickel chute NC, a dime chute DC and a quarter chute QC. Each of these chutes is of elongate generally rectangular cross section (see FIG. 2) and they are located side-by-side in flatwise parallel relation. The dime chute is located between the nickel and quarter chutes, the nickel chute being located on the outside of the dime chute away from the side wall 3 and the quarter chute being located on the inside of the dime chute.

The assembly 9 comprises an outside plate 11 for the nickel chute, a plate 13 common to the nickel and dime chutes, a plate 15 common to the dime and quarter chutes, and a plate 17 for the outside of the quarter chute (the inside of assembly 9). It also comprises nickel chute spacers 19, 21, 23 and 25 (see FIG. 5), dime chute spacers 27, 29, 31 and 33 (see FIG. 6) and quarter chute spacers 35, 37 and 39 (see FIG. 7). Each of the chute plates 11, 13, 15 and 17 is slotted to provide an arcuate slot 41 through the entire assembly 9. This slot registers with the nickel chute NC from the upper end of the slot through a portion 41N of the slot having a length approximately one-fifth the entire length of the slot (see FIG. 5). It registers with the dime chute DC from its upper end through a portion 41D of its length (see FIG. 6), 41D being approximately twice as long as 41N. It registers with the quarter chute QC throughout its entire length (see FIG. 7).

It will be understood that the vending machine has a slot for nickels, dimes and quarters. Coins deposited in this slot will enter a coin selector and slug rejector device (not shown) mounted above the unit T to deliver nickels to the nickel chute NC, dimes to the dime chute DC and quarters to the quarter chute QC. Brackets for mounting the coin selector and slug rejector device are indicated at 43. The coin selector and slug rejector device also acts to reject coins of improper denominations (pennies) and spurious coins. Such rejected coins drop out of the device into a chute 45. Coin selector and slug rejector devices suitable for the purpose are well known: see, for example, U.S. Patent 2,292,628.

A shaft 47 (see FIGS. 2 and 3) has its ends journalled in nylon bearings 49 fixed in the inside and outside mechanism plates 5 and 7 of the unit T. The arc of slot 41 has its center in the axis of this shaft. Retaining caps for the bearings 49 are indicated at 51. Fixed on the shaft 47 is a ratchet 53, which functions as an indexing member. The ratchet has two series of ratchet teeth 55 and 57, and a stop tooth 59. Teeth 55 are driving teeth and teeth 57 are holding teeth. While teeth 57 are on a larger diameter than teeth 55, the spacing of teeth 55 and 57 is the same (representing five-cent increments as will be later made clear). The ratchet is biased by a clock spring 61 to rotate in clockwise direction as viewed in FIG. 3 to a zero position determined

by engagement of the stop tooth 59 with a shoulder 63 on a stop plate 65 carried by studs 67 and 69 extending from the inside plate 5. This direction is referred to as reverse direction. The ratchet is adapted to be driven in forward (counterclockwise) direction by a driver 71 rotatable on shaft 47 relative to the ratchet. The driver 71 comprises a pawl carrier constituted by a disk 73 having a hub 75 rotatable on shaft 47 inward of the ratchet. Pivoted at 77 on the face of the disk 73 toward the ratchet is a driving pawl 79 (see FIG. 10). This pawl is biased toward engagement with the series of driving teeth 55 by a leaf spring 81 carried by the disk 73. At 83 is indicated a holding pawl for engagement with the series of holding teeth 57. Pawl 83 is fixed on one end of a hub 85 rotary on a stud 87 extending from plate 5. Pawl 83 is biased toward engagement with the teeth 57 by a spring 89 connected to an arm 91 fixed on the other end of the hub 85.

A coin-driven arm constituted by a wire 93 is fixed to the disk 73 as indicated at 95 and extends between the coin chute assembly 9 and plate 5 to the slot 41, where it has a finger 97 which extends through the slot across all three chutes QC, DC, NC. A spring 99 connected to the hub of disk 73 biases the disk to rotate in reverse (clockwise) direction and biases the wire 93 to swing upward to a raised retracted position determined by engagement of the finger 97 with the upper end of the slot 41. On the arm 91 of the holding pawl 83 is a pin 101 engageable by the wire when it swings upward to its raised retracted position to drive the holding pawl downward. A reset lever 103 is pivoted on a stud 105 extending from plate 5. This lever has a curved arm 107 engageable with the driving pawl 79 to release this pawl from the ratchet teeth 55 upon counterclockwise rotation of the lever from the retracted position illustrated in FIG. 3. The lever 103 is held in its retracted position by the holding pawl 83 when the latter is in engagement with the ratchet teeth by engagement of the holding pawl with a pin 109 on an arm 111 of the lever. Pin 109 is adapted to lift the holding pawl when the lever 103 rotates counterclockwise away from its retracted position. Arm 111 also carries a roller 113 engageable by a cam edge 115 on a lever 117 pivoted at 119 on a stud extending from plate 5. Lever 117 is biased to the retracted position illustrated in FIG. 3 by a spring 120. On counterclockwise rotation of lever 117 away from its retracted position, cam edge 115 engages roller 113 to rock the reset lever 103 counterclockwise for releasing the driving pawl 79 and the holding pawl 83.

Any coin, whether a nickel, dime or quarter, falling in its respective chute NC, DC, QC engages the finger 97 on the trip wire 93 and swings the wire downward against the bias of the spring 99. A nickel falling in the nickel chute swings the wire downward through the arc AN as shown in FIG. 5 (corresponding to the portion 41N of the slot 41), at which point the finger passes out of the nickel chute and the nickel rides off the finger, continuing its fall and exiting from the lower end of the nickel chute. A dime falling in the dime chute swings the wire downward through the arc AD as shown in FIG. 6 (corresponding to the portion 41D of the slot 41), at which point the finger passes out of the dime chute and the dime rides off the finger, continuing its fall and exiting from the lower end of the dime chute. Arc AD is approximately twice arc AN. A quarter falling in the quarter chute swings the wire downward through the arc AQ as shown in FIG. 7 (corresponding to the entire length of the slot 41), at which point the finger passes out of the quarter chute and the quarter rides off the finger, continuing its fall and exiting from the lower end of the quarter chute. Arc AQ is approximately five times arc AN.

Upon the downward swing of the trip wire 93, the disk 73 rotates in reverse (clockwise) direction as viewed in FIGS. 3 and 10, and the driving pawl 79 simply clicks over the ratchet teeth 55 without rotating the ratchet 53, the latter being held against rotating in reverse (clockwise) direction by the holding pawl 83. When a coin rides off the finger 97 of the trip wire 93, the latter swings back upward under the bias of the spring 99. This rotates the disk 73 in forward (counterclockwise) direction, and the driving pawl 79 thereupon rotates the ratchet 53 in forward (counterclockwise) direction, the degree of rotation of the ratchet depending upon the arc of swing of the trip wire. In the case of a nickel, which drives the trip wire downward through the arc AN, the ratchet is rotated through a one tooth interval. In the case of a dime, which drives the trip wire downward through the arc AD, the ratchet is rotated through two tooth intervals. In the case of a quarter, which drives the trip wire downward through the arc AQ, the ratchet is rotated through five tooth intervals.

Upon the upward swing of the trip wire 93, and the consequent forward rotation of the ratchet 53, the ratchet clicks by the holding pawl 83. This causes a raising and lowering of the holding pawl. Inertia of the ratchet (and other parts to be described which rotate with the ratchet) might cause the ratchet to override (i.e. to index through more than the proper number of tooth intervals), except for the fact that the trip wire, at the conclusion of its upward swing, engages the pin 101 on the arm 91 of the holding pawl, and positively and rapidly drives the holding pawl 83 downward toward the ratchet to prevent override. Accordingly, it is assured that a nickel indexes the ratchet forward one tooth, a dime indexes the ratchet forward two teeth, and a quarter indexes the ratchet forward five teeth, and no more.

Upon any advance of the ratchet (whether one tooth, two teeth or five teeth), it is held in its advanced position against the bias of the ratchet return spring 61 by both the driving pawl 79 and the holding pawl 83. Release of the ratchet for return to its zero position under the bias of spring 61 is effected by rotating the lever 117 counterclockwise from its retracted position illustrated in FIG. 3. Upon such counterclockwise rotation of the lever 117, the cam edge 115 on this lever engages the roller 113 on the arm 111 of the reset lever 103 to swing the curved arm 107 of the reset lever into engagement with the driving pawl 79 to release the latter. Also, upon the stated swinging of the reset lever 103, the pin 109 thereon swings the holding pawl 83 out of engagement with the ratchet.

The ratchet 53 has an outwardly projecting hub 121. Fitting on this hub is a stop means 123 constituted by an assembly of three stop disks 125, 127 and 129. This stop means or disk assembly 123 is mounted on the hub 121 with disks 125 abutting the outside face of the ratchet. It has a series of holes, five being shown, each designated 130, in its inside face any one of which is adapted to receive a coupling pin 131 projecting from the ratchet (see FIGS. 2 and 12). The disk assembly 123 is adapted to be moved axially outward on hub 121 to clear pin 131, then rotated on hub 121 to align a selected one of the holes with the pin 131, then moved axially inward to enter the pin in the selected hole. The disks 125, 127 and 129 of assembly 123 are formed with notches 132, 133 and 134, respectively. These notches have radial shoulders S–1, S–2 and S–3, respectively, at their leading end. Notch 133 is longer than 132, and notch 134 is longer than 133. The disks 125, 127 and 129 are secured together in such manner that shoulders S–1, S–2 and S–3 are angularly spaced at intervals corresponding to the spacing of the ratchet teeth 55 and 57, these intervals representing five-cent price intervals.

The stop disk assembly 123 controls the operation of mechanism for releasing the latches L–1 to L–3. This mechanism includes three latch release bars 137, 139 and 141. The first latch release bar 137 (for latch L–1) is mounted for horizontal sliding movement on the face of plate 5 toward plate 7 by means of studs 142 received

in slots 143 in the bar. The latch L–1 has an arm 145 which projects outward through an opening 147 in plate 5 into an opening 149 in the bar 137. The second latch release bar 139 (for latch L–2) is mounted for horizontal sliding movement on the back of plate 5 by means of studs 151 received in slots 153 in the bar. The latch L–2 has an arm 155 which projects outward into an opening 157 in bar 139 and an opening 159 in plate 5. The third latch release bar 141 (for latch L–3) is mounted for horizontal sliding movement above bar 139 on the back of plate 5 by means of studs 161 received in slots 163 in the bar. The latch L–3 has an arm 165 which projects outward into an opening 167 in bar 141 and an opening 169 in plate 5.

Mechanism for operating the first latch release bar 137 is shown to comprise a feeler constituted by a lever 171 pivoted intermediate its ends on a stud 173 extending between plates 5 and 7 on the left side of the coin chute assembly 9 as viewed in FIG. 3. This lever extends down between a pair of pins 175 on the bar 137 for sliding the bar back and forth on rocking of the lever. The upper end of the lever is engageable with the stop disk 125. On the right side of the coin chute assembly 9 there is a lever 177 (see FIGS. 3 and 9) pivoted on a stud 179 extending between the plates 5 and 7. Levers 171 and 177 are connected by a link 181 located in the space between the coin chute assembly 9 and plate 7. Mechanism for operating the second latch release bar 139 is shown to comprise a feeler constituted by a lever 183 pivoted intermediate its ends on stud 173. Pivoted on stud 179 outward of lever 177 is a lever 185, and levers 185 and 183 are connected by a link 187 which lies outward of link 181. Link 187 has a finger 189 received between a pair of pins 191 extending from bar 139 through a slot 193 in plate 5. The upper end of lever 183 is engageable with the stop disk 127. Mechanism for operating the third latch release bar 141 is shown to comprise a feeler constituted by a lever 195 pivoted intermediate its ends on stud 173. Pivoted on stud 179 outward of lever 177 is a lever 197, and levers 197 and 195 are connected by a link 199 which lies outward of link 187. Link 199 has a finger 201 received between a pair of pins 203 extending from bar 141 through a slot 205 in plate 5. The upper end of lever 195 is engageable with the stop disk 129. The links 181, 187 and 199, adjacent their left ends, have downwardly extending tangs 181', 187' and 199', respectively.

A bar 207 is mounted for horizontal sliding movement on the front of plate 7 by means of studs 209 received in slots 211 in the bar (see FIGS. 1 and 2). The bar 207 is biased by a spring 213 toward the left as viewed in FIG. 1 to the retracted position illustrated in FIG. 1. Bar 207 has an upper finger 215 (see FIGS. 1–3) reaching through a triangular opening 216 in plate 7 and a lower finger 217 reaching through a slot 218 in plate 7. Tension springs 219, 222 and 223 (see FIG. 2) connect links 181, 187 and 199, respectively, and the finger 215. The lower finger 217 is engageable with tangs 181', 187' and 199' for holding levers 171, 183 and 195 in a retracted position clear of the stop means 123 (wholly out of engagement with the stop means) when bar 207 is in its retracted position so as not to impede movement of the stop means. A bar 225 is mounted for horizontal sliding movement below bar 207 on the front of plate 7 by means of studs 227 received in slots 229 in bar 225. Pivoted at 231 on bar 225 is a pawl 233 engageable with a roller 235 on bar 207 to move bar 207 to the right when bar 225 is moved to the right. The pawl 233 has a cam edge 237 engageable with a roller 239 mounted on plate 7 for camming the pawl out of engagement with roller 235 when the bars 225 and 207 have moved a predetermined distance to the right, thereby releasing bar 207 to snap back to its retracted position under the bias of spring 213. A spring 240 is provided for biasing the pawl 233 toward engagement with roller 235. Bar 225 carries a stud 241 extending through a slot 242 in plate 7 engageable with lever 117 to rock the latter counterclockwise upon movement of bar 225 to the right.

A lever 243 is pivoted at 245 intermediate its ends on a stud extending out from plate 7. Lever 243, at one end, has a slot 247 receiving a pin 249 on bar 225. Lever 243, toward its other end, is formed with a cam edge 251. At 253 is indicated a shaft which corresponds to the shaft 49 shown in Patent 2,993,581. On this shaft is a crank arm 255 carrying a roller 257 engageable with the cam edge 251 of lever 243. It will be understood that arm 255 is rotated clockwise as viewed in FIG. 1 from the position shown in FIG. 1, then returned to the FIG. 1 position when a purchaser pulls out a knob of the vending machine and then returns the knob in the same manner as described for the crank arm 515 in Patent 2,993,581. Lever 243 is biased by a spring 259 to the retracted position illustrated in FIG. 1 in which it holds bar 225 in retracted position determined by engagement of the right ends of slots 229 with studs 227. When the crank arm 255 is rotated clockwise from its retracted position, lever 243 is rotated clockwise from its retracted position to move the bar 225 to the right against the bias of spring 259. When the crank arm returns to retracted position, lever 243 and bar 225 are returned by spring 259 to retracted position.

Mounted on the outside of the side wall 3 below the totalizer unit T is a lower coin unit 261 (see FIGS. 1 and 13–15). This comprises an inside plate 263, and outside plate 265 and left and right side walls 267 and 269 which, as shown, are integral portions of the inside plate 263. Coins drop out of the chutes NC, DC and QC into a hopper indicated at 271 in the upper part of the lower unit. This hopper is defined by left and right upper walls 273 and 275, and left and right lower pivoted gates 277 and 279. The gates have a common pivot at 281. A spring-biased bar 283 vertically slidable on the outside of the plate 265 has a stud 285 reaching through a slot 287 in the plate 265 under the right-hand gate 279 for holding this gate in an upper closed position. The spring for biasing the bar 283 upward is designated 289. A spring-biased bar 291 vertically slidable on the back of the plate 263 has a finger 293 reaching through a slot 295 in the plate 263 under the left-hand gate 277 for holding this gate in an upper closed position. The spring for biasing the bar 291 upward is designated 299. The arrangement is such that upon downward movement of the bar 283 against the bias of the spring 289, the finger 285 is lowered from under the right-hand gate 279, and this gate swings down under its own weight to spill out any coins in the hopper into a chute 301 which leads to a money box 302. Upon downward movement of the bar 291 against the bias of the spring 299, the finger 293 is lowered from under the left-hand gate 277, and this gate swings open to spill any coins in the hopper into a chute 303 for return to a customer.

Pivoted at 307 on the outside of the plate 265 is a lever 309. This lever is biased upward to the raised retracted position illustrated in FIG. 1 by a spring 311. It has a cam follower roller 313 engageable by a cam edge 315 on the crank arm 255 for swinging it downward against the bias of the spring 311 upon clockwise rotation of the crank arm 255 from its retracted position. Upon such swinging down of the lever 309, its lower edge engages a roller 317 on the bar 283 and moves this bar downward to release the right-hand gate.

A lockout lever 319 for the left-hand gate 277 is pivoted at 320 on the outside of the plate 265. A pin 321 extends from this lever 319 through a slot 323 in the plate 265. The lever 319 has a heavy stud 325 engageable by the lever 309 for holding lever 319 in the retracted position shown in FIG. 1. In the stated retracted position of the lockout lever 319, the pin 321 registers with a notch 327 in the left-hand gate (see FIG. 15). When the lever 309 swings down away from the stud

325, the lockout lever 319 moves under the bias of the weight of the stud 325 to a position in which the pin 321 blocks the left-hand gate 277 from moving downward even though the bar 291 is moved downward.

At 329 is indicated a coin return bar. This bar is mounted for vertical movement in vertical alignment with the bar 291 by means of studs 331 extending through vertical slots 333 in the bar. The coin return bar is biased upward to a retracted position by a spring 335. At the lower end of bar 329 is a stud 337 (see FIG. 4) which is engageable with a finger 339 on the upper end of the bar 291 for pushing the bar 291 downward when the bar 329 is moved downward against the bias of the spring 335. The coin return bar 329 also carries a cam 341 engageable with a roller 343 on a lever 345 pivoted at 347 on a stud which extends from the plate 5 toward the plate 7. The roller 343 is accommodated in a notch 349 in plate 5 and projects from the lever 345 through this notch toward the side wall 3. The lever 345 is engageable with an ear 351 on lever 117, the arrangement being such that upon downward movement of the coin return bar 329, the cam 341 swings the lever 345 clockwise to rotate the lever 117 counterclockwise.

At 353 and 355 are indicated price arms, which correspond to the price arms 159 and 161 shown in the above-noted Patent 2,993,581. The price arm 353 via a wire 357 operates a lever 359 which corresponds to the lever 135 shown in Patent 2,993,581. The price arm 355 via a wire 361 operates a lever 363 which corresponds to the lever 149 shown in Patent 2,993,581. Levers 359 and 363 are pivoted at 365 and 367, respectively, on the side wall 3 between the chute 45 and the coin return bar 329.

Operation is as follows:

As herein illustrated, the apparatus is set up for vending twenty-five cent, thirty cent and thirty-five cent items. This is accomplished by setting the stop disk assembly 123 in such an angular position relative to the ratchet 53 that, with the ratchet 53 in its zero position, it takes five steps of the ratchet to rotate the disk assembly 123 to a position where the shoulder S–1 is above the upper end of the lever 171, six steps of the ratchet to rotate the assembly 123 to a position where the shoulder S–2 is above the upper end of the lever 183, and seven steps of the ratchet to rotate the assembly 123 to a position where the shoulder S–3 is above the upper end of the lever 195.

A nickel N deposited in the coin slot of the vending machine passes through the coin selector (not shown) which delivers it into the upper end of the nickel chute NC. The nickel, falling in the nickel chute, engages the finger 97 at the free end of the wire 93, and drives the wire 93 downward against the bias of the spring 99 through the arc AN. Upon the downward swing of the wire, the disk 73 rotates in reverse (clockwise) direction, as viewed in FIGS. 3 and 10, and the driving pawl 79 clicks over one ratchet tooth 55 without rotating the ratchet 53 and the stop disk assembly 123 which is coupled to the ratchet. The ratchet 53 and assembly 123 are held against rotating in reverse (clockwise) direction by the holding pawl 83. When the wire has swung down through the arc AN, the nickel rides off the finger 97, and exits from the nickel chute, falling into the hopper 271. The wire 93 swings back upward under the bias of the spring 99. Upon the upward or return swing of the wire through the arc AN, the ratchet 53 and the stop disk assembly 123 are rotated forward (counterclockwise) through a one-tooth interval, and held in the advanced position against the bias of the ratchet return spring 61 by the pawls 79 and 83. The ratchet 53 and assembly 123 are prevented from overriding (i.e., prevented from rotating more than a one-tooth interval) by the engagement of the wire 93 with the pin 101 on the arm 91 of the holding pawl 83. The deposit of additional nickels results in rotating the ratchet and stop disk assembly one more step for each nickel. For example, if seven nickels are inserted in succession, the ratchet and stop disk assembly will be rotated seven steps.

A dime D deposited in the coin slot of the vending machine passes through the coin selector which delivers it into the upper end of the dime chute DC. The passage of the dime through the dime chute effects advance of the ratchet 53 and the stop disk assembly 123 in substantially the same manner as a nickel, except that they are advanced two steps instead of one, as in the case of a nickel. This is because the dime drives the wire 93 downward through the arc AD which is approximately twice the arc through which the wire 93 is driven downward by a nickel.

A quarter Q deposited in the coin slot of the vending machine passes through the coin selector which delivers it into the upper end of the coin chute QC. The passage of the quarter through the quarter chute results in advance of the ratchet 53 and the stop disk assembly 123 in substantially the same manner as a nickel or a dime, except that they are advanced five steps instead of one, as in the case of a nickel, or two, as in the case of a dime. This is because the quarter drives the wire 93 downward through the arc AQ which is approximately five times as long as the arc AN.

Assuming that a purchaser has deposited twenty-five cents in coin (either as a quarter, two dimes and a nickel, a dime and three nickels or five nickels), the ratchet 53 and the stop disk assembly 123 will be rotated five steps from the zero position shown in FIG. 3 to the twenty-five cent position shown in FIG. 11, and latched in the five-step advanced position. This brings the assembly 123 to a position where the shoulder S–1 is above the upper end of the feeler or lever 171. The five-step rotation, however, is not sufficient to bring the shoulders S–2 and S–3 to a position above the upper ends of the feelers or levers 183 and 195. Now, having deposited twenty-five cents, the purchaser pulls out a twenty-five cent rod of the vending machine in the manner made clear in Patent No. 2,993,581, resulting in clockwise rotation of the shaft 253 and the crank arm 255. The lever 243 is thereby rotated clockwise from the position shown in FIG. 1, moving the bar 225 to the right. The pawl 233 carried by bar 225 moves the bar 207 to the right in unison with the bar 225 until the pawl 233 is disengaged from the roller 235 by the engagement of cam edge 237 on the pawl 233 with roller 239. At this point, the bar 207 snaps back to the left under the bias of the spring 213. As the bar 207 moves to the right, it acts through the springs 219, 222 and 223 to bias the links 181, 187 and 199 to the right. This bias tends to swing levers 171, 183 and 195 in counterclockwise direction as viewed in FIG. 3. Levers 183 and 195, however, are blocked against swinging more than a small amount by disks 127 and 129, since shoulders S–2 and S–3 are below the upper ends of these levers, and springs 222 and 223 simply yield to permit bar 207 to travel through its full stroke. However, lever 171 can swing freely in counterclockwise direction into the notch 132 of disk 125 since shoulder S–1 is above the upper end of lever 171. Accordingly, the lever 171 is swung counterclockwise by the link 181 through such an angle as to move the bar 137 to the right far enough to release the latch L–1. With the latch L–1 released, as made clear in Patent 2,993,581, the twenty-five cent rod of the vending machine may be completely pulled out and then returned to its retracted position to dispense a twenty-five cent item.

When the bar 207 snaps back to the left under the bias of the spring 213, levers 171, 183 and 195 are returned clockwise to their retracted positions in which they lie clear of the stop disk assembly 123. This return is effected by the engagement of the finger 217 on the bar 207 with the tangs 181', 187' and 199' of the links 181, 187 and 199. The return of the lever 171 to its

retracted position returns the bar **137** to its retracted position to release the latch L–1 for return to its locking position. As the bar **225** moves to the right, the stud **241** thereon engages the lever **117** to rock the latter counterclockwise from its retracted position shown in FIG. 3. Lever **117** thereupon acts, after the bar **207** has snapped back to its retracted position and levers **171**, **183** and **195** have been returned to their retracted position, to actuate the reset lever **103** to release the driving pawl **79** and the holding pawl **83** for resetting of the ratchet **53** and the stop disk assembly **123** to zero position.

Also, upon the above-noted clockwise rotation of the crank arm **255**, the cam edge **315** on the crank arm acts to swing down the lever **309**, thereby releasing the right-hand hopper gate **279**. Any coin or coins in the hopper are thereby spilled out into the chute **301** and passed to the money box. Upon the downward swing of the lever **309**, the lockout lever **319** is released for movement to the position in which the pin **321** blocks the left-hand hopper gate **277** to prevent any possibility of return of a coin or coins by pushing down the coin return bar **329**. When the crank arm **255** returns counterclockwise to its retracted position shown in FIG. 1, the lever **243** returns to its retracted position under the bias of the spring **259** and returns the bar **225** to its retracted position. Also, lever **309** is released for return to its retracted position under the bias of the spring **311**. On return of the lever **309** to retracted position, the lockout lever **319** is returned to retracted position and the right-hand hopper gate **279** closes.

If less than twenty-five cents in coin should be deposited, the stop disk assembly **123** is rotated through less than the five steps necessary to bring the shoulder S–1 to a position above the upper end of the lever **171**. Accordingly, lever **171** is locked against sufficient movement to release the latch L–1.

Assuming that a purchaser has deposited thirty cents in a coin (either as a quarter and a nickel, three dimes, two dimes and two nickels, one dime and four nickels, or six nickels), the stop disk assembly **123** will be rotated six steps from its zero position shown in FIG. 3 to a position wherein shoulders S–1 and S–2 are above the upper ends of the levers **171** and **183**. This six-step rotation, however, is not sufficient to bring shoulder S–3 above the upper end of the lever **195**. As will be clear from Patent 2,993,581, it is necessary to release latches L–1 and L–2 to obtain a thirty cent item. When the purchaser, having deposited thirty cents, pulls out a thirty cent rod of the vending machine, the action is similar to that above described except that now levers **171** and **183** are free to swing in counterclockwise direction into the notches **132** and **133** of disks **125** and **127** when the bar **207** moves to the right. Such swinging of the levers **171** and **183** results in movement of the bars **137** and **139** to release the latches L–1 and L–2. However, lever **195** is blocked against swinging more than a small amount by the disk **129**, and spring **223** simply yields to permit bar **207** to travel through its full stroke.

Assuming that a purchaser has deposited thirty-five cents in coins (either as a quarter and a dime, a quarter and two nickels, three dimes and a nickel, two dimes and three nickels, one dime and five nickels, or seven nickels), the stop disk assembly **123** will be rotated seven steps from its zero position shown in FIG. 3 to a position wherein shoulders S–1, S–2 and S–3 are above the upper ends of the levers **171**, **183** and **195**. When the purchaser, having deposited thirty-five cents, pulls out a thirty-five cent rod of the vending machine, the action is similar to that above described except that now all three levers **171**, **183** and **195** are free to swing in counterclockwise direction into the notches **132**, **133** and **134** of disks **125**, **127** and **129** when the bar **207** moves to the right. Such swinging of the levers **171**, **183** and **195** results in movement of the bars **137**, **139** and **141** to release the latches L–1, L–2 and L–3.

To cancel a prospective purchase and obtain the return of any coins deposited in the machine, the coin return bar **329** is pushed down from the position shown in FIG. 1. It will be understood that the coins deposited in the machine will have passed through the totalizer unit T, stepped up the ratchet **53** and the stop disk assembly **123**, and dropped into the hopper **271** of the lower coin unit **261**. Upon downward movement of the coin return bar, the cam **341** thereon swings the lever **345** clockwise from the position shown in FIG. 3 to rotate the lever **117** counterclockwise. Lever **117** thereupon actuates the reset lever **103** to reset the ratchet and stop disk assembly to the zero position. The stud **337** at the lower end of the coin return bar pushes down the left-hand gate release bar **291**, thereby releasing the left-hand hopper gate **277** to spill out coins into the chute **303** for return to the purchaser.

Conversion of the apparatus to different three-price set-ups is readily accomplished by changing the position of the stop disk assembly **123** relative to the ratchet **53**. For example, to convert from the above described twenty-five, thirty cent, thirty-five cent set-up to a twenty cent, twenty-five cent, thirty cent setup, it is simply necessary to reposition the assembly **123** one step in clockwise direction from the position illustrated in FIG. 3 so that it takes a four step advance of assembly **123** from the zero position for shoulder S–1 to clear the upper end of the lever **171**, a five step advance for the shoulder S–2 to clear the upper end of the lever **183**, and a six step advance for the shoulder S–3 to clear the upper end of the lever **195**. With the disks **125**, **127** and **129** secured together as herein illustrated, the conversion is limited to three-price set-ups in which the three prices differ by five-cent increments. It will be understood, however, that the stop disk assembly may be made in a manner similar to that shown in Patent 2,993,581, in which the stop disks are individually adjustable relative to one another, so that the prices may differ by more than five cents from one another.

It will be noted that the advance of the ratchet **53** and the stop disk assembly **123** occurs on the return or upstroke of the wire **93**. This has a decided advantage over advancing the ratchet and stop disk assembly on the downstroke. If, for example, a person should pull out any rod of the vending machine before depositing any coins, this moves levers **171**, **183** and **195** into engagement with assembly **123**, thereby impeding rotation of this assembly and the ratchet. If the advance of the ratchet and stop disk assembly were to occur on the downstroke, such impedance would prevent the wire from moving downward, and any coins deposited by the person holding out the rod would pile up above the wire. However, with the arrangement such that advance occurs on the upstroke, even if the stop disk assembly and ratchet are held against rotation, the coins can still swing the wire down and pass out of the totalizer unit into the hopper **271**, and return of the coins can be obtained by operating the coin return bar. This also eliminates any necessity for provision of any supplemental means for preventing over-insertion of coins. Also, by advancing on the upstroke, rather than on the downstroke, the total force of the spring **99** is available for advance of the ratchet and stop disk assembly. It will be understood that in any construction in which the advance would be effected on the downstroke, the weight of a coin would act against the spring bias required to return the wire to its retracted position, and the force for effecting indexing would be reduced. Also, by working on the upstroke, which means that the advance of the ratchet and stop disk assembly is terminated at the same point for all coins, it is possible to provide the override preventing arrangement above described.

In view of the above, it will be seen that the several objects of the invention are achieved and other advantageous results attained.

As various changes could be made in the above constructions without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

We claim:

1. In a coin-controlled vending machine having a latch for locking the machine against operation, means for releasing the latch comprising a member adapted for movement away from a retracted position for moving the latch from a locking to a retracted position, purchaser-operated means for moving said member away from its retracted position, a stop for holding said member against movement sufficient to release the latch, said stop being movable to a position permitting full latch-releasing movement of said member, said member when in retracted position being wholly out of engagement with said stop so as not to impede movement of said stop, a first chute for coins of a first denomination and a second chute for coins of a second denomination, a member engageable by a coin falling in either chute adapted to be driven downward a first distance by a coin of the first denomination and a second distance by a coin of the second denomination, the ratio of said distances corresponding to the ratio of the value of the coins, means biasing said coin-driven member to return to a raised retracted position when a coin disengages therefrom, and means operable by said coin-driven member on its return to retracted position for driving the stop.

2. In a coin-controlled vending machine having a latch for locking the machine against operation, means for releasing the latch comprising a member adapted for movement away from a retracted position for moving the latch from a locking to a retracted position, purchaser-operated means for moving said member away from its retracted position, means for holding said member against movement sufficient to release the latch, said holding means being movable in forward direction away from a zero position to a position permitting full latch-releasing movement of said member, said member when in retracted position being wholly out of engagement with said holding means so as not to impede movement of said holding means, means biasing said holding means to move in reverse direction toward its zero position, releasable means for maintaining said holding means in any advanced position against return to zero position, a driver movable independently of said holding means and adapted on movement in forward direction to drive the holding means in forward direction, the driver being movable in reverse direction without moving the holding means, a coin chute, an arm extending from the driver and having a portion intersecting the chute, means biasing the arm to move upward to a raised retracted position, said portion of said arm being engageable by a coin falling in the chute to be driven downward by the weight of the coin, the upward bias of said arm-biasing means being less than the downward bias of the weight of the coin, said coin disengaging from said portion of the arm when the arm has moved downward a predetermined distance to release the arm for movement by the arm-biasing means through a return stroke back to retracted position, the driver moving in reverse direction on downward movement of the arm and in forward direction on a return stroke of the arm.

3. In a coin-controlled vending machine having a latch for locking the machine against operation, means for releasing the latch comprising a member adapted for movement away from a retracted position for moving the latch from a locking to a retracted position, purchaser-operated means for moving said member away from its retracted position, a rotary ratchet, a stop rotary with the ratchet for holding said member against movement sufficient to release the latch, said ratchet and stop being rotatable in forward direction away from a zero position, to a position permitting full latch-releasing movement of said member, said member when in retracted position being wholly out of engagement with said stop so as not to impede rotation of the stop and the ratchet, means biasing the ratchet and the stop to rotate in reverse direction toward zero position, a holding pawl for holding the ratchet in any advanced position against return to zero position, a pawl carrier mounted for rotation independently of the ratchet, a driving pawl on said carrier engageable with the ratchet on rotation of said carrier in forward direction to drive the ratchet in forward direction, said carrier and driving pawl being rotatable in reverse direction without rotating the ratchet, a coin chute, an arm extending from the pawl carrier and having a portion intersecting the chute, means biasing the arm to swing upward to a raised retracted position, said portion of said arm being engageable by a coin falling in the chute to be driven downward by the weight of the coin, the upward bias of said arm-biasing means being less than the downward bias of the weight of the coin, said coin disengaging from said portion of the arm when the arm has swung downward a predetermined distance to release the arm for movement by the arm-biasing means through a return stroke back to retracted position by said arm-biasing means, the pawl carrier rotating in reverse direction on downward movement of the arm and in forward direction on a return stroke of the arm.

4. In a coin-controlled vending machine having a plurality of latches for locking the machine against operation, a plurality of latch-releasing means, one for each latch, each of said latch-releasing means comprising a member adapted for movement away from a retracted position for moving the respective latch from a locking to a retracted position, purchaser-operated means for moving each of said members away from its retracted position, means providing a plurality of stops, one for each of said members, each stop being adapted to hold the respective member against movement sufficient to release the respective latch, said stop means being movable in forward direction away from a zero position to advanced positions permitting full latch-releasing movement of the respective members, said members when in retracted position being wholly out of engagement with said stop means so as not to impede movement of said stop means, means biasing said stop means to move in reverse direction toward its zero position, releasable means for maintaining said stop means in any advanced position against return to zero position, a driver movable independently of said stop means and adapted on movement in forward direction to drive the stop means in forward direction, the driver being movable in reverse direction without moving the stop means, a first chute for coins of a first denomination, a second chute for coins of a second denomination, an arm extending from the driver and having a portion intersecting the chutes, means biasing the arm to swing upward to a raised retracted position, said portion of said arm being engageable by a coin falling in either chute to be driven downward by the weight of the coin, the upward bias of said arm-biasing means being less than the downward bias of the weight of the lighter coin, a coin of the first denomination disengaging from said portion of the arm when the arm has moved downward a first distance and a coin of the second denomination disengaging from said portion of the arm when the arm has moved downward a second distance to release the arm for movement by the arm-biasing means through a return stroke back to retracted position, the ratio of said distances corresponding to the ratio of the value of the coins, the driver moving in reverse direction on downward movement of the arm and in forward direction on a return stroke of the arm.

5. In a coin-controlled vending machine having a plurality of latches for locking the machine against operation, a plurality of latch-releasing means, one for each latch, each of said latch-releasing means comprising a

member adapted for movement away from a retracted position for moving the respective latch from a locking to a retracted position, purchaser-operated means for moving each of said members away from its retracted position a rotary ratchet, means rotatable with the ratchet providing a plurality of stops, one for each of said members, each stop being adapted to hold the respective member against movement sufficient to release the respective latch, said ratchet and stop means being rotatable in forward direction away from a zero position to advanced positions permitting full latch-releasing movement of the respective members, said members when in retracted position being wholly out of engagement with said stop means so as not to impede movement of said stop means, means biasing the ratchet and stop means to rotate in reverse direction toward their zero position, a holding pawl for holding the ratchet in any advanced position against return to zero position, a pawl carrier mounted for rotation independently of the ratchet, a driving pawl on said carrier engageable with the ratchet on rotation of said carrier in forward direction to drive the ratchet in forward direction, said carrier and driving pawl being rotatable in reverse direction without rotating the ratchet, a first chute for coins of a first denomination, a second chute for coins of a second denomination, an arm extending from the pawl carrier and having a portion intersecting the chutes, means biasing the arm to swing upward to a raised retracted position, said portion of said arm being engageable by a coin falling in either chute to be driven downward by the weight of the coin, the upward bias of said arm-biasing means being less than the downward bias of the weight of the lighter coin, a coin of the first denomination disengaging from said portion of the arm when the arm has swung downward a first distance and a coin of the second denomination disengaging from said portion of the arm when the arm has swung downward a second distance to release the arm for movement by the arm-biasing means through a return stroke back to retracted position by said arm-biasing means, the ratio of said distances corresponding to the ratio of the value of the coins, the pawl carrier rotating in reverse direction on downward movement of the arm and in forward direction on a return stroke of the arm.

6. In a coin-controlled vending machine having a plurality of latches for locking the machine against operation, a plurality of latch-releasing means, one for each latch, each of said latch-releasing means comprising a member adapted for movement away from a retracted position for moving the respective latch from a locking to a retracted position, purchaser-operated means for moving each of said members away from its retracted position a rotary ratchet, means rotatable with the ratchet providing a plurality of stops, one for each of said members, each stop being adapted to hold the respective member against movement sufficient to release the respective latch, said ratchet and stop means being rotatable in forward direction away from a zero position to advanced positions permitting full latch-releasing movement of the respective members, said members when in retracted position being wholly out of engagement with said stop means so as not to impede movement of said stop means, means biasing the ratchet and stop means to rotate in reverse direction toward their zero position, a holding pawl for holding the ratchet in any advanced position against return to zero position, a pawl carrier mounted for rotation independently of the ratchet, a driving pawl on said carrier engageable with the ratchet on rotation of said carrier in forward direction to drive the ratchet in forward direction, said carrier and driving pawl being rotatable in reverse direction without rotating the ratchet, a nickel chute, a dime chute and a quarter chute, an arm extending from the pawl carrier and having a portion intersecting the chutes, means biasing the arm to swing upward to a raised retracted position, said portion of said arm being engageable by a coin falling in any one of the chutes to be driven downward by the weight of the coin, the upward bias of said arm-biasing means being less than the downward bias of the weight of a dime, a nickel disengaging from said portion of the arm when the arm has swung downward a predetermined amount, a dime disengaging from said portion of the arm when the arm has swung downward twice said amount, and a quarter disengaging from said portion of the arm when the arm has swung downward five times said amount, to release the arm for movement by the arm-biasing means through a return stroke back to retracted position, the pawl carrier rotating in reverse direction on downward movement of the arm and in forward direction on a return stroke of the arm.

7. Coin apparatus as set forth in claim 6, further comprising means on the holding pawl engageable by the arm upon return of the arm to retracted position to operate the holding pawl to prevent overriding of the ratchet.

8. Coin apparatus as set forth in claim 6, further comprising means for simultaneously releasing both the driving pawl and the holding pawl for return of the ratchet to zero position.

9. In a multi-coin coin-controlled device, a first chute for coins of a first denomination and a second chute for coins of a second denomination, each of said chutes being of elongate generally rectangular cross section, said chutes being located side-by-side in flatwise parallel relation, a totalizer member, an arm pivoted on an axis transverse to the long cross-sectional dimensions of the chutes having a finger extending into the chutes from one side thereof engageable by a coin deposited in either chute and adapted to be driven downward a first distance by a coin of the first denomination due to the weight of the coin before the coin disengages therefrom and a second distance by a coin of the second denomination due to the weight of the coin before the coin disengages therefrom, the ratio of said distances corresponding to the ratio of the value of the coins, said arm being biased to swing upward to a raised retracted position and thereby being returned to retracted position upon disengagement of a coin from the finger, with the upward bias less than the downward bias of the weight of the lighter coin, means operable by said arm on its return to retracted position under the bias for driving the totalizer member, and means for controlling the operation of the device in accordance with the position of the totalizer member including a feeler normally occupying a retracted position clear of the totalizer member so as not to impede the operation of the totalizer member by the arm, and purchaser-operable means for moving said feeler away from retracted position toward the totalizer member to detect the position of the totalizer member.

10. In a multi-coin coin-controlled device, a first chute for coins of a first denomination and a second chute for coins of a second denomination, each of said chutes being of elongate generally rectangular cross section, said chutes being located side-by-side in flatwise parallel relation, a totalizer for totalizing the value of coins deposited in the chutes, said totalizer comprising a ratchet rotatable on an axis extending transversely of the long cross-sectional dimensions of the chutes and spaced from said chutes, said ratchet being rotatable in forward direction away from a zero position, means biasing the ratchet to rotate in reverse direction toward its zero position, a holding pawl for holding the ratchet in any advanced position against return to zero position, a pawl carrier mounted for rotation coaxially with the ratchet and independently of the ratchet, a driving pawl on said carrier engageable with the ratchet on rotation of said carrier in forward direction to drive the ratchet in forward direction, said carrier and driving pawl being rotatable in reverse direction without rotating the ratchet, an arm extending from the pawl carrier and having a finger extending into the chutes from one side thereof,

means biasing the arm to swing upward to a raised retracted position, said finger being engageable by a coin falling in either chute to be driven downward by the weight of the coin, the upward bias of said arm-biasing means being less than the downward biais of the weight of the lighter coin, a coin of the first denomination disengaging from said finger when the arm has swung downward a first distance and a coin of the second denomination disengaging from said finger when the arm has swung downward a second distance to release the arm for movement by the arm-biasing means through a return stroke back to retracted position, the ratio of said distances corresponding to the ratio of the value of the coins, the pawl carrier rotating in reverse direction without driving the ratchet on downward movement of the arm and rotating in forward direction to drive the ratchet forward on a return stroke of the arm, a member rotatable with the ratchet, and means for controlling the operation of the device in accordance with the position of said member including a feeler normally occupying a retracted position clear of said member so as not to impede the rotation of the ratchet and said member by said arm, and purchaser-operable means for moving said feeler away from retracted position toward said member to detect the position of said member.

11. In a multi-coin multi-price coin-controlled device, a plurality of coin chutes for coins of different demoninations, said chutes being located side-by-side, a totalizer for totalizing the value of coins deposited in the chutes, said totalizer comprising a ratchet rotatable on an axis extending transversely of and spaced from said chutes, said ratchet being rotatable in forward direction away from a zero position, means biasing the ratchet to rotate in reverse direction toward its zero position, a holding pawl for holding the ratchet in any advanced position against return to zero position, a pawl carrier mounted for rotation independently of the ratchet on an axis extending transversely of and spaced from the chutes, a driving pawl on said carrier engageable with the ratchet on rotation of said carrier in forward direction to drive the ratchet in forward direction, said carrier and driving pawl being rotatable in reverse direction without rotating the ratchet, an arm extending from the pawl carrier and having a finger extending into the chutes from one side thereof, means biasing the arm to swing upward to a raised retracted position, said finger being engageable by a coin falling in any of the chutes to be driven downward by the weight of the coin, the upward bias of said arm-biasing means being less than the downward bias of the weight of the lightest coin, coins of the different denominations disengaging from said finger when the arm has swung downward different distances to release the arm for movement by the arm-biasing means through a return stroke back to retracted position, the ratio of said distances corresponding to the ratio of the value of the coins, the pawl carrier rotating in reverse direction without driving the ratchet on downward movement of the arm and rotating in forward direction to drive the ratchet forward on a return stroke of the arm, and means for controlling the operation of the device including a plurality of stops, one for each of a plurality of different prices, rotatable with the ratchet, and a plurality of feelers, one for each stop, each feeler normally occupying a retracted position clear of the respective stop so as not to impede the rotation of the ratchet and the stops by the weight of a coin falling in a chute and being movable toward the respective step for detecting the position thereof.

12. In a device as set forth in claim 11, said stops being individually adjustable relative to the ratchet for price changing.

13. In a device as set forth in claim 12, said pawl carrier being coaxial with the ratchet.

14. In a coin-controlled device, a coin chute, a totalizer member, means powered solely by the weight of a coin deposited in the chute for driving the totalizer member, and means for controlling the operation of the device in accordance with the position of the totalizer member including a feeler normally occupying a retracted position clear of the totalizer member so as not to impede the operation of the totalizer member by said drive means, and purchaser-operable means for moving said feeler away from retracted position toward the totalizer member to detect the position of the totalizer member.

15. In a coin-controlled device, a coin chute, a totalizer member, a pivoted arm having a portion extending into the chute engageable by a coin deposited in the chute and adapted to be driven downward a predetermined distance by the coin before the coin disengages therefrom, spring means biasing said arm to swing upward to a raised retracted position with the spring bias less than the downward bias of the weight of a coin, said spring means being thereby powered by the weight of a coin to return the arm to retracted position upon disengagement of a coin from said portion of the arm, means operable by said arm on its return to retracted position for driving the totalizer member, and means for controlling the operation of the device in accordance with the position of the totalizer member including a feeler normally occupying a retracted position clear of the totalizer member so as not to impede the operation of the totalizer member by the arm, and purchaser-operable means for moving said feeler away from retracted position toward the totalizer member to detect the position of the totalizer member.

16. In a coin-controlled device, a coin chute, a totalizer for totalizing the value of coins deposited in the chute, said totalizer comprising a ratchet rotatable in forward direction away from a zero position, means biasing the ratchet to rotate in reverse direction toward its zero position, a holding pawl for holding the ratchet in any advanced position against return to zero position, a pawl carrier mounted for rotation coaxially with the ratchet and independently of the ratchet, a driving pawl on said carrier engageable with the ratchet on rotation of said carrier in forward direction to drive the ratchet in forward direction, said carrier and driving pawl being rotatable in reverse direction without rotating the ratchet, an arm extending from the pawl carrier and having a portion extending into the chute, means biasing the arm to swing upward to a raised retracted position, said portion of the arm being engageable by a coin falling in the chute to be driven downward by the weight of the coin, the upward bias of said arm-biasing means being less than the downward bias of the weight of a coin, a coin disengaging from said portion of the arm when the arm has swung downward a predetermined distance to release the arm for movement by the arm-biasing means through a return stroke back to retracted position, the pawl carrier rotating in reverse direction without driving the ratchet on downward movement of the arm and rotating in forward direction to drive the ratchet forward on a return stroke of the arm, a member rotatable with the ratchet, and means for controlling the operation of the device in accordance with the position of said member including a feeler normally occupying a retracted position clear of said member so as not to impede the rotation of the ratchet and said member by said arm, and purchaser-operable means for moving said feeler away from retracted position toward said member to detect the position of said member.

17. In a multi-price coin-controlled device, a coin chute, a plurality of totalizer members, one for each of a plurality of different prices, means powered solely by the weight of a coin deposited in the chute for driving said totalizer members, and means for controlling the operation of the device in accordance with the position of said totalizer members including a plurality of feelers, one for each totalizer member, each feeler normally occupying a retracted position clear of the respective totalizer member so as not to impede the oper-

ation of the totalizer members by said drive means, and purchaser-operable means for moving said feelers away from retracted position toward the respective totalizer member for detecting the position thereof.


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