

June 19, 1956

T. E. KULO ET AL

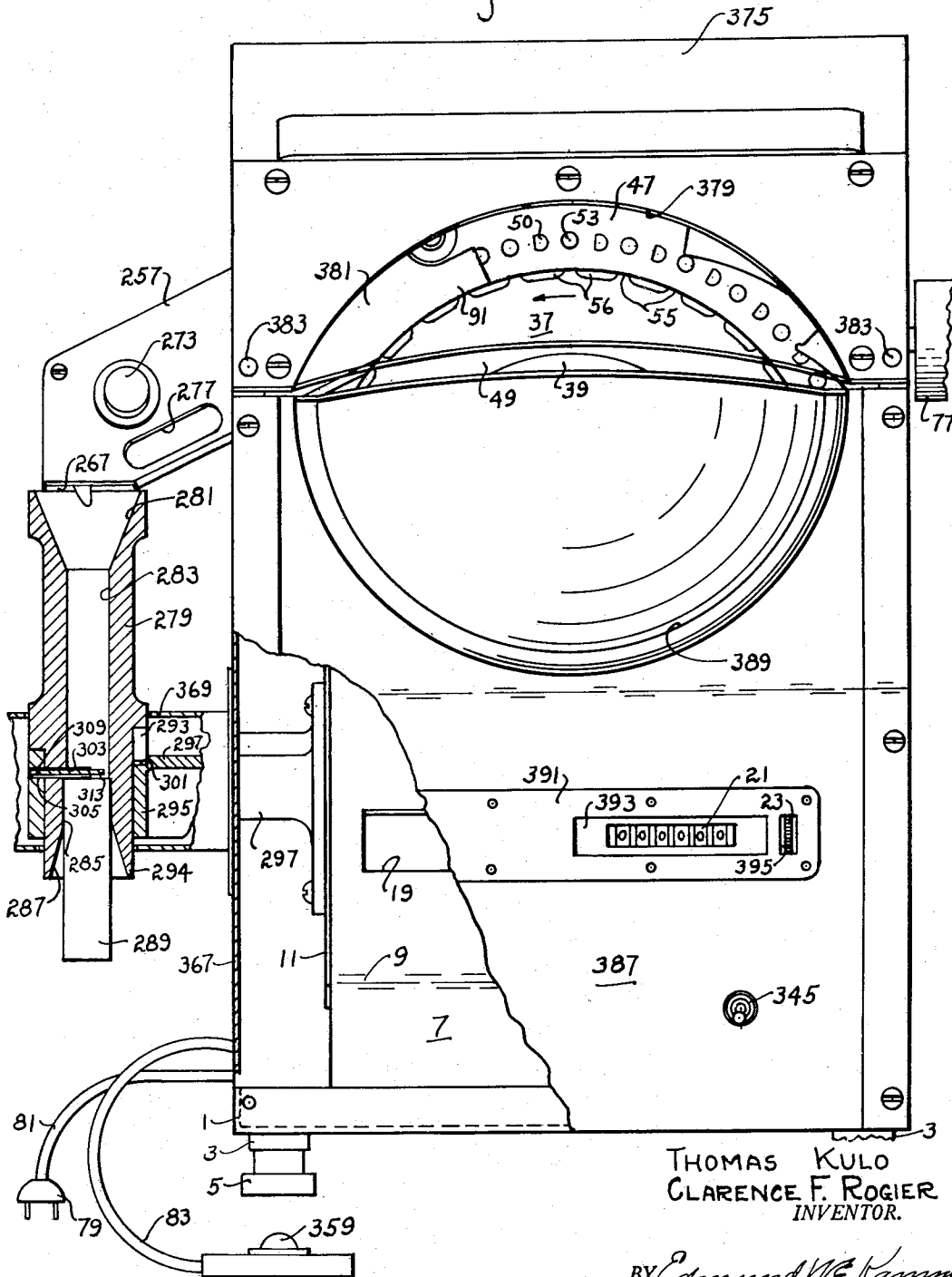
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COIN COUNTER

Filed Sept. 8, 1949

6 Sheets-Sheet 1

Fig. 1



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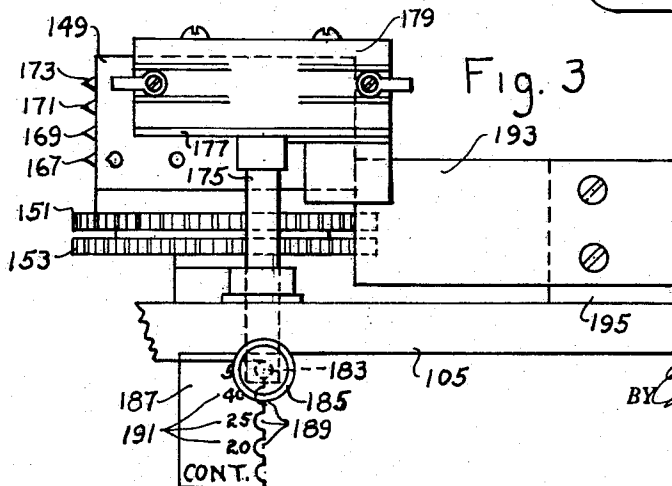
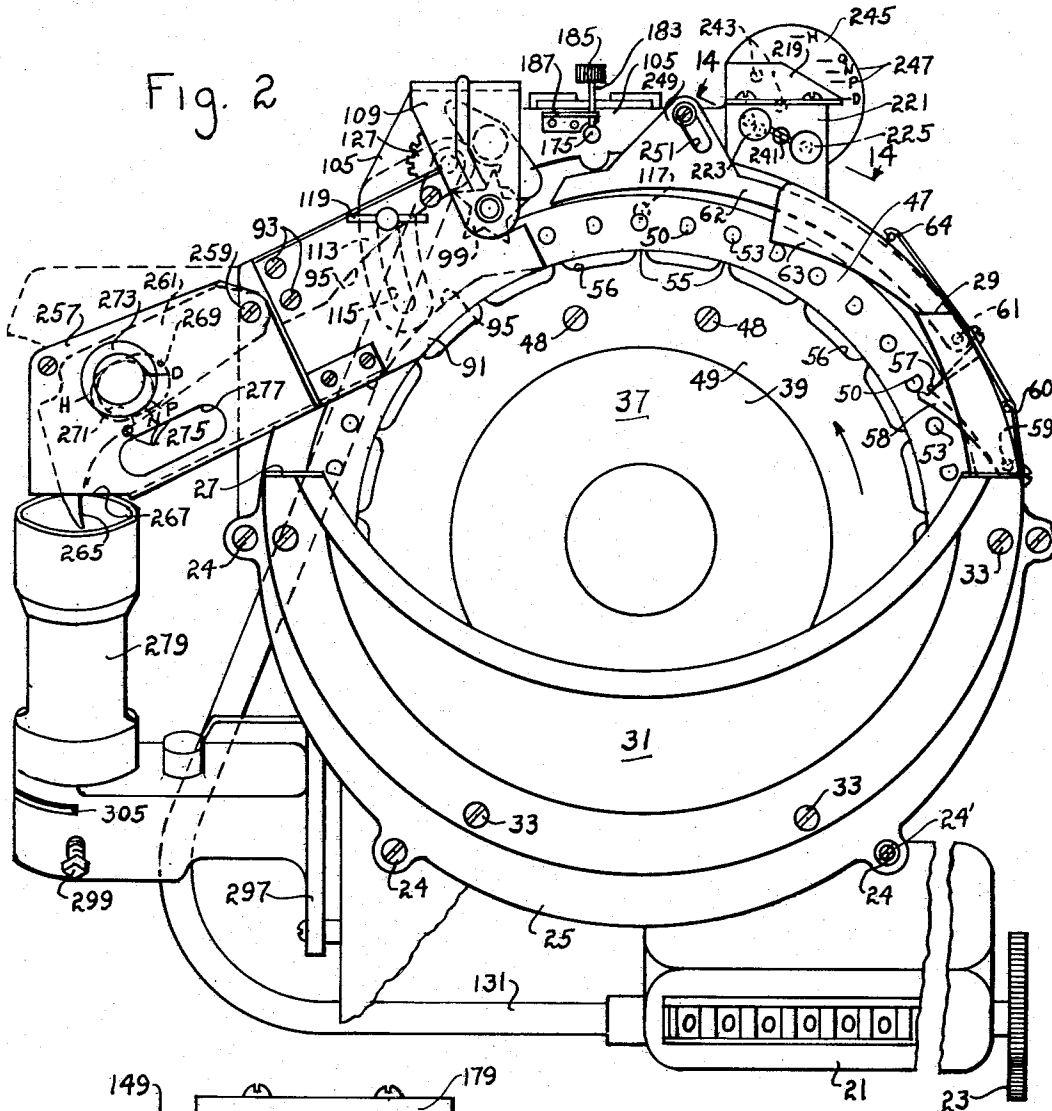
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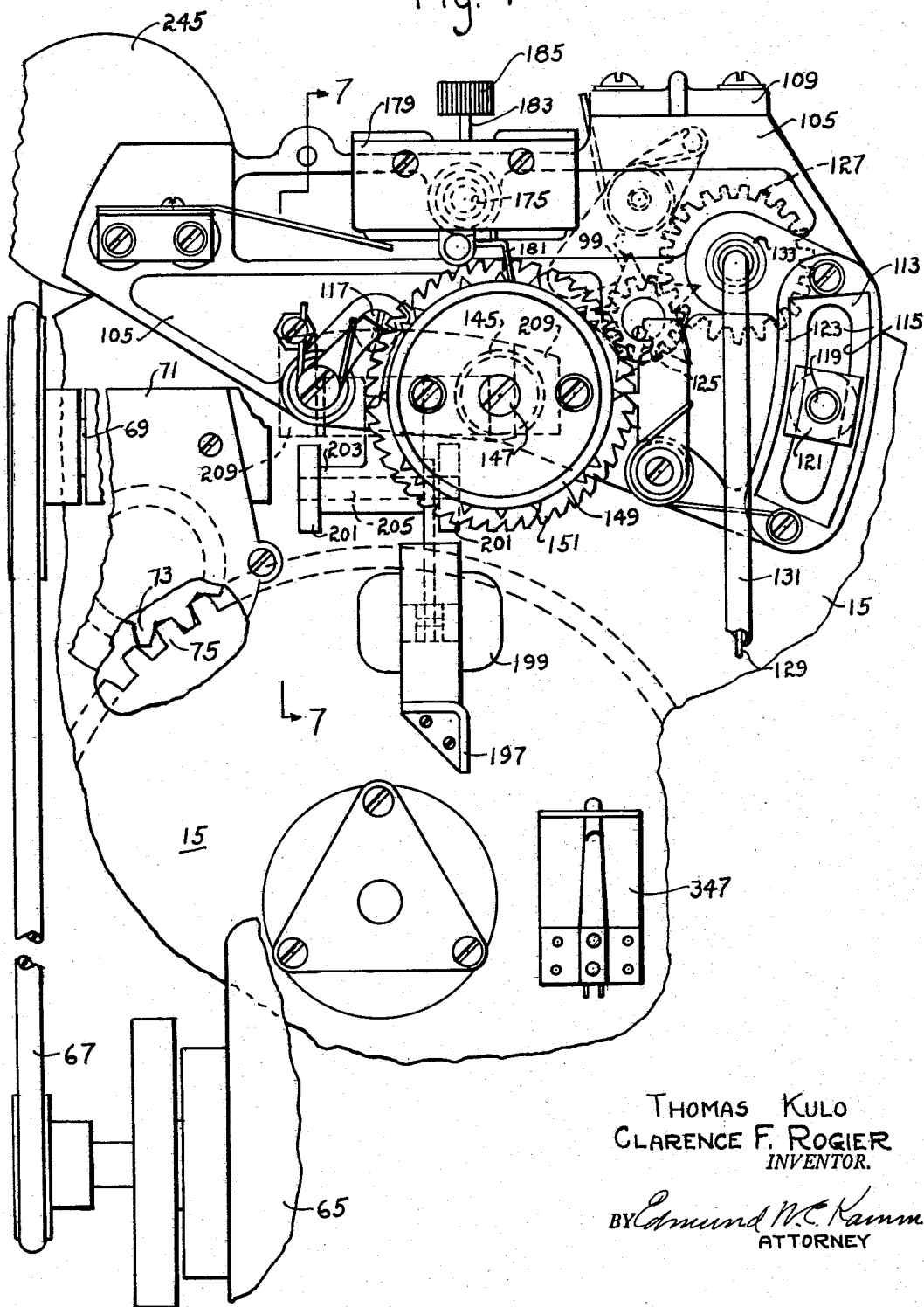
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2,750,949

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Fig. 4



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Fig. 5

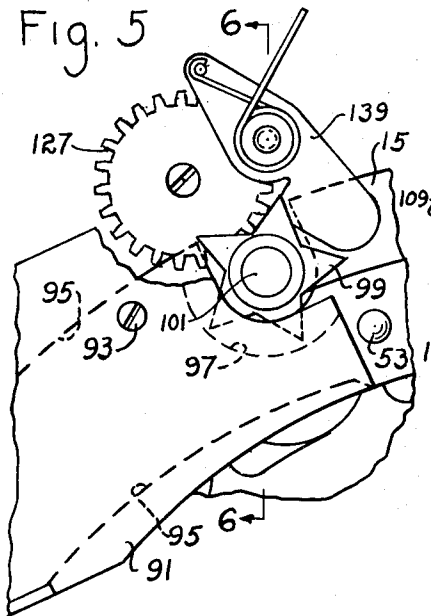


Fig. 6

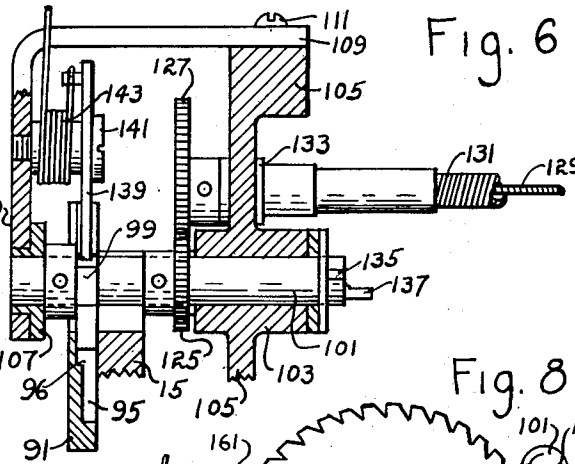


Fig. 8

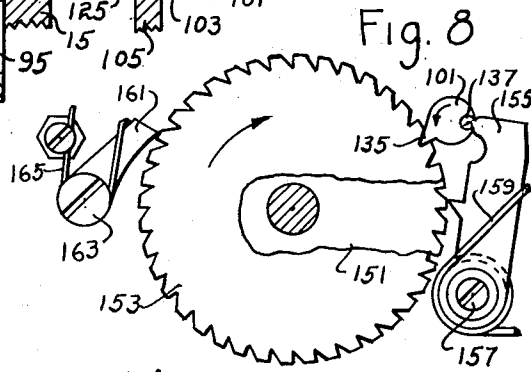


Fig. 7

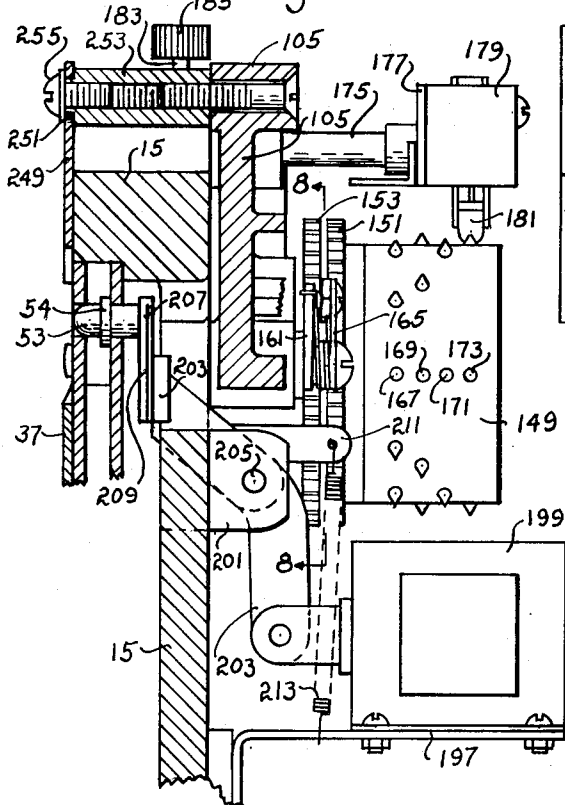
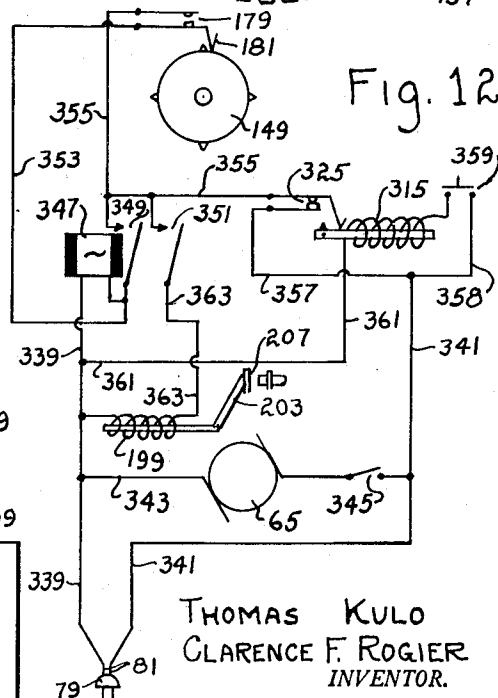


Fig. 12



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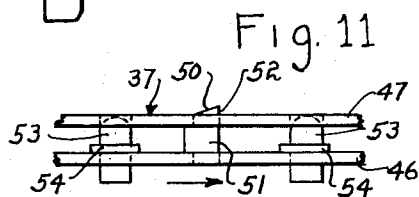
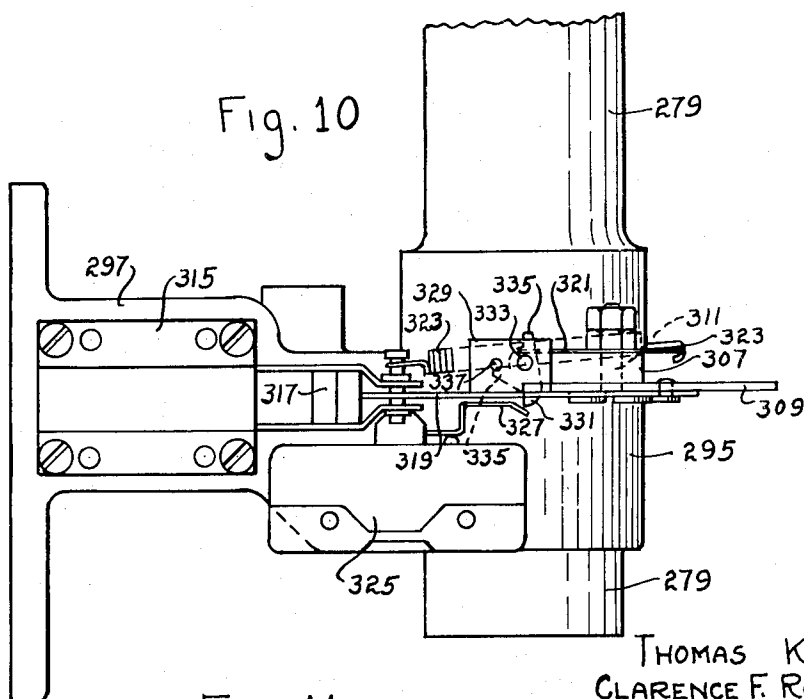
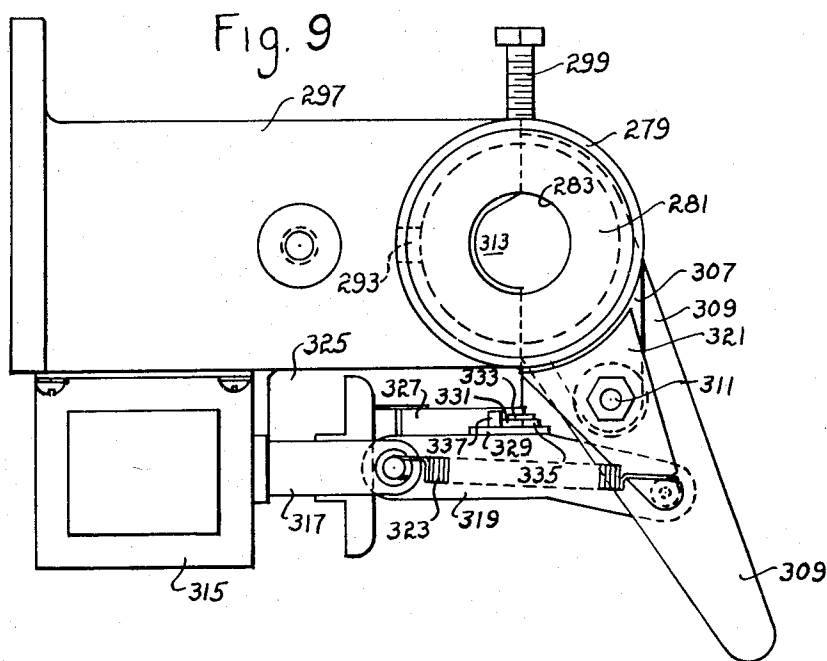
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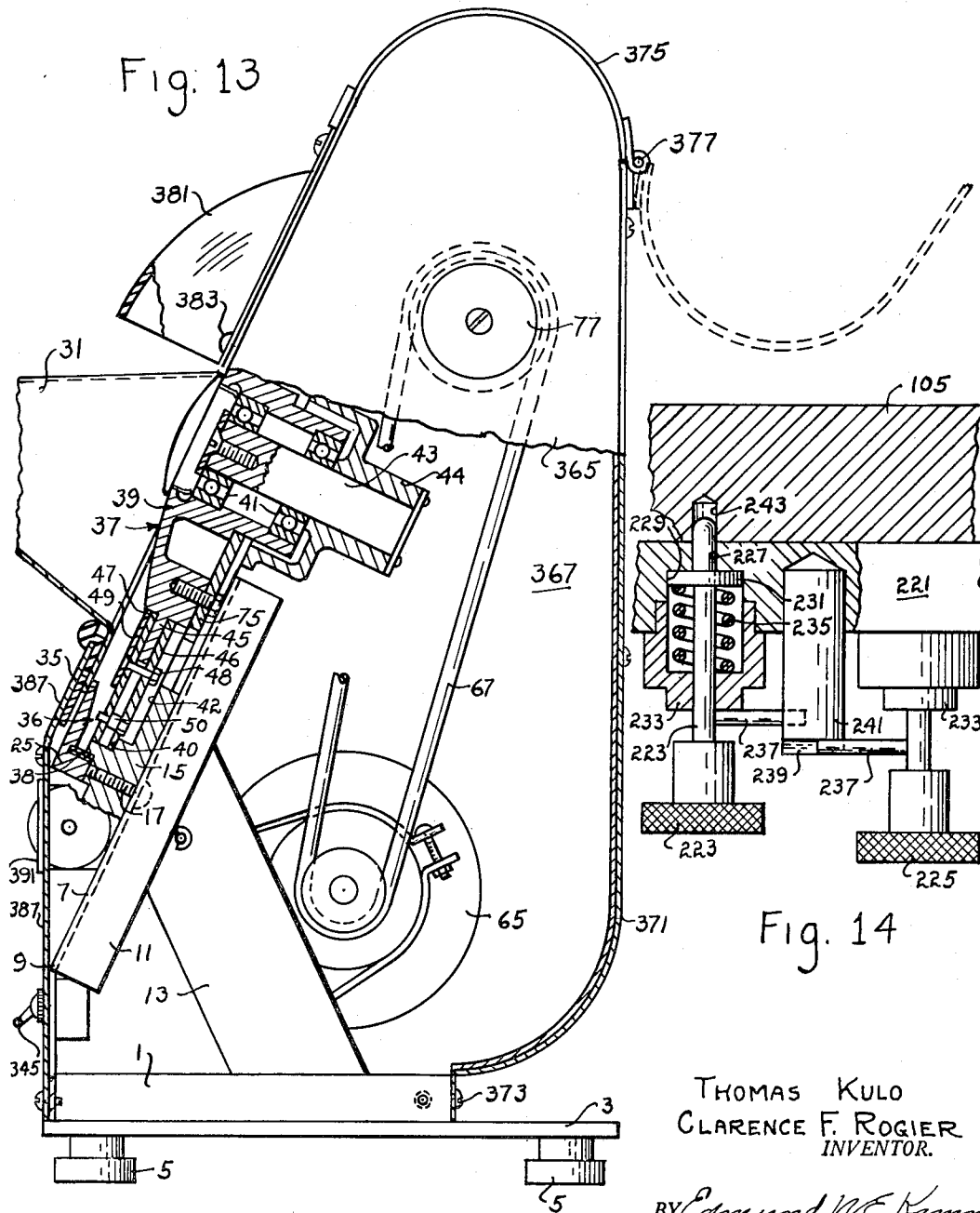
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2,750,949

COIN COUNTER

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Application September 8, 1949, Serial No. 114,504

18 Claims. (Cl. 133—8)

This invention relates to a coin counter. More specifically, it relates to a coin counter which is power driven and capable of counting coins of various denominations and of stopping the counting operation when a predetermined number of coins have been counted.

It is an object of the invention to provide means for feeding the coins singly to a counting mechanism.

Another object is to provide a coin counter which will deflect coins from the counting mechanism when a predetermined number have been counted.

A further object of the invention is to deflect the coins from the counting mechanism without stopping the coin pick-up means.

Yet another object of the invention is to provide a coin counter which is adjustable to handle coins of various diameters.

Still another object of the invention is to provide a counter which is rapid and accurate.

It is a further object of the invention to provide a counter in which the coins are deflected from the counting mechanism at the completion of a count and automatically fed to the mechanism as soon as the counted coins have been removed.

Another object of the invention is to provide a counting mechanism which can be quickly adjusted to receive coins of different diameters.

Still another object of the invention is to provide a counter in which the count may be varied by means of a simple adjustment.

Yet another object of the invention is to provide means for guiding counted coins into the receiving tube so that they will not stand on edge or otherwise jam the tube.

These and other objects will become apparent from a study of this specification and the drawings which are attached hereto, made a part hereof and in which:

Figure 1 is a front elevation of the counter showing the coin hopper, pick-up plate, counted coin receiver and register.

Figure 2 is a view similar to Figure 1 but with the housings removed.

Figure 3 is a plan view showing the predeterminer drum, switch and count adjusting mechanism.

Figure 4 is a rear elevation of the mechanism of Figure 2 showing the drive, the predeterminer and counting mechanisms and the coin deflecting mechanism.

Figure 5 is a detailed front elevation of the coin counting mechanism.

Figure 6 is a sectional view taken substantially on the line 6—6 of Figure 5 showing the coin counting mechanism.

Figure 7 is a sectional view taken on the line 7—7 of Figure 4 showing the predeterminer and the coin deflecting mechanisms.

Figure 8 is a sectional view taken on the line 8—8 of Figure 7 showing the predeterminer stepping means.

Figure 9 is a plan view of the counted coin tube and coin unloading mechanism.

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Figure 10 is a rear elevation of the mechanism of Figure 9.

Figure 11 is a detail of the coin pick-up disc showing the pick-up and deflecting pins.

Figure 12 is a wiring diagram of the entire apparatus.

Figure 13 is a side elevation of the machine with parts in section to show the pick-up plate construction.

Figure 14 is a sectional view taken substantially on the line 14—14 of Figure 2 showing the locating means for the coin gap lever.

FRAME AND SUPPORTING STRUCTURE

Figures 1 and 13

Referring now to Figures 1 and 13, the numeral 1 represents a base which is supported on suitable runners 3 provided with rubber feet 5. A front plate 7 is welded or otherwise fixed to the base and is bent at 9 to extend rearwardly and upwardly. The plate is provided with rearwardly extending side flanges 11 above the bend, and braces 13 are attached to the flanges and to the base to stiffen the frame.

A generally circular platform 15 is mounted on the front of the plate by means of suitable screws 17 and extends in a plane parallel to that of the plate above the bend 9.

A suitable opening 19 is provided in the plate, above the bend, for the reception of a resettable register 21, which is reset by the knurled knob 23.

COIN PICK-UP AND SINGLING MEANS

Figures 1, 2, 4, 11 and 13

The platform 15 has yieldably attached to it by means of suitable screws 24 which ride on springs 24', a partial ring 25 which extends from the point 27 to point 29 (Fig. 2).

A coin hopper 31 is fixed to the outer surface of the ring and extends frontwardly therefrom.

The ring is beveled at 35 at the inner side to form a narrow but expansible trough 36 to guide the coins from the hopper and turn them to stand on edge and lean toward the rear of the machine. A hardened steel bar 38 forms the bottom of the trough in all positions of ring 25 relative to the platform. The depth of the trough decreases as the point 29 is approached and at this point it vanishes entirely.

Platform 15 is provided with a first circular recess 40 and a second circular recess 42 of smaller diameter than the first.

A pick-up plate 37 is rotatably mounted in the recess 40. This plate is constructed of a hub 39 which is fitted with anti-friction bearings 41 which are mounted on a shaft 43 fixed in a boss 44 formed in platform 15.

The hub has a peripheral flange 45 and two circular pin plates 46 and 47 are fixed on either side thereof by means of bolts 48. A number of sectors 49 are also held in place on the outer plate 46 by these bolts.

A plurality of pick-up pins 50 which have enlarged central portions 51 extend through the plates and serve as spacers therefor. The pins project through the upper plate 47 and are bevelled so as to present a surface 52 which drives the coins.

Adjacent each pick-up pin, a coin deflecting pin 53 is slidably mounted between the plates. These pins have collars 54 which hold them in place between the plates. The distance from the collar to each end of the pin is such that when the collar lies against the rear of plate 47 the rounded end of the pin projects above the surface of the plate; and when it lies on the surface of plate 46 the other end projects from the rear side of the plate while the rounded end is entirely retracted within the plate 47. These pins are normally retracted.

The segments 49 form a circle which is concentric with that of the pins 50 and 53. Each segment has a plurality of lands 55 equal in number to the deflecting pins 53 and in substantially radial alignment therewith. The pick-up pins 50 are preferably spaced midway between the deflecting pins. Between the lands the segments are bevelled at 56 so that a coin cannot be supported thereon.

A pair of pawls 57 and 58 are disposed in face-to-face relation between platform 15 and ring 25 and pivot on pin 59. Spring 60 fixed to the ring urges the pawls inwardly. Pawl 57 lies immediately upon pick-up plate 47.

Pivoted on a pin 61 above these pawls is a coin guide 62 which lies closely adjacent and over the face of plate 47 and, in face-to-face relation with the guide is a pawl 63 also pivoted on pin 61. A spring 64 fixed to the platform urges the pawl inwardly.

Thus as the pick-up plate 37 rotates through trough 36, the pins 50 pick up coins and lift them. As the coins are raised, pawl 57 tends to hold those which are resting on lands 55 and against plate 47 in place thereon while pawl 58 tends to shear off or displace any coins which are stacked upon the first coins to the end that only one coin will be positioned on one land. The pawl 63 duplicates this function so as to catch any coins which are missed by pawl 58. The coin guide 62 holds the properly positioned coins from displacement by centrifugal force. Any coins which come to rest on the bevels 56 will slide away from them when they reach an elevated position. All of the sheared or displaced coins fall back into the hopper.

Referring to Figures 4 and 13, it will be seen that an electric motor 65 is mounted on the frame and drives a belt 67 which drives a shaft 69 which is the input shaft of the speed reducing gear set 71. The final gear 73 of this set meshes with a gear 75 which is fixed to the hub 39.

Shaft 69 extends beyond the housing 365 and a hand-wheel 77 is fixed thereto so that the shaft may be manually rotated.

A plug connection 79 is attached to the power cord 81 while a cord 83 connects the foot switch 359 with the wiring.

COIN COUNTING MECHANISM

Figures 2, 4, 5 and 6

As shown particularly in Figures 5 and 6, the coins are fed singly, by the pick-up pins 50 into a coin guide 91, which is fixed by suitable fasteners 93 to the platform 15. The guide is grooved at 95 to receive the coins and has a recess 97 to receive the five-tooth star wheel 99.

This star wheel is fixed to a shaft 101 which is rotatably mounted at one end in a boss 103 formed in lever 105 and at its other end in a bearing 107 supported on a bracket 109 fixed to the lever by screw fasteners 111.

Lever 105 has a downwardly extending ear 113 which is provided with an arcuate slot 115 having its center coincident with the stud 117 set in the back of platform 15 upon which lever 105 pivots (see particularly Fig. 4). A thumb screw 119 enters the slot, passes through an opening in the platform and enters a nut 121. The nut is held from rotation by the arcuate ribs 123 which are formed on the lever and are disposed on either side of the slot.

Referring again to Figure 6, the shaft 101 carries a gear 125, between the star wheel and boss 103, which meshes with a gear 127 which is attached to the driven wire 129 of a Bowden cable, the sheath 131 of which is fixed in a boss 133 of lever 105. The cable is connected to drive the register 21 as is shown in Figure 2.

PREDETERMINED STOP MECHANISM

Figures 2, 3, 4, 5, 6, 7 and 14

The end of shaft 101 projects through the boss 103 and terminates in a stepping tooth 135 and an axially extending pin 137.

A pawl 139 is pivotally mounted on screw 141 in bracket 109. A spring 143 engages the pawl and bracket and holds the pawl against the teeth of star wheel 99 so as to always maintain a tooth thereof in a position normal to the axis of coin slot 95.

A boss 145 formed on lever 105 has a fixed shaft 147 projecting rearwardly therefrom (Fig. 4). A pin drum 149 is rotatably mounted on the shaft and carries ratchets 151 and 153 fixed to it. The forty teeth of ratchet 151 are formed to prevent rotation in a clockwise direction (Fig. 8) and cooperate with a pawl 155 which is pivoted on the lever 105 at 157 and which is urged into engagement with the ratchet by spring 159. The pawl is positioned in the path of pin 137.

The forty teeth of ratchet 153 are formed to prevent rotation in a counterclockwise direction and a pawl 161, also mounted at 163 on lever 105, is pressed into engagement with the ratchet by spring 165.

The stepping tooth 135 is adapted to engage the teeth of ratchet 153 to advance it one tooth for each revolution of shaft 101.

Pin drum 149 has four peripheral rows of pins 167, 169, 171 and 173. Row 167 contains ten pins; row 169, eight pins; row 171, five pins and row 173, four pins. Since there are forty teeth in ratchet 153 and it is advanced one tooth for each five coins passing the star wheel 99, it will require two hundred coins passing the star wheel to rotate the drum one turn. Accordingly, the distance between the pins of row 167 represents twenty coins; between the pins of row 169, twenty-five coins; between the pins of row 171, forty coins; and between the pins of row 173, fifty coins.

A shaft 175 is slidably and rotatably mounted in lever 105 and has its axis parallel to that of the drum but is disposed above the drum. A bracket 177 is mounted on the rear end of the shaft and carries a normally open switch 179. The actuating lever 181 of the switch faces the drum and is adapted to ride thereon.

The forward end of shaft 175 is provided with a lever 183 disposed perpendicular to the shaft axis and surmounted by a knob 185. An indexing plate 187 is fixed to lever 105 and extends parallel to shaft 175. It has five notches 189 for the reception of lever 183 and suitable markings 191 (Fig. 3) to indicate the number of coins which will be counted when the lever 183 engages a particular notch.

When the lever 183 occupies the notch marked "50," the switch actuator 181 will be positioned in alignment with the pin row 173. Similarly, when it occupies the "40," "25" or "20" notches, the actuator will be aligned with the pin rows 171, 169 or 167 respectively. When it occupies the notch marked "CONT," the actuator 181 will be positioned to the left of row 167 (Fig. 7) and will not be actuated at all as the drum rotates.

A leaf spring 193 is mounted on a projection 195 from lever 105 and engages underneath the switch bracket 177 and serves to rotate the shaft 175 so that the switch actuator 181 is normally held in contact with the drum and lever 183 is normally held in contact with a notch 189.

From Figures 4 and 7 it will be seen that a bracket 197 is mounted on the rear of platform 15 and that a solenoid 199 is supported thereon. A pair of ears 201 also project from the rear of the platform and a lever 203 is pivotally mounted on a shaft 205 supported by the ears. One end of the lever is connected to the armature of the solenoid while the other end extends through the platform and carries a cam 207 which is disposed behind disc 46 of the coin pick-up.

The cam is beveled at each side as shown at 209 and is disposed immediately adjacent the star wheel 99 on the entering side thereof. The cam, when positioned by the solenoid, serves to eject the movable deflector pins 53 of the pick-up mechanism so as to deflect all coins and prevent their passage to the star wheel.

An arm 211 on lever 203 is engaged by a spring 213

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which has its other end hooked on bracket 197 and serves to hold the cam out of pin engaging position when the solenoid is not energized.

As shown particularly in Figure 2, the lever 105 has attached to it an indicator tab 245 bearing indicia 247 to designate the coin to be counted. In this case five coins, to wit, halves, quarters, nickels, pennies and dimes are indicated.

A pointer 219 is fixed to a projection 221 on platform 15. A pair of stop pins 223, 225 are slidably and rotatably mounted in the projection. Since the pins are just alike, only one need be described in connection with Figure 14.

The projection 221 is provided with a hole 227 which is counterbored at 229. Pin 223 rides in the hole and has a flange 231 which fits in the counterbore. A cap 233 is fixed in the projection so as to close the counterbore and pin 223 extends through the cap. A spring 235 is compressed between the cap and flange 231.

The pin has a lateral projection 237 which is adapted to engage a notch 239 in the top of a post 241 also fixed in the projection 221 midway between the pins.

The pins when seated by springs 235 enter holes 243 formed in lever 105 and thus hold the lever in predetermined positions. Pin 223 engages one of two holes 243 which are so located that the star wheel 99 is positioned relative to the coin guide slot 95 to receive pennies or quarters. Pin 225 engages one of three holes 243 to position the star wheel to receive halves, nickels and dimes.

When one pin is to be used to position the lever 105, the other is retracted and rotated until its projection 237 is aligned with the notch 239 whereupon it is released and is held in position on post 241 by its spring.

It is, of course, necessary to loosen thumb screw 119 before attempting to shift the lever 105.

The lever 105 carries an indicator plate 245 which bears indicia 247 to which the pointer 219 is adjusted in order to roughly position the lever for the counting of any one of the five coins. The pins 223 and 225 furnish the exact position required after which the thumb screw 119 is again tightened to hold the lever in its adjusted position.

The coin guide 62 which is pivotally mounted on the platform 15 at 61 and extends practically to the star wheel 99, has an upwardly extending ear 249 which contains a cam slot 251. A shouldered stud 253 is fixed to lever 105 (Fig. 7) and a screw and washer 255 loosely confine the guide ear on the stud. Thus as the lever is rotated clockwise (Fig. 2) about its pivot 117, the stud will cam the guide in a similar direction to open it relative to the supports on the pick-up wheel so that a coin of greater diameter may be received. The gate is, of course, rotated in the opposite direction when lever 105 rotates counterclockwise to adjust for a smaller coin.

COIN STACKING MECHANISM

Figures 1, 2, 9 and 10

The coins, as they leave the coin guide 91, enter a second guide 257 which is of hollow, rectangular cross section and is pivotally mounted at 259 on the platform 15 in alignment with the guide 91.

A coin deflector finger 261 is pivotally mounted at 259 in the guide and has a downwardly curved projection 265 which extends through the discharge opening 267 of the guide. The deflector is provided with a central slot 269 which receives a cam 271 which is mounted for rotation in the walls of the guide. The cam is adjusted by a pointer knob 273 which also cooperates with indicia 275 on the outer surface of the guide to indicate the setting for the various coins. An elongated opening 277 is preferably formed in the front face of the guide so that any jamming of the coins due to improper setting of the deflector 261 will be detected.

The coins dropping from the guide 257 enter the funnel

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279 which has a flared mouth 281 and then a bore 283 of suitable size to receive a stack of the coins being counted. A different funnel is required for each size of coin.

The bore 283 is counterbored at 285 and the lower end of the latter is flared outwardly at 287 to facilitate the entrance of a paper tube or coin wrapper 289 which is frictionally held in the counterbore and is positioned axially by the shoulder at the juncture of the two bores.

The funnel has an external, annular section 291 which has a key 293 fixed therein, which extends axially along the exterior of the funnel. The reduced portion 294 disposed below the section is received in a ring 295 supported on a bracket 297 which is attached to and extends laterally from the frame.

A screw 299 in the ring holds the funnel in place. A socket 301 is formed in the ring to receive the key 293.

The reduced portion 294 is slotted radially at 303 for about half its diameter, at a point which is preferably opposite the key 293. The ring 295 is provided with an aligned slot 305 for about half its diameter and in a position opposite the socket 301.

An ear 307 extends laterally from the ring and a stop lever 309 is pivoted at 311 thereon below the ear. The lever enters the slots 303 and 305 and carries a tab 313 which blocks the bore 283.

A solenoid 315 is mounted on bracket 297 and its armature 317 is connected by link 319 to the lever 309.

A plate 321 is fixed to the upper side of ear 307, is held in place by pivot bolt 311 and rests against ring 295 to prevent rotation. A tension spring 323 connects the armature and plate and serves to hold the armature out of the solenoid and the lever 309 with its tab 313 positioned in closing relation in bore 283.

A normally closed switch 325 is mounted on bracket 297 and has an actuating lever 327 disposed below link 319. An ear 329 is turned up at the side of the link and a pawl 331 is pivoted at 333 thereon.

The tail of the pawl has two projections 335 spaced about 90 degrees and a stop pin 337 is set into the ear between the projections. The weight of the nose of the pawl normally holds projection 335 against pin 337. Thus on the power stroke of the solenoid, the pawl will ride idly over the switch lever 327 but on the return stroke under the action of the spring 323, the pawl will be prevented from rotating by the stop pin, and the rounded nose of the pawl will accordingly depress the switch lever to momentarily open it and thereafter ride off the end of it to permit it to reclose.

ELECTRICAL DIAGRAM

Figure 12

The wiring diagram discloses the power supply mains 339, 341. The electric motor 65 is connected across the mains by line 343 and switch 345.

A relay 347 having two normally open switches 349, 351 has its magnet connected to main 339 on one side and the other side connected by wire 353 to its own switch 349 and to normally open switch 179 operated by the pin drum. The other side of this switch is connected by wire 355 to both switches 349, 351 and also to normally closed switch 325 and thence by wire 357 to the other main 341.

A foot operated, normally open button switch 359 is contained in a circuit from main 341, through wire 358, the switch 359, the coil of solenoid 315 and thence by wire 361 to main 339.

The coin deflecting solenoid 199 is connected at one end to main 339 and at the other end by wire 363 to switch 351.

HOUSING

Suitable side housings 365 and 367 are attached to the machine and a housing 369 extends laterally from 367.

to enclose the coin stacking mechanism except the funnel 279.

A rear housing 371 is fixed to the base 1 at 373 and has a cover 375 attached to it by means of a hinge 377. The cover 375 extends up over the top of the machine and slantwise down the front thereof and terminates about on the level of the hopper. The cover is cut away at 379 to form an arcuate recess and a bowed-out shield 381 is fitted into the recess. The shield is preferably made of a transparent material such as a plastic so that the operator may view the interior of the hopper.

A grooved bullet-nosed pin 383 is fixed to the frame of the machine at each side of the shield and projects through a hole in the cover. The resilience of the cover causes the edge of the cover, at the hole, to enter the groove of the pin to hold the cover closed.

The front panel 387 is held in place by suitable screws and has an arcuate recess 389 formed in the upper portion thereof to clear the hopper. It is also provided with a cover plate 391 which has a window 393 for the register and an opening 395 for the reset knob of the register.

The device is thus fully housed.

OPERATION

In order to operate the machine it is first necessary to depress the cover 375 slightly to detach it from pins 383 and then swing it back to the dashed line position (Fig. 13).

Next the wing nut 119 is loosened, pins 223 and 225 are withdrawn and set with their projections 237 on post 241. The lever is then swung about its pivot 117 until the proper indicia 247 is aligned with the pointer 219.

Assuming that dimes are to be counted, when the pointer indicates the letter D, pin 225 is released from post 241 so that it may enter the corresponding opening 243. A slight shifting of the lever 105 may be necessary to seat the pin. When it has seated, the thumb nut 119 is again tightened.

The lever 183 is then turned to free it from the plate 187 and is then manipulated to slide shaft 175 axially until the lever is positioned in front of the particular notch 189 representing the number of coins to be counted in each group. Usually fifty dimes are placed in one wrapper so that the top notch (Fig. 3) will be engaged. This positions the actuating lever 181 of switch 179 above the pin row 173 which contains four pins.

In adjusting the lever 105, the coin guide 62 has been positioned to allow the proper gap between it and the lands 55 on the pick-up plate. Also, the star wheel has been positioned to provide the proper gap between it and the coin groove 95.

The knob 273 is rotated until its index points to the proper indicia 275, in this case the letter D. This rotates cam 271 in slot 264 and positions the point 265 in proper relation with respect to funnel 279 so that the coins issuing from guide 257 will fall flatwise to form a stack. The required positions of the point have been determined by experiment.

The guide 257 is swung to the dashed line position and screw 299 is loosened. The lever 309 will then be actuated by hand to withdraw it from slot 303 so that the funnel 279 may be removed and the proper funnel for dimes may be inserted. The lever 309 will not enter the slot of the new funnel unless the key 293 is seated in the socket 301. When this occurs the lever will enter the slot so that tab 313 blocks the bore 283. Screw 299 will now be tightened and guide 257 will be restored to the full line position.

The dimes to be counted are now placed in the hopper, the cover 375 is closed and switch 345 is closed. This starts motor 65 which rotates the pick-up plate 37 counter-clockwise as shown by the arrow in Figures 1 and 2.

Coins are picked up from trough 36 by the plate and those which are supported by lands 55 and pins 50 are carried to the star wheel 99 while all of the other coins

are either sheared off by pawls 58 and 63 or slide off the levels 56.

Each coin as it enters the gap between the star wheel and chute 95 will rotate the wheel one-fifth of a revolution. This turns shafts 101 and 129 a like amount and the latter advances the units wheel of the register 21 one digit.

Pin 137 cams pawl 155 out of ratchet 151 and thereafter the stepping tooth 135 advances ratchet 153 one tooth. The pin drum 149 is advanced with the ratchet and eventually a pin in the row 173 will raise switch lever 181 and momentarily close switch 179.

Referring to the diagram of Figure 12, closure of switch 179 establishes the circuit through the relay magnet and energizes it to close switches 349 and 351.

Switch 349 sets up a holding circuit through the relay magnet and switch 325. Switch 351 sets up a circuit through the coin deflector solenoid 199 and switch 325.

When solenoid 199 is energized, the cam 207 is moved into close proximity with the rear of plate 46 so that the pins 53 will be projected out through the face of plate 47 as their inner ends ride onto the cam.

The cam is positioned at the highest point reached by the pins (see Fig. 4) so that the pins will be projected before they reach the gap adjacent the star wheel. Thus any coins carried by the pick-up plate, on the lands 55 and pins 50, will be pushed from the lands and fall back into the hopper.

Usually the first count is incorrect so that when the cam is set so that the coins are deflected, the register 21 is reset by means of knob 23 and the first count is disregarded.

After the counter has been cleared the operator will hold his hand under funnel 279 and step on foot switch 359. This closes the circuit through solenoid 315 which withdraws lever 309 and tab 313 from the funnel so that the coins will drop from the funnel into the operator's hand.

A paper coin wrapper is now inserted in the counter-bore 285 of the funnel and upon release of switch 359 the solenoid 315 will be returned to normal position by spring 323. The lever 309 and tab 313 are likewise restored.

Upon restoration of the solenoid armature 317, the pawl 331 momentarily opens switch 325 which breaks the holding circuit through the relay and that through the pin displacer solenoid 199. Pins 53 accordingly move back into plate 47 and the coins are again driven through the gap adjacent the star wheel. In case the pins do not retract by gravity they will be cammed back by the rib forming the lower portion of the coin guide 91.

This time it will require ten complete revolutions of the star wheel which advances the pin drum ten steps to again pass a pin under switch lever 181 and stop the cycle. Since it requires five coins to rotate the star wheel one turn, it will be seen that fifty coins will have passed it before pins 53 will again be set to deflecting position.

This time, when the foot switch is operated, the fifty coins will be caught in the wrapper so that when the latter is closed the package is completed.

It should be noted that the lever 309 may be operated manually with the same results as are attained with the foot switch except that solenoid 315 is not energized.

The pick-up plate shown in Figure 2 is a universal plate which will handle all of the five coins. However, if the three smaller coins are to be counted exclusively, the pin plate of Figure 1 may be used in which the lands 55 are closer together and more numerous and, of course, more pins 50, 53 are provided. This increases the number of coins which will be counted per revolution of the plate and thus increases the capacity of the machine.

The same operations that are described above in connection with the dime would have to be repeated in the same order for any of the other coins handled by the machine.

It is obvious that various changes may be made in the form, structure and arrangement of parts without departing from the spirit of the invention. Accordingly, we do not desire to be limited to the specific embodiment disclosed herein primarily for purposes of illustration; but instead, we desire protection falling fairly within the scope of the appended claims.

What we claim to be new and desire to protect by Letters Patent of the United States is:

1. In a coin counter, the combination of a coin counting means comprising a coin guide, a star wheel disposed adjacent the guide to form a coin gap therewith, coin pick-up means for feeding coins to said gap, coin ejecting means on said pick-up means, a pin drum having a number of rows of pins, each row having a different number of pins, means connecting said star wheel to advance said drum in accordance with the coin count and means selectively settable relative to said rows of pins for actuation by a pin in the selected row to operate said coin ejecting means.

2. In a coin counter, the combination of a coin counting means comprising a coin guide, a star wheel disposed adjacent the guide to form a coin gap therewith, a coin pick-up means for feeding coins to said gap, coin ejecting means on said pick-up means, a pin drum having a number of rows of pins, each row having a different, predetermined number of pins, means connecting said star wheel to advance said drum in accordance with the coin count and means selectively settable relative to said rows of pins for actuation thereby to operate said coin ejecting means.

3. In a coin counter, the combination of a coin counting means comprising a coin guide, a star wheel disposed adjacent the guide to form a coin gap therewith, coin pick-up means for feeding coins to said gap, coin ejecting means on said pick-up means, a pin drum having a number of rows of pins, each row having a different, predetermined number of equally spaced pins, means connecting said star wheel to advance said drum in accordance with the coin count and means selectively settable relative to said rows of pins for actuation thereby to operate said coin ejecting means.

4. In a coin counter, the combination of coin counting means, means for feeding coins thereto, said feeding means having a plurality of coin receiving stations, coin ejecting means mounted on the feeding means adjacent each station, a predeterminer mechanism comprising a pin drum connected to be driven by said counting means, a plurality of rows of pins on said drum, the number of pins differing in each row, a switch, means mounting said switch for movement into alignment with any of said rows of pins for actuation thereby and electromagnetic means controlled by said switch for rendering said coin ejecting means effective.

5. In a coin counter, the combination of coin counting means comprising a coin guide, a star wheel cooperating therewith to form a coin gap, means mounting said star wheel for movement relative to said guide to vary the size of the gap, a second coin guide in advance of said gap, means connecting said second guide for movement with said mounting means to compensate for the changed size of the gap, a predeterminer fixed to said mounting means, for movement therewith, a coin pick-up mechanism adapted to feed coins along said second guide to said gap, coin deflecting means movable to and from a position in which it deflects coins from the pick-up mechanism ahead of the gap, means operated by the predeterminer for moving said deflecting means to deflecting position, a receptacle for the counted coins, means for releasing said coins from the receptacle and means operable by said releasing means for moving said deflecting means from deflecting position.

6. In a coin counter, the combination of coin counting means comprising a coin guide, a star wheel cooperating therewith to form a coin gap, means mounting said star

wheel for movement relative to said guide to vary the size of the gap, a second coin guide in advance of said gap, means connecting said second guide for movement with said mounting means to compensate for the changed size of the gap, a predeterminer fixed to said mounting means, for movement therewith, means connecting said star wheel to advance said predeterminer comprising first and second reversely acting ratchets, a mutilated pinion driven by the star wheel to actuate the first ratchet, a pawl for holding said second ratchet and a cam driven by said star wheel to release said pawl prior to the actuation of the first ratchet, a coin pick-up mechanism adapted to feed coins along said second guide to said gap, coin deflecting means movable to and from a position in which it deflects coins from the pick-up mechanism ahead of the gap, means for moving said deflecting means to deflecting position comprising a pin drum driven by said first ratchet, a switch disposed for actuation by the pins of said drum and power means controlled by the switch.

7. In a coin counter, the combination of coin counting means, means for adjusting said means to accommodate coins of different diameters, means for feeding said coins to the counting means, a funnel having a bore to receive the counted coins, a coin guide for conducting the coins from the counting means toward the funnel, means for directing said coins to a predetermined position above the bore of the funnel to insure proper face-to-face stacking thereof in the funnel, said last named means comprising a finger supported adjacent the guide and pivotally mounted for movement substantially transversely of and toward and away from the top of the funnel, means for moving said finger relative to the bore of said funnel and means for indicating the position corresponding to each size of coin.

8. A coin receiving means comprising a tube having a coin inlet, means for counting and supplying coins to said inlet, means for stopping the counting means after a predetermined number of coins have been counted, a closure for said tube below the inlet, electromagnetic means for retracting the closure, means for restoring said closure and means responsive to the restoring means, operable during restoration, for starting the counting and supplying means.

9. A coin receiving means comprising a tube having a coin inlet, means for counting and supplying coins to said inlet, means for stopping the counting and supplying means after a predetermined number of coins have been counted, a closure for said tube below the inlet, electromagnetic means for retracting the closure, means for restoring said closure and means responsive to the restoring means, operable during restoration, for starting the counting and supplying means.

10. A coin receiving means comprising a tube having an outwardly flared coin inlet, means for counting and supplying coins to said inlet, means for stopping the counting means after a predetermined number of coins have been counted, a closure for said tube below the inlet, electromagnetic means for retracting the closure, means for restoring said closure and means responsive to the restoring means, operable during restoration, for starting the counting and supplying means.

11. A coin receiving means comprising a tube having a coin inlet, means for counting and supplying coins to said inlet, means for stopping the counting means after a predetermined number of coins have been counted, a closure for said tube below the inlet, electromagnetic means for retracting the closure, means for restoring said closure, a socket in said tube below said closure for supporting a coin wrapper and means responsive to the restoring means, operable during restoration, for starting the counting and supplying means.

12. In a coin counting machine, the combination of coin counting means, continuously operable motor means for feeding coins to the counting means, means associated with the feeding and counting means for deflecting coins

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from the latter, a coin receptacle, means for releasing coins from the receptacle, a predeterminer connected to be driven by the counting means and connected to control the deflecting means, a relay, means operable by the predeterminer for energizing the relay, means operable by the relay for actuating the coin deflecting means, means for actuating the coin releasing means and means operable by the latter for deenergizing the relay.

13. In a coin counting machine, the combination of coin counting means, continuously operable motor means for feeding coins to the counting means, means associated with the feeding and counting means for deflecting coins from the latter, a coin receptacle, means for releasing coins from the receptacle, a predeterminer connected to be driven by the counting means and connected to control the deflecting means, a relay, means operable by the predeterminer for energizing the relay, means operable by the relay for actuating the coin deflecting means and for holding the relay energized, means for actuating the coin releasing means and means operable by the latter for deenergizing the relay.

14. In a coin counting machine, the combination of coin counting means, continuously operable motor means for feeding coins to the counting means, means associated with the feeding and counting means for deflecting coins from the latter, a coin receptacle, means for releasing coins from the receptacle, a predeterminer connected to be driven by the counting means and connected to control the deflecting means, a relay, means operable by the predeterminer for energizing the relay, means operable by the relay for actuating the coin deflecting means and for holding the relay energized, means for actuating the coin releasing means and means operable by the latter for deenergizing the relay, said relay, upon deenergization, serving to render the deflecting means ineffective.

15. In a coin counter, the combination of coin counting means, coin pick-up means for supplying coins to the counting means, a receptacle disposed to receive the counted coins, means having enabled and disabled conditions and effective when in the enabled condition for preventing coins from entering the counting means, means operable after a predetermined number of coins have been counted for enabling said preventing means, coin control means movable between an effective position in which it holds coins in the receptacle and ineffective position in which it releases coins from said receptacle and means responsive to the operation of said coin control means for disabling said preventing means.

16. In a coin counter, the combination of coin counting means, coins pick-up means for supplying coins to the counting means, a receptacle disposed to receive the counted coins, means having enabled and disabled conditions and effective when in the enabled condition for preventing coins from entering the counting means, means operable after a predetermined number of coins have been counted for enabling said preventing means, coin control means operable through a cycle and being effective in one position for holding coins in the receptacle

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and ineffective in another position for releasing the coins from said receptacle and means responsive to the operation of said coin control means near the completion of the cycle for disabling the preventing means.

17. In a coin counter, the combination of coin counting means, coin pick-up means having a plurality of coin stations thereon for feeding coins to the counting means, a coin ejector mounted at each station on the pick-up means, means responsive to the passage of a predetermined number of coins through the counting means for actuating said ejectors so as to prevent feeding of additional coins to the counting means, a receptacle, means for conducting counted coins from said counting means to said receptacle, coin control means movable between an effective position in which it holds coins in the receptacle and ineffective condition in which it releases coins from said receptacle, means for moving the coin control means to ineffective position, and means responsive to the operation of the coin control means to effective position for disabling said ejector actuating means.

18. In a coin counter, the combination of coin counting means, coin pick-up means for supplying coins to the counting means, a receptacle disposed to receive the counted coins, means having enabled and disabled conditions and effective when in the enabled condition for preventing coins for entering the counting means, means operable after a predetermined number of coins have been counted for enabling said preventing means, coin control means movable between an effective position in which it holds coins in the receptacle and ineffective condition in which it releases coins from said receptacle, means responsive to the operation of said coin control means for disabling said preventing means and foot actuated means for operating said coin control means.

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