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C. F. ROGIER ET AL

2,804,737

COIN ROLL FILLING AND CRIMPING MACHINE

Filed Sept. 3, 1953

20 Sheets-Sheet 1

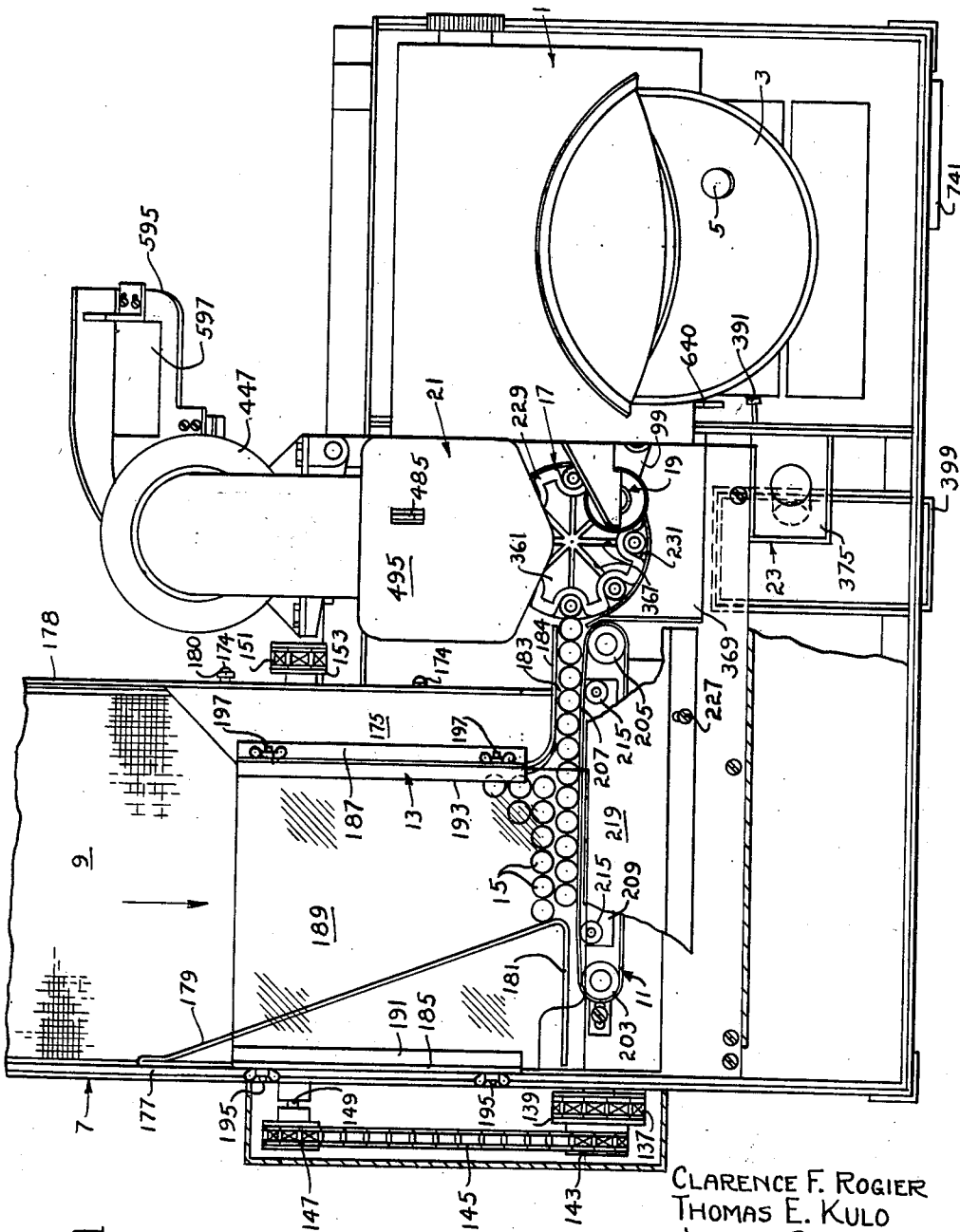


Fig. 1

CLARENCE F. ROGIER
THOMAS E. KULO
JOSEPH SINGER
GUSTAV V. NERO
INVENTOR.

BY Edmund W. E. Kamm
ATTORNEY

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C. F. ROGIER ET AL

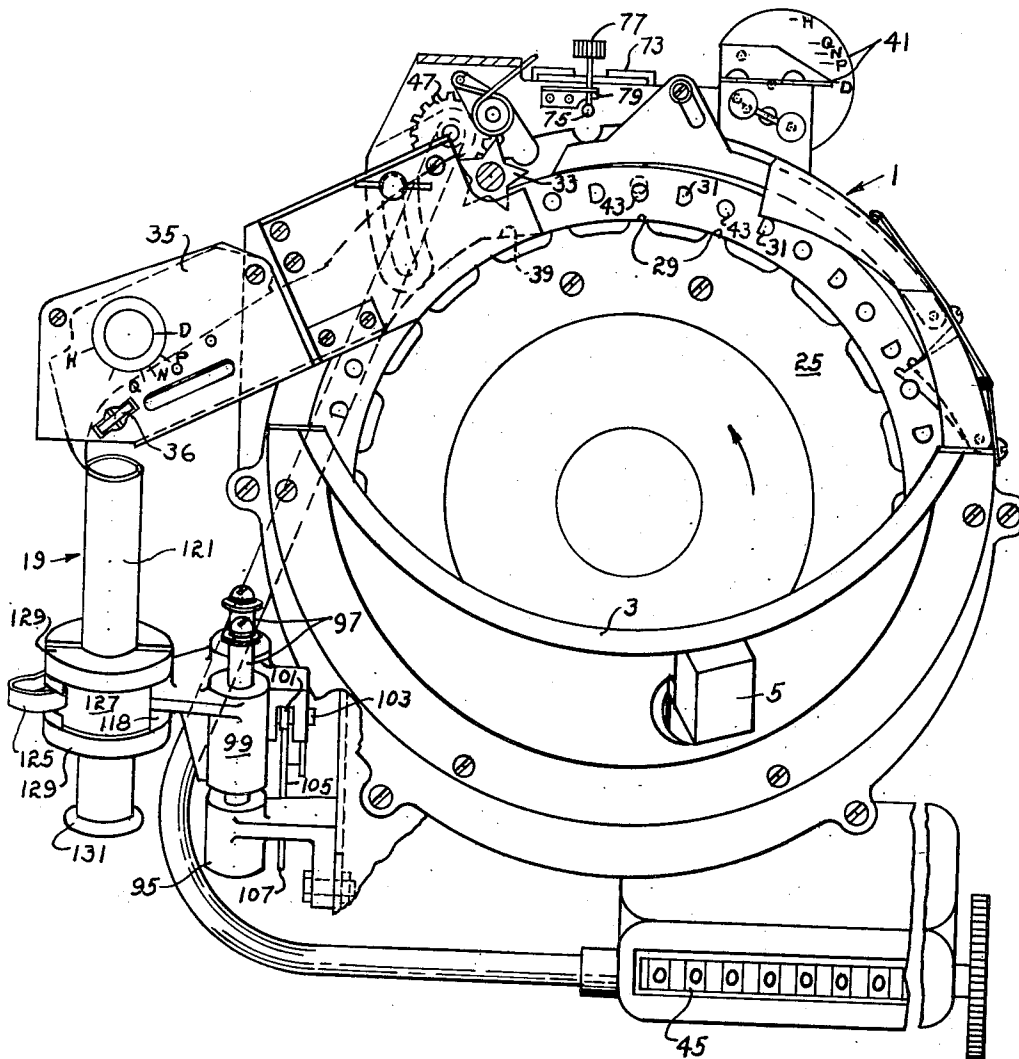
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COIN ROLL FILLING AND CRIMPING MACHINE

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Fig. 2



CLARENCE F. ROGIER
THOMAS E. KULO
JOSEPH SINGER
GUSTAV V. NERO
INVENTOR.

BY *Edmund W. E. Kamm*
ATTORNEY

Sept. 3, 1957

C. F. ROGIER ET AL

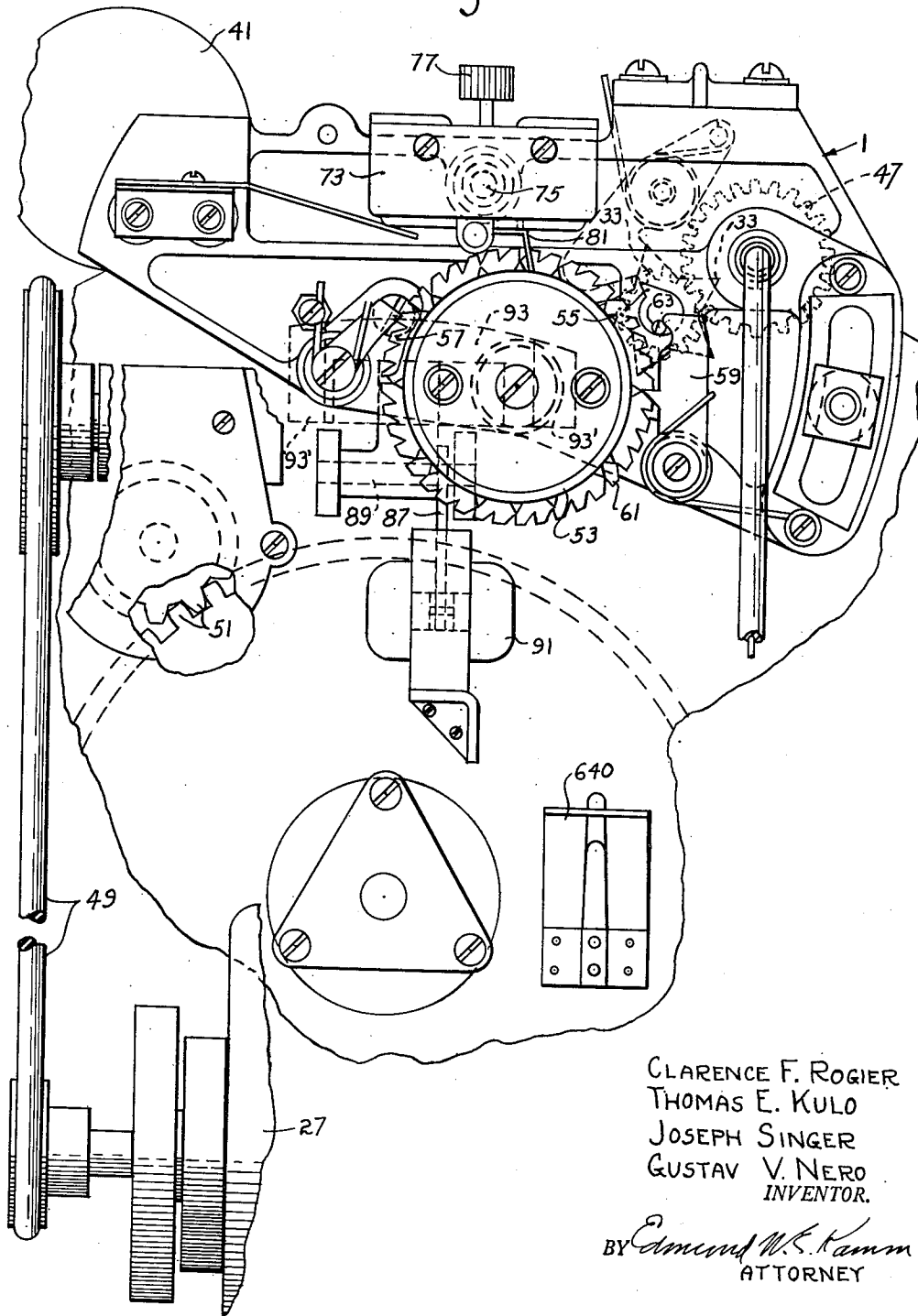
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Fig. 3



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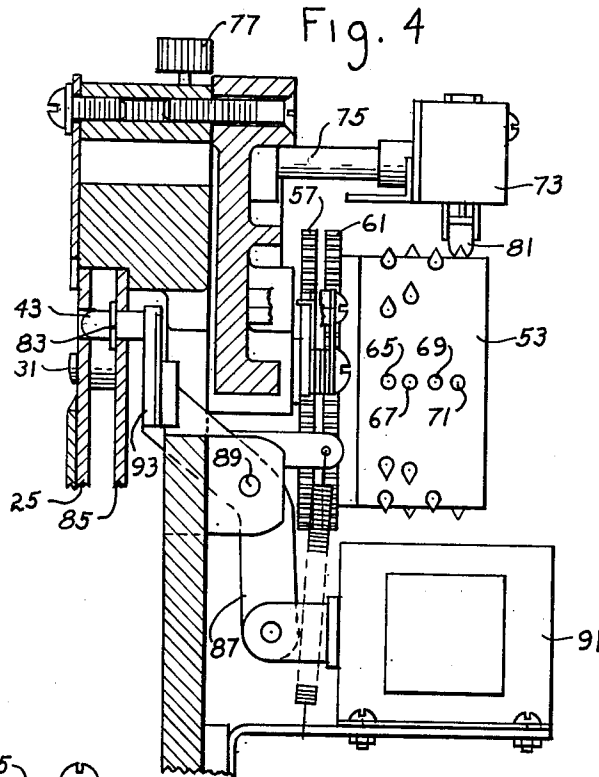
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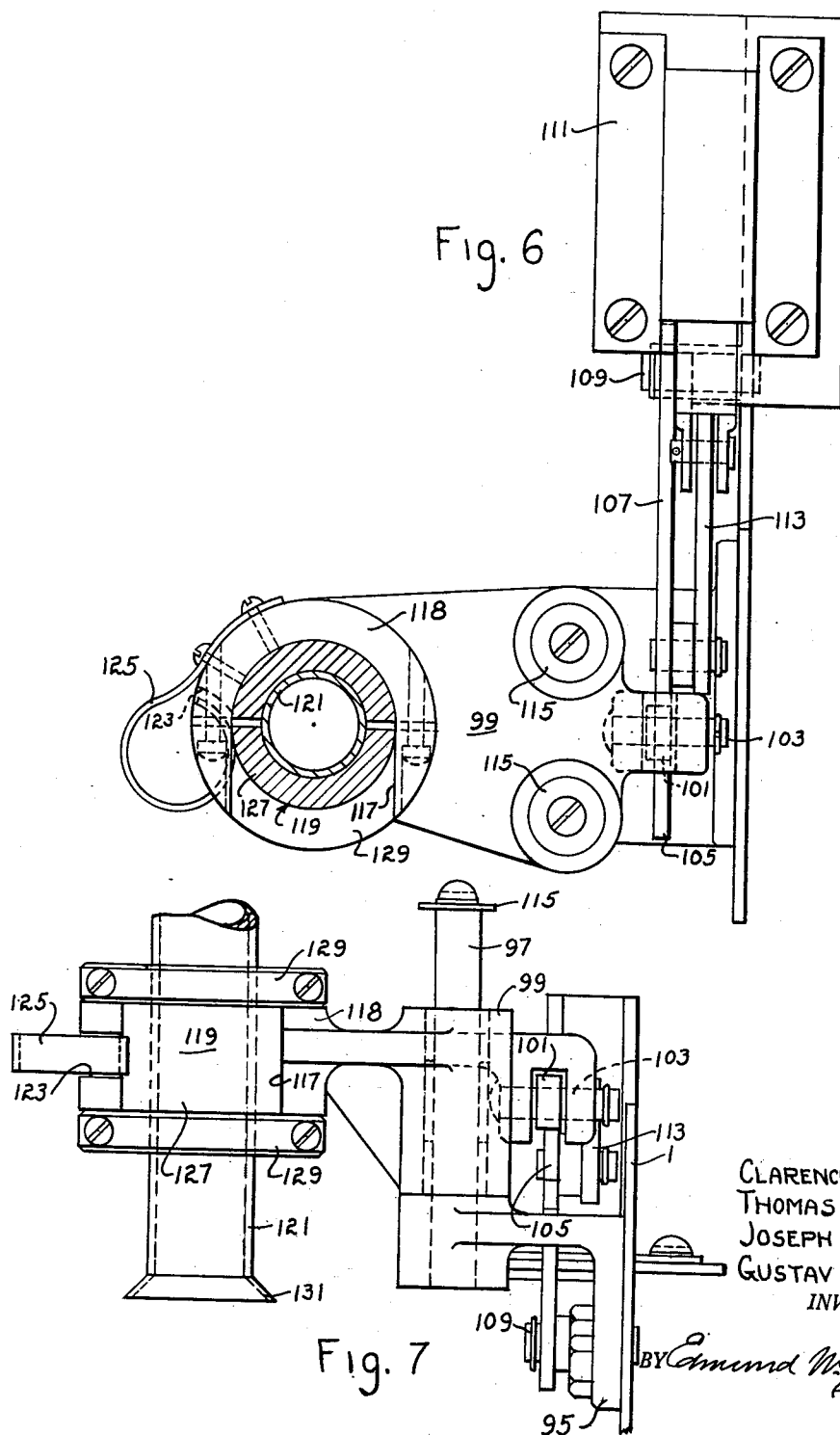
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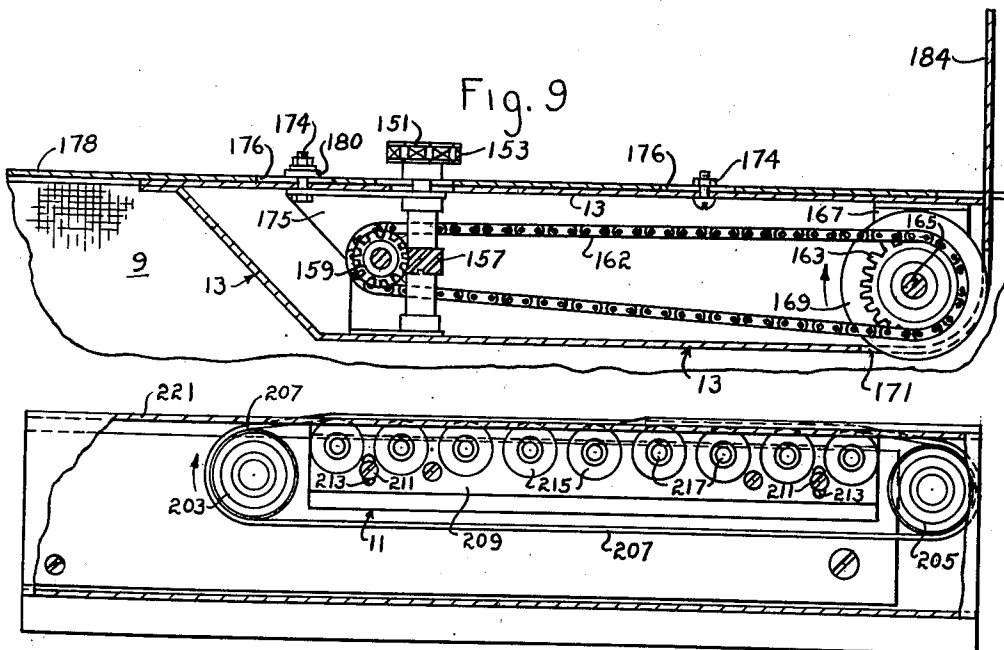
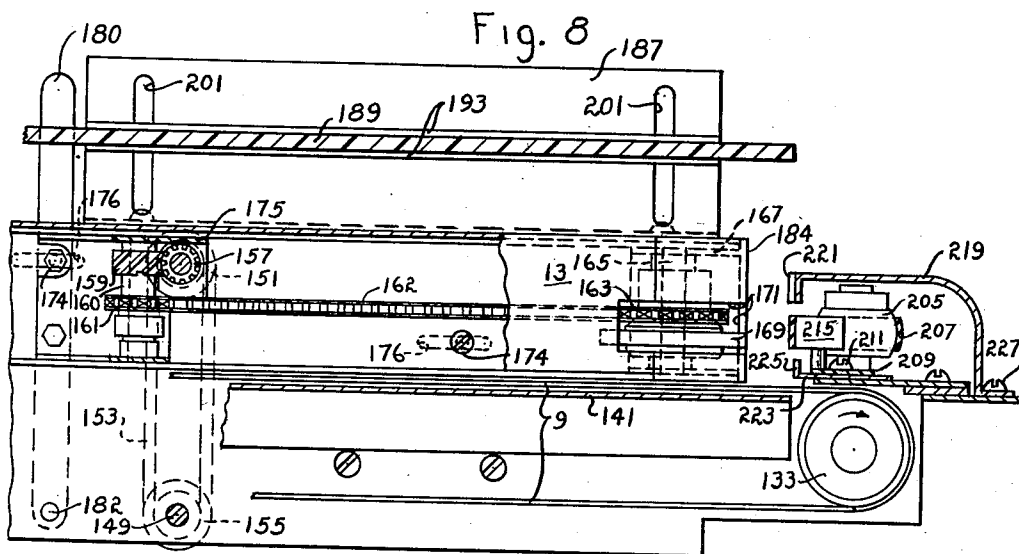


Fig. 10

CLARENCE F. ROGIER
THOMAS E. KULO
JOSEPH SINGER
GUSTAV V. NERO
INVENTOR.

BY *Edmund N. E. Kamm*
ATTORNEY

Sept. 3, 1957

C. F. ROGIER ET AL

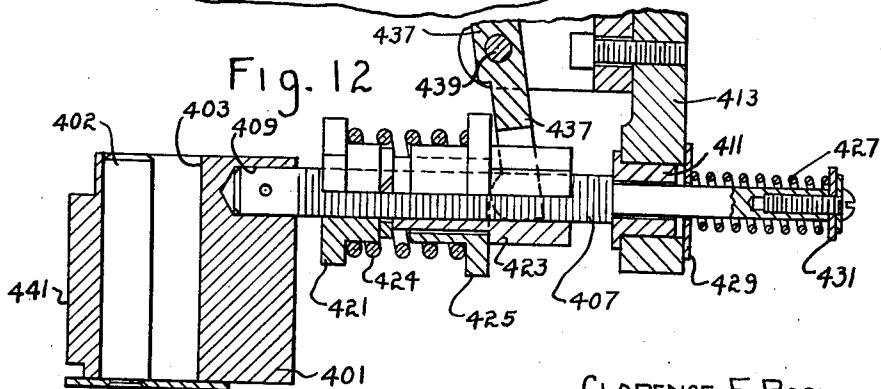
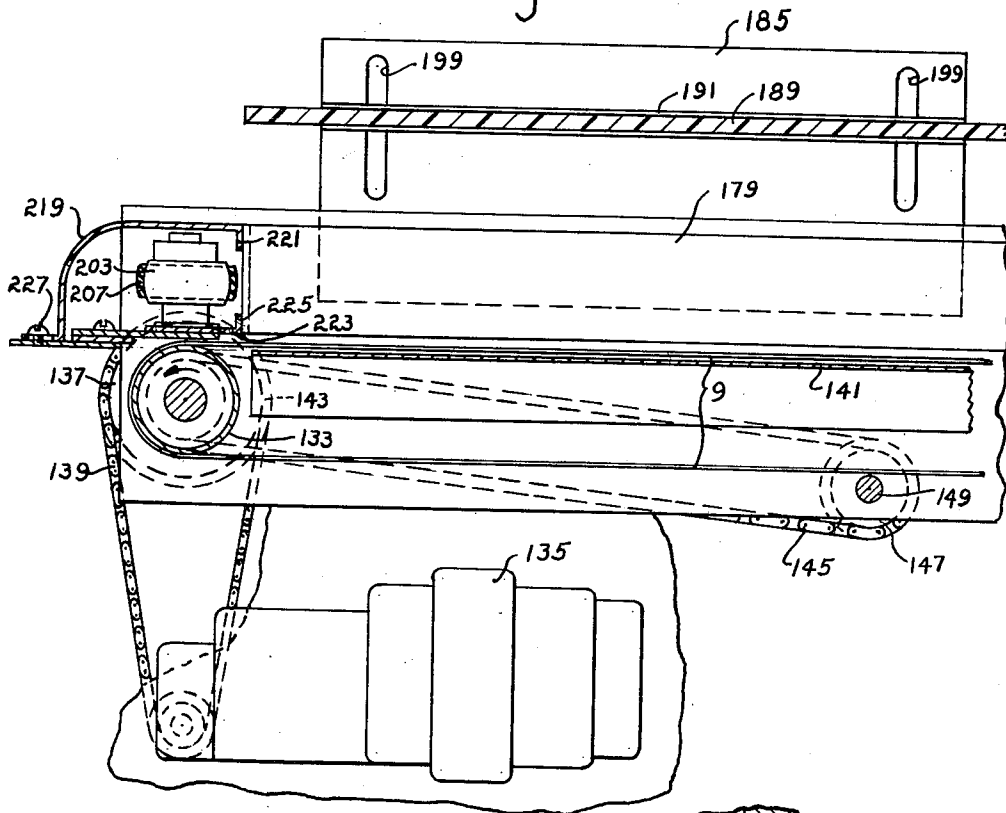
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COIN ROLL FILLING AND CRIMPING MACHINE

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Fig. 11



CLARENCE F. ROGIER
THOMAS E. KULO
JOSEPH SINGER
GUSTAV V. NERO
INVENTOR.

BY *Edmund M. Kamm*
ATTORNEY

Sept. 3, 1957

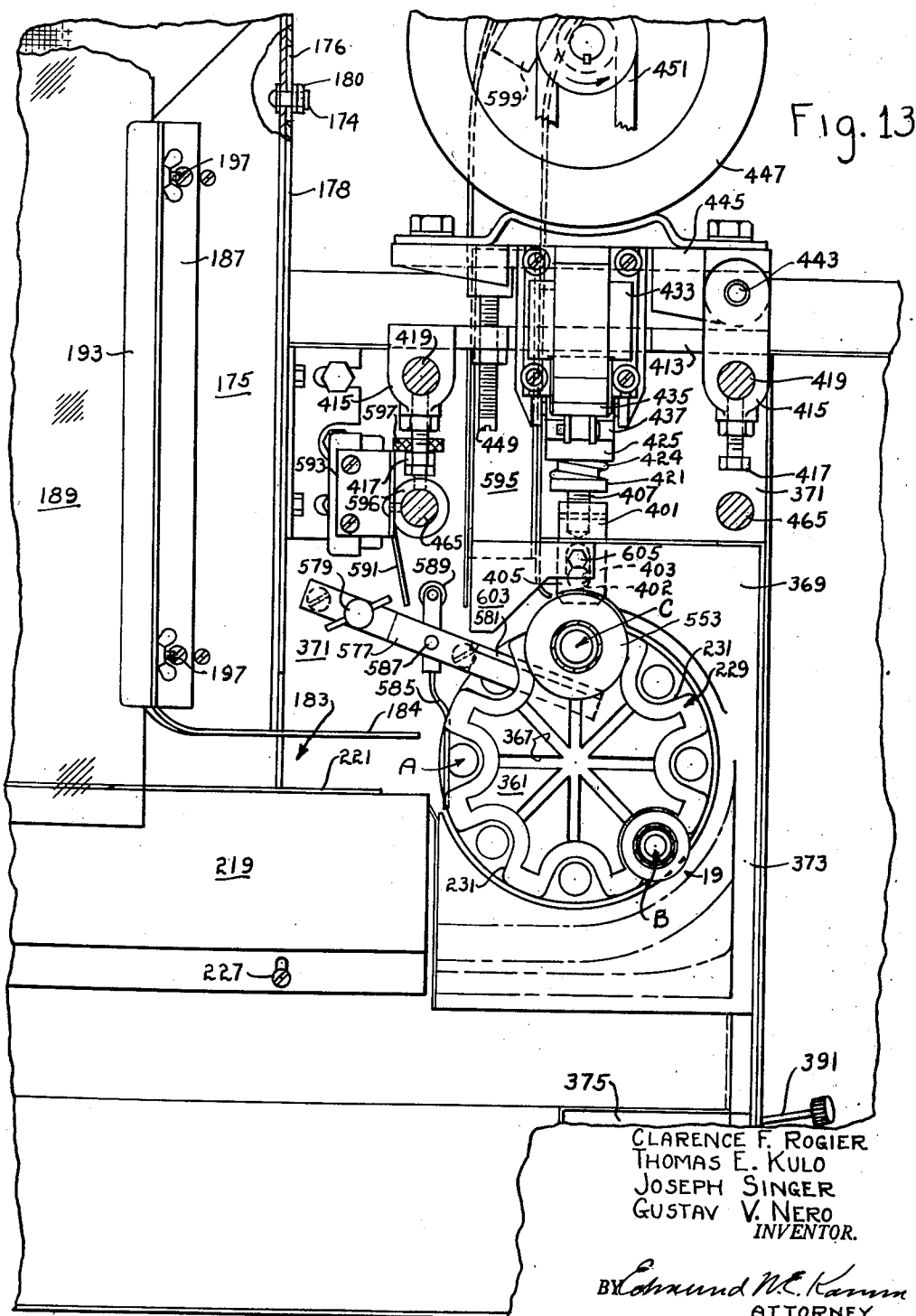
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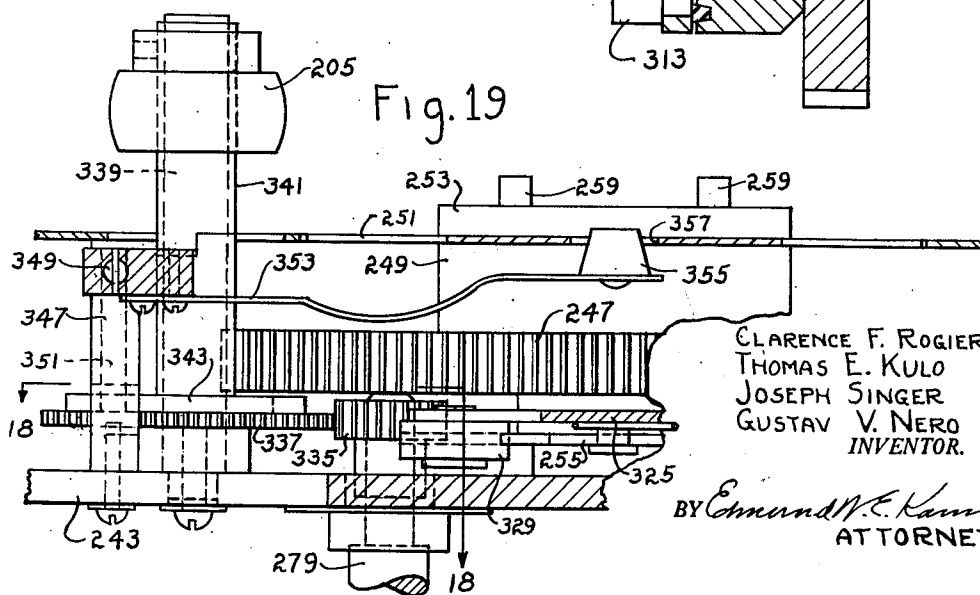
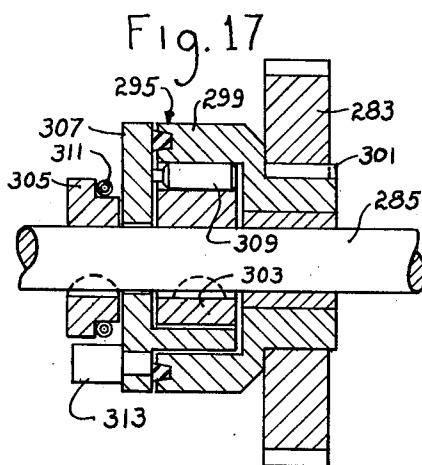
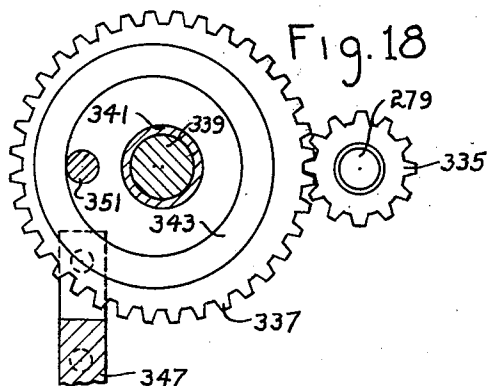
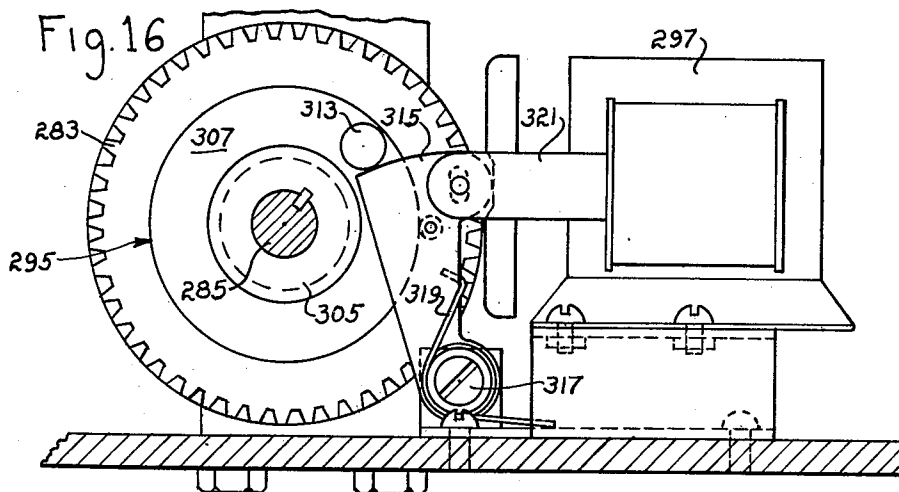
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CLARENCE F. ROGIER
THOMAS E. KULO
JOSEPH SINGER
GUSTAV V. NERO
INVENTOR.

BY Edmund W. E. Kamm
ATTORNEY

Sept. 3, 1957

C. F. ROGIER ET AL

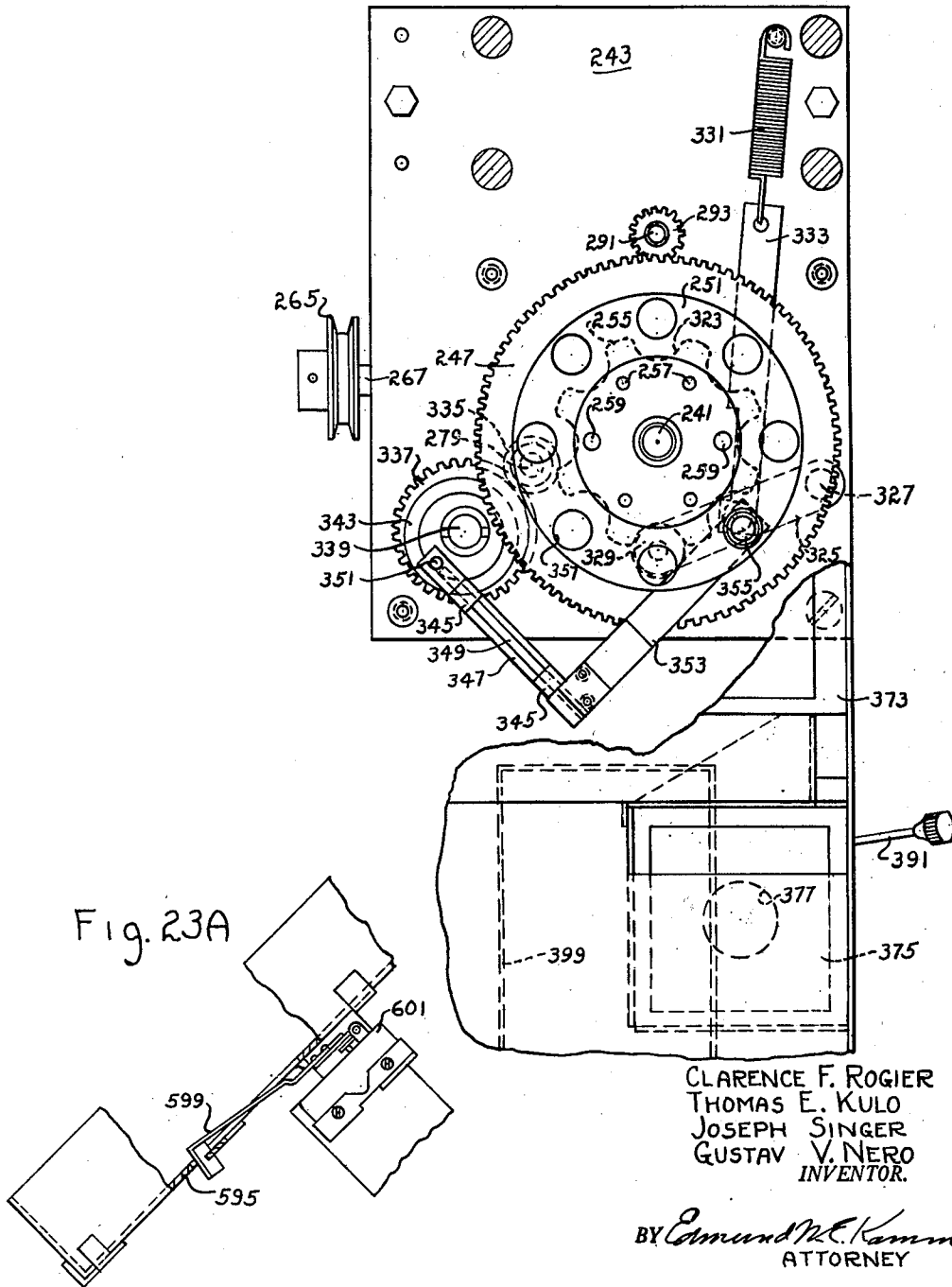
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Fig. 20



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Fig. 21

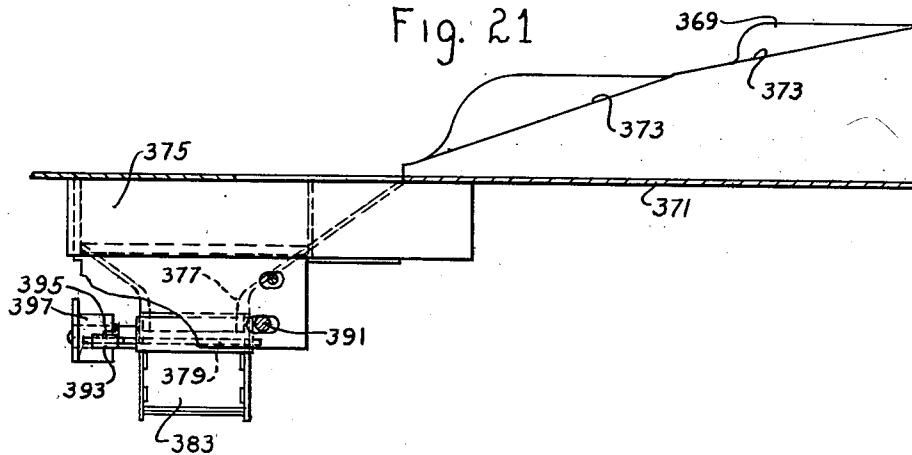
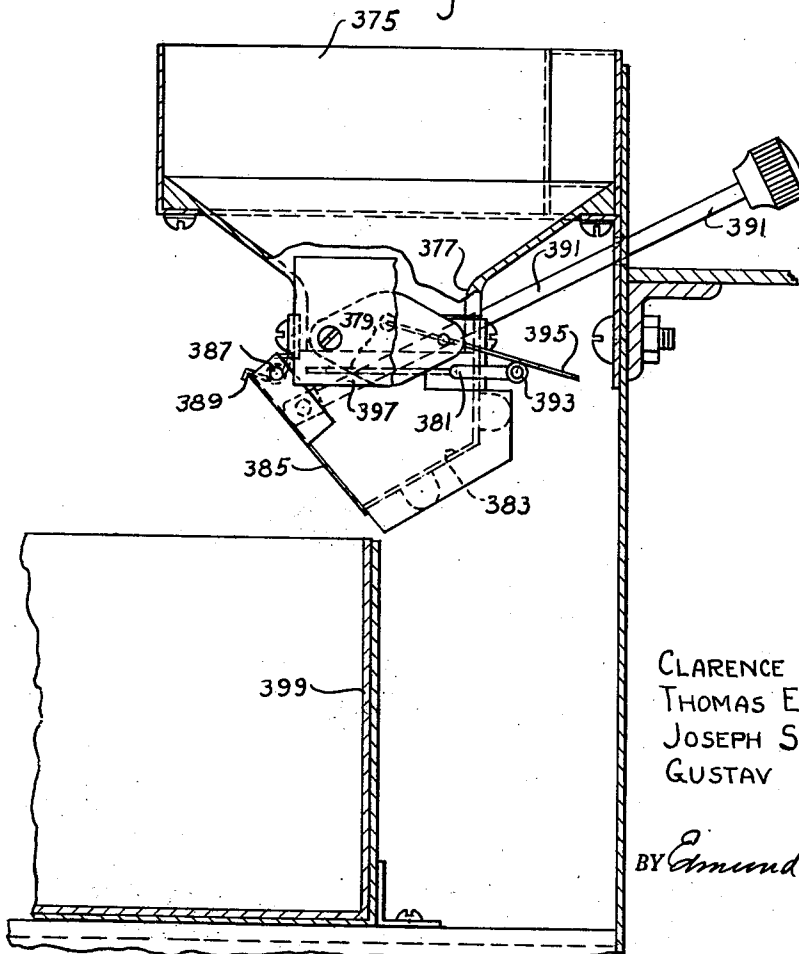


Fig. 22



CLARENCE F. ROGIER
THOMAS E. KULO
JOSEPH SINGER
GUSTAV V. NERO
INVENTOR.

BY *Edmund W. Kamm*
ATTORNEY

Sept. 3, 1957

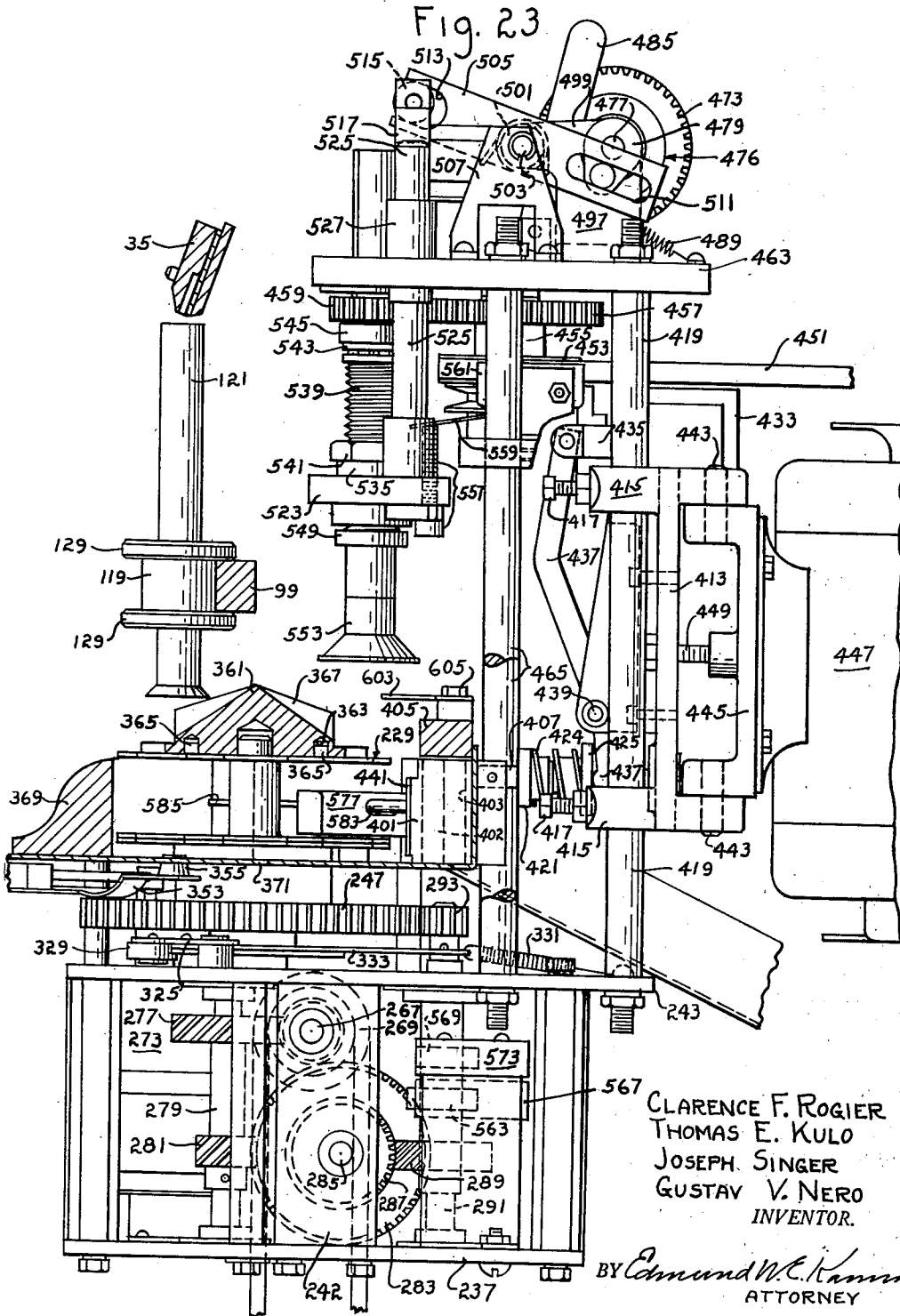
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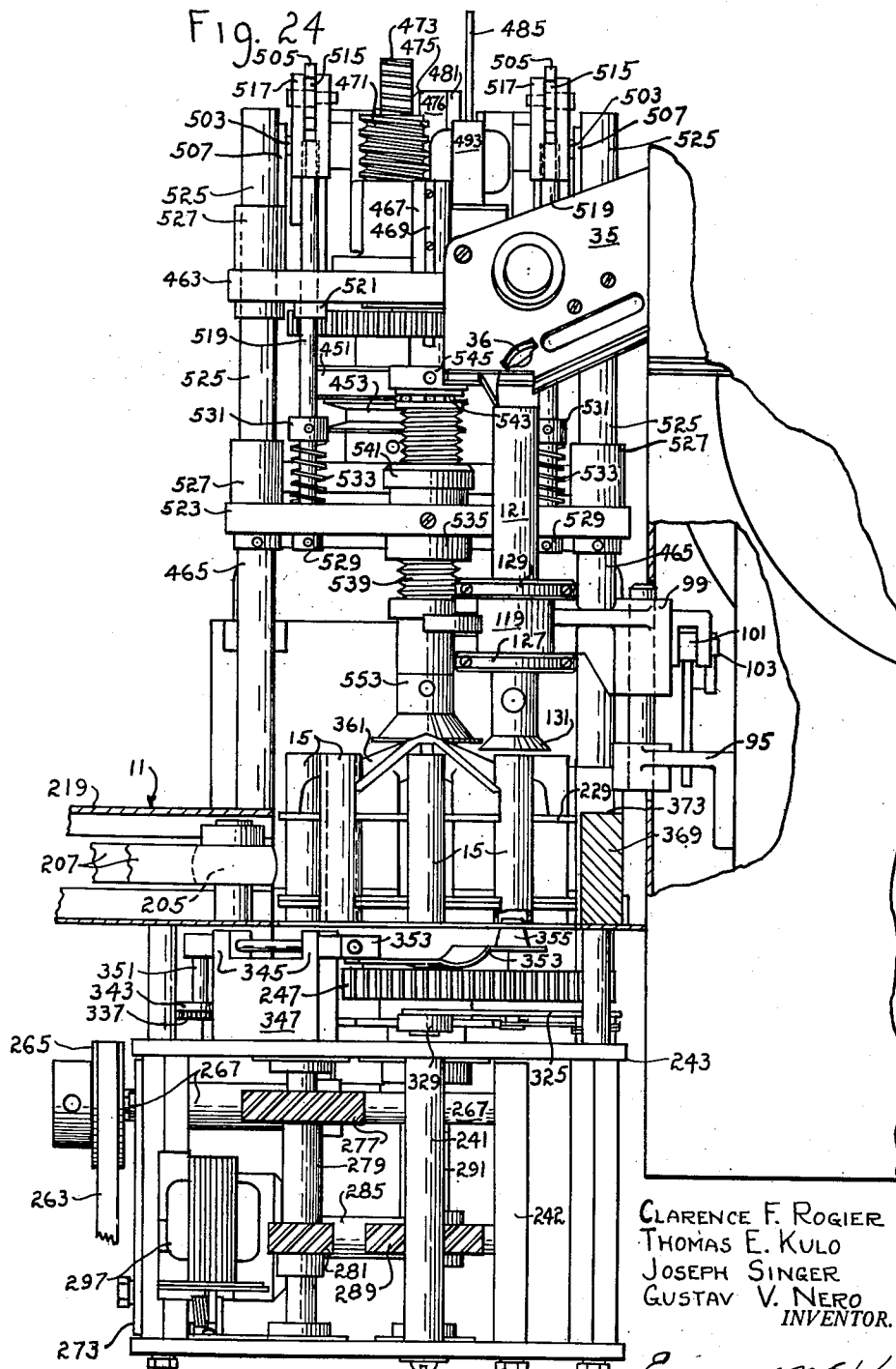
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CLARENCE F. ROGIER
THOMAS E. KULO
JOSEPH SINGER
GUSTAV V. NERO
INVENTOR.

BY *Edmund W. Kamm*
ATTORNEY

Sept. 3, 1957

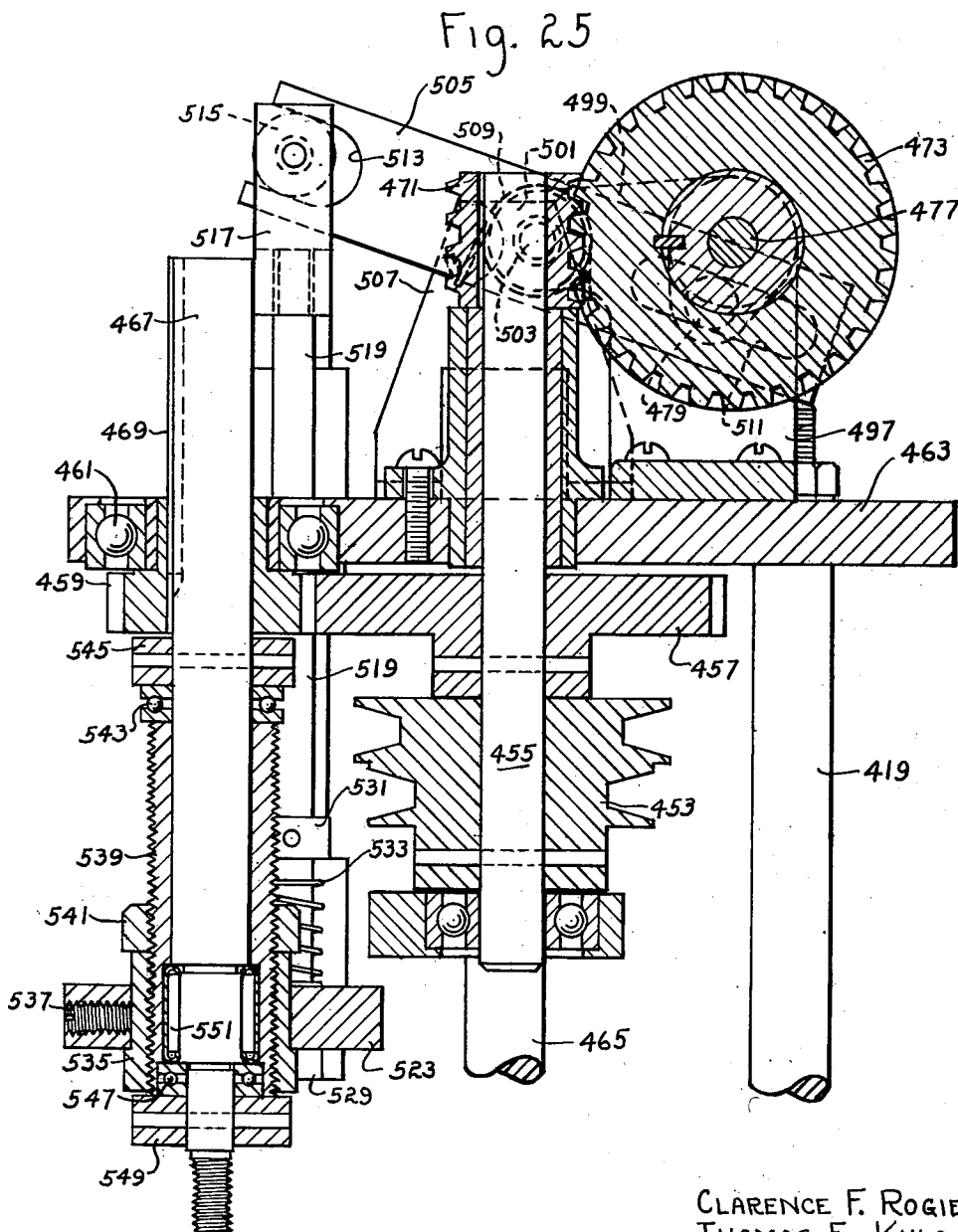
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COIN ROLL FILLING AND CRIMPING MACHINE

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CLARENCE F. ROGIER
THOMAS E. KULO
JOSEPH SINGER
GUSTAV V. NERO
INVENTOR.

BY *Edmund W. Kamm*
ATTORNEY

Sept. 3, 1957

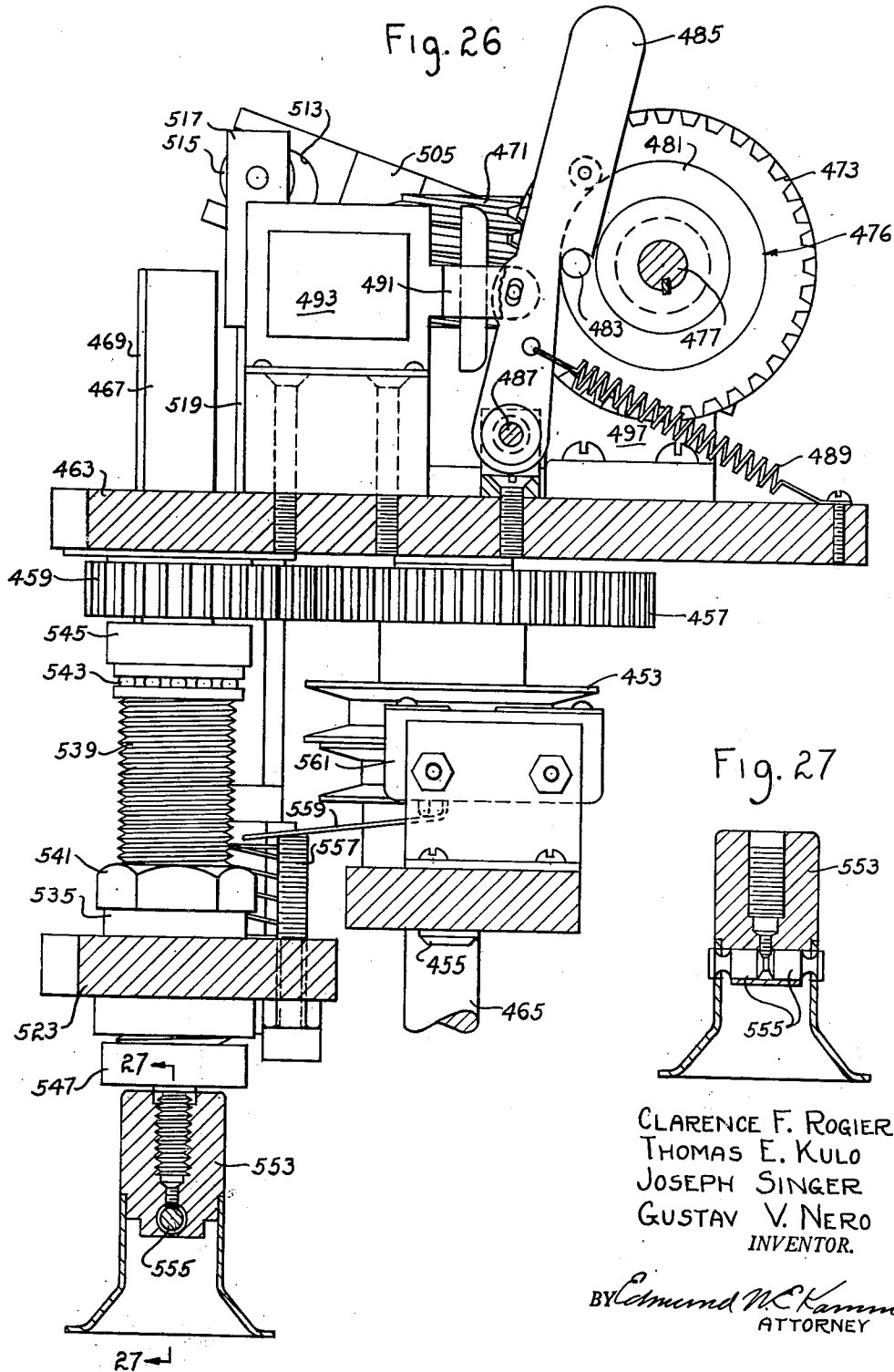
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COIN ROLL FILLING AND CRIMPING MACHINE

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Fig. 26A

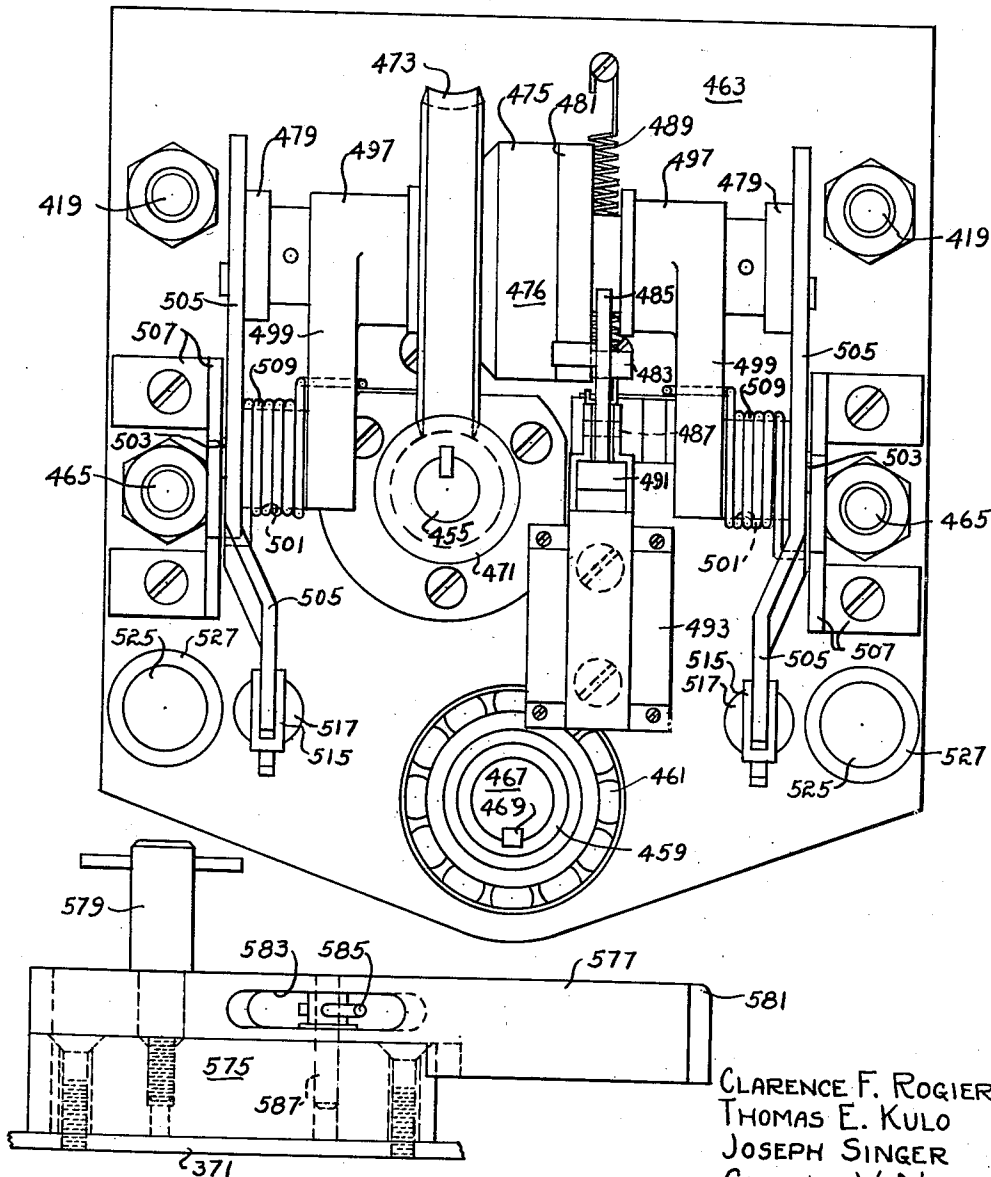


Fig. 27A

CLARENCE F. ROGIER
THOMAS E. KULO
JOSEPH SINGER
GUSTAV V. NERO
INVENTOR.

BY *Edmund W. Kamm*
ATTORNEY

Sept. 3, 1957

C. F. ROGIER ET AL

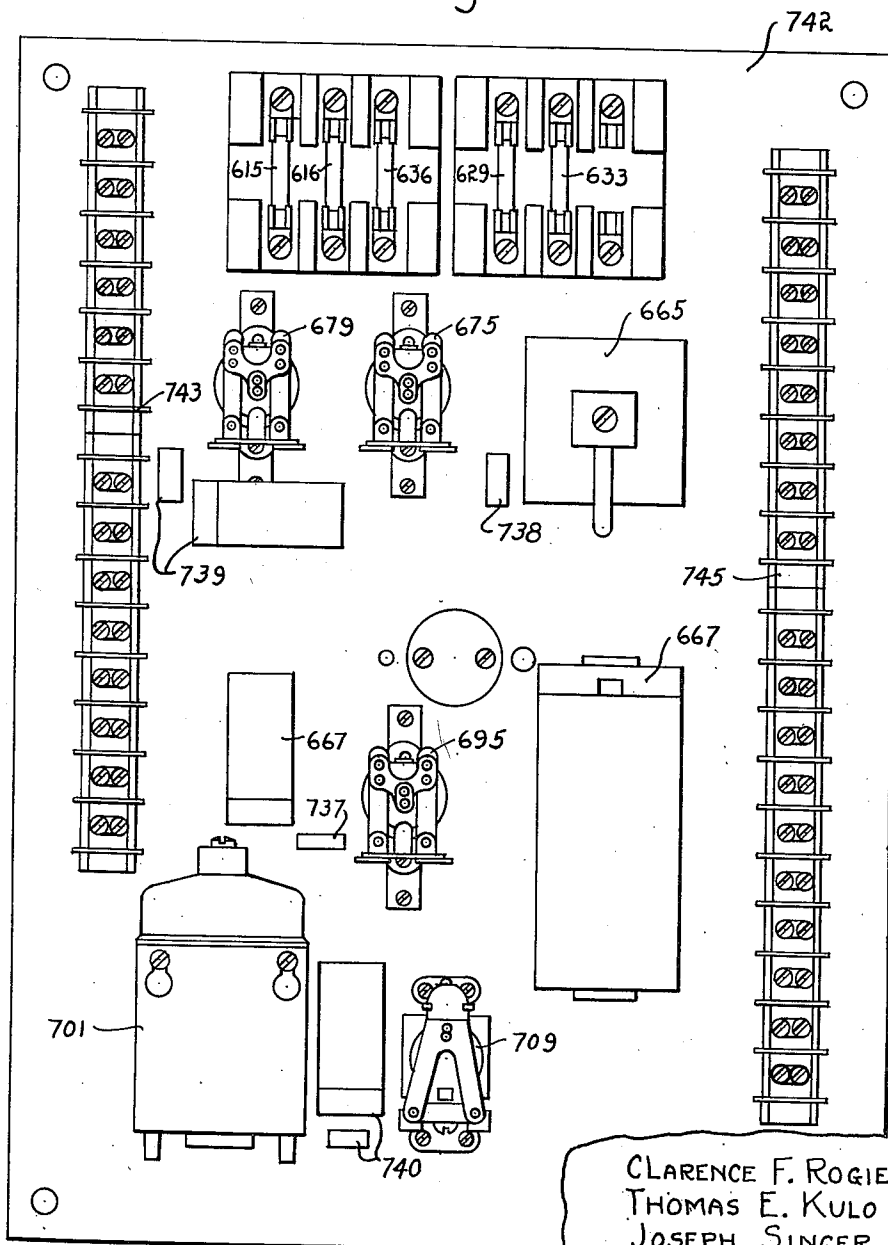
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COIN ROLL FILLING AND CRIMPING MACHINE

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Fig. 28



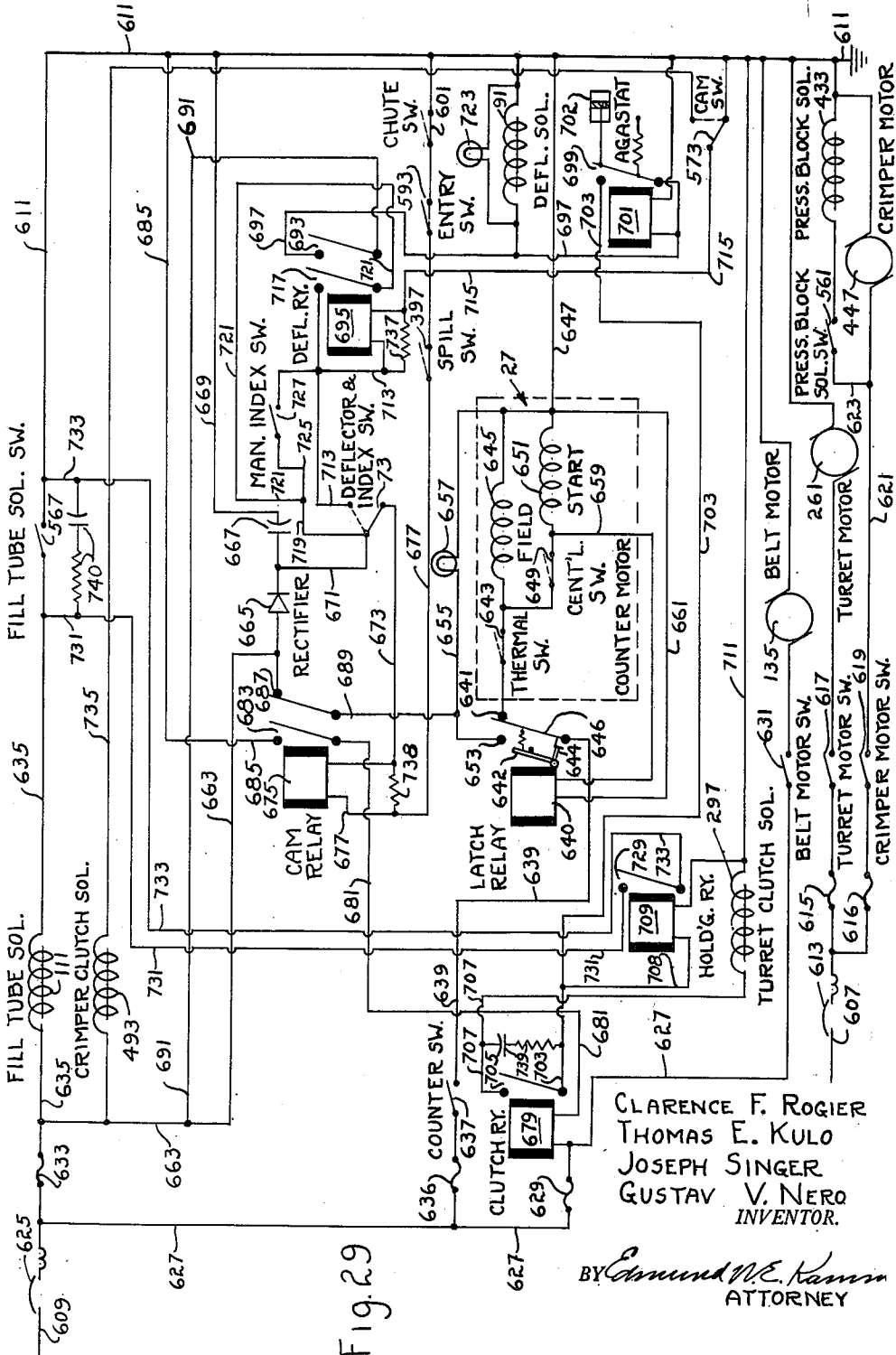
CLARENCE F. ROGIER
THOMAS E. KULO
JOSEPH SINGER
GUSTAV V. NERO
INVENTOR.

BY *Edmund M. Kamm*
ATTORNEY

COIN ROLL FILLING AND CRIMPING MACHINE

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COIN ROLL FILLING AND CRIMPING MACHINE

Clarence F. Rogier, Chicago, Thomas E. Kulo, Glenview, and Joseph Singer and Gustav V. Nero, Chicago, Ill., assignors to Johnson Fare Box Company, Chicago, Ill., a corporation of Delaware

Application September 3, 1953, Serial No. 378,290

29 Claims. (Cl. 53—60)

This invention relates to a coin roll filling and crimping machine. More specifically, it relates to a machine for counting coins, filling them into preformed coin wrappers, crimping the rolls and discharging them.

An object of the invention is to provide a unified machine which will receive loose coins and loose coin tubes and which will assemble the two components into a single product, accurately and quickly.

A further object of the invention is to provide means to prevent improper filling of the tubes and to stop the operation of the machine if any one of a number of improper events occurs.

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 plan view of the entire apparatus.

Figure 2 is a front elevation of the coin counter and the fill tube mechanism.

Figure 3 is a rear elevation of the coin counter showing the deflector switch, solenoid and the latching relay.

Figure 4 is a side elevation, partly in section, of the mechanism of Figure 3.

Figure 5 is a side elevation of the fill tube actuating mechanism.

Figure 6 is a plan view of the fill tube and its actuating mechanism.

Figure 7 is a front view of the fill tube and its actuating mechanism.

Figure 8 is a side elevation of the conveyor mechanisms for transporting the empty coin wrappers to position for filling.

Figure 9 is a plan view, with parts in section, showing the back feed conveyor.

Figure 10 is a plan view, with parts in section showing the cross feed conveyor or belt.

Figure 11 is an elevation showing the belt motor and connected drive means.

Figure 12 is a sectional elevation showing the pressure block mechanism for holding the filled coin wrappers during crimping.

Figure 13 is a plan view showing the turret, pressure block mechanism and the wrapper feed means.

Figure 14 is an elevation, partly in section, showing the turret drive means.

Figure 15 is a plan view of the apparatus of Figure 14 but showing the turret clutch solenoid and the cam switches.

Figure 16 is an elevation of the turret clutch and solenoid.

Figure 17 is a cross sectional view of the one revolution clutch used both in the crimper and in the turret control mechanisms.

Figure 18 is a plan view of the coin juggler drive mechanism taken substantially on line 18—18 of Figure 19.

Figure 19 is a side elevation of the mechanism of Figure 17.

Figure 20 is a sectional view taken substantially on line

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20—20 of Figure 14 showing the turret centering means, coin juggler and spill box.

Figure 21 is a side elevation of the spill block and spill box.

Figure 22 is a side elevation, partly in section, showing the spill box and gate mechanism.

Figure 23 is a side elevation, with parts in section, showing the crimper mechanism.

Figure 23A is a side elevation of the chute switch and its actuator.

Figure 24 is a front elevation, with parts in section, showing the crimper mechanism.

Figure 25 is an elevation, partly in section, showing the crimper feed and retract mechanism.

Figure 26 is an elevation of the apparatus shown in Figure 25 and showing in addition the pressure block switch.

Figure 26A is a plan view of the crimper mechanism.

Figure 27 is a sectional view of the crimper taken substantially on line 27—27 of Figure 26.

Figure 27A is an elevation of the roll removing arm.

Figure 28 is an elevation of the control box panel.

Figure 29 is a schematic wiring diagram of the apparatus.

General description

Referring first to Figure 1, the numeral 1 represents generally the coin counter which is substantially the same structure as that disclosed in the application of Thomas E. Kulo et al., Serial No. 114,504 filed September 8, 1949, now Patent Number 2,750,949 for Coin Counter.

This unit has a hopper 3 which is supplied by coins by a coin conveying and cleaning device which is fully disclosed in our application, Serial No. 282,966 filed April 18, 1952, now Patent Number 2,769,524 for Coin Handling Machine. A switch 5 serves to start and stop the latter device as the level of coins in the hopper falls and rises.

A coin wrapper feeding machine is indicated generally by the numeral 7 which consists generally of three conveyors, namely the main conveyor 9, the cross feed conveyor 11 and the back feed conveyor housing 13.

The empty coin wrappers or tubes represented by numeral 15 are fed into the turret assembly 17 which is indexed to first position the tubes under the fill tube mechanism indicated generally by 19 and after a predetermined number of coins have been deposited therein by the coin counter, under the crimper 21 which turns the end of the roll inwardly upon the uppermost coin to hold the coins in the roll.

Thereafter, the rolls of coins are discharged by the turret into a suitable chute for delivery to roll handling, printing and predeterminer mechanism, such as that disclosed in our application, Serial No. 277,458 filed March 19, 1952 for Roll Handling Machine.

The spill mechanism is indicated generally by the numeral 23 and will be described below.

Coin counter and predeterminer mechanisms

(Figures 2 to 4)

The coin counter 1 includes a rotating disc 25 which is driven by a motor 27 and which has, adjacent its periphery a series of pickup means including ledges 29 and pins 31 for feeding coins singly in succession past the star wheel 33, out through the spout 35 and into the fill tube 121 of the fill tube mechanism. At the end of the spout 35, there is disposed in the path of the coins, a spring pressed detent roll 36 so that no coin will enter the fill tube 121 until it is forced past the detent as another coin is forced past the star wheel. The spout is thus full of counted coins.

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The size of the gap between the star wheel and the coin guide 39 may be varied by movement of the former relative to the latter as indicated by the pointer and scale 41.

A series of axially movable pins 43 are mounted in the disc 25 and disposed adjacent the ledges 29. When the pins are retracted, a coin may be retained on the ledge; when the pin is extended the coin will be pushed from the ledge before it can enter the star wheel.

The register 45 is driven by suitable gearing 47 from the star wheel so as to indicate the number of coins passing the star wheel.

Referring to Figures 3 and 4, the motor 27 drives the plate 25 through the belt 49 and gearing 51 while the star wheel 33 drives the pin drum 53 through the step tooth 55 acting on ratchet 57. The pawl 59 is lifted from the ratchet 61 by pin 63 which is also actuated by the star wheel so that the ratchet 57 may be turned one step for every five coins passing the start wheel.

The drum 53 has four rows 65, 67, 69 and 71 having 10, 8, 5 and 4 pins respectively. There are 40 teeth in the ratchet 57 and since the ratchet is advanced one tooth for every five coins, it will be seen that the distance between adjacent pins in row 65 represents 20 coins and row 67 represents 25 coins.

A deflector switch 73 is mounted on a sliding shaft 75 which is adjustable axially along the drum 53 by the handle 77 which coacts with a notched plate 79 so as to position the switch actuator 81 in line with one or another of the rows of pins, depending upon the number of coins to be deposited in each coin wrapper. The switch is normally open and is closed when its actuator 81 is raised by a pin in one of the rows. The mechanism thus described constitutes the predetermined count mechanism which is presettable to any one of four counts.

As shown, particularly in Figure 4, each pin 43 is limited in stroke by a collar 83 which is confined by the disc 25 and a parallel disc 85. A lever 87, pivoted at 89, carries at its upper end a cam 93 for camming the pins 43 successively outward and is connected at its other end with the armature of a deflector solenoid 91.

The cam is normally in the retracted position shown in Figure 4 when the solenoid is deenergized but moves to a position to project the pins when the solenoid is energized as it is when switch 73 is closed. The cam is bevelled at each side at 93' so that approaching pins are gradually cammed out and departing pins may be restored gradually to retracted position.

Fill tube and actuating mechanism

(Figures 5 to 7, Inc.)

Suitably mounted on the counter 1 is a bracket 95 having a pair of vertical, parallel guide pins 97. Slidably mounted on the pins is a carriage 99 which carries a roll 101 mounted on shaft 103 in position to be engaged by the end 105 of lifter lever 107 which is pivoted at 109 on the counter 1. A fill tube solenoid 111, also mounted on the counter, is connected by a link 113 to the lever 107. When the solenoid is energized, the lever 107 is rotated clockwise (Fig. 5) and the carriage is raised on pins 97.

Stops 115 are provided on the pins to limit the motion of the carriage.

The carriage is provided with a boss 118 having a lateral recess 117 for the reception of the adapter 119 on a fill tube 121. The wall of the recess is slotted at 123 and a spring detent has one end fastened to the wall and the other end coiled at 125 so as to extend through the slot and into the path of the adapter.

The adapter has a central portion 127 which fits snugly in the recess and upper and lower flanges 129 which fit snugly on the upper and lower faces of the boss. The flanges are preferably chamfered to afford easy insertion.

The adapter is split, diametrically and is held together by screws to clamp the fill tube in position. A different

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adapter is needed for each size of fill tube to accommodate the different denominations of coins. The exterior diameter of all adapters, however fits into the recess 117. The adapter obviously may be adjusted along the fill tube to dispose the bell 131 thereof at the proper height.

As will be seen from Figure 5, when the fill tube solenoid 111 is energized, the fill tube is raised so that the turret described later can be indexed to position an empty coin wrapper beneath the fill tube, after which the tube is again lowered by deenergization of the solenoid.

Coin wrapper feeding mechanism

(Figures 1, 8 to 11 and 13)

This mechanism, indicated generally by the numeral 7, Figure 1, comprises three conveyors, the first of which is the broad, stretched, fabric belt 9 which is mounted on a pair of horizontal rolls 133, only one of which is shown in Figures 8 and 11. The roll shown is a live roll, which is driven directly by motor 135 through sprocket 137 and chain 139.

The upper run of the belt is supported on a fixed table 141 so that the coin tubes or wrappers will be supported at the proper level.

A sprocket 143 which is driven with sprocket 137 drives a chain 145, sprocket 147, shaft 149, sprocket 155, chain 153 (Fig. 1), sprocket 151 (Fig. 9) and spiral gears 157, 159. Shaft 160, which is driven by gear 159, drives sprocket 161, chain 162 and sprocket 163.

The sprockets 161 and 163 are supported by the bracket 175 and bracket 167 respectively which is fixed within the back feed housing 13 and the entire assembly is mounted on the frame of the machine by means of bolts 174 which extend through slots 176 formed in the frame member 178 of the machine. One bolt is connected to a lever 180 which is pivotally mounted at 182 on the frame. The parts are held in position by friction and are moved by the lever to position the tube guide 184 to its proper position relative to flange 221 to accommodate tubes of different diameters.

Sprocket 163 is mounted on shaft 165 which is supported on suitable bearings in bracket 167, also mounted on guide housing 13. The shaft 165 carries a friction roll 169, which may be of rubber. The roll projects through a slot 171 in the guide housing 13, as shown in Figure 9 so that it will not act on tubes which have fairly engaged guide 184 but will force to the left any rolls which are approaching the roll 169 along guide housing 13 or which are crowded against the roll 169 in any manner. This prevents coin wrappers from jamming the passage leading to the turret.

Fixed to the side wall 177 of the conveyor is a wide flat guide 179 which is inclined toward the right and down (Fig. 1) as it approaches the cross feed conveyor 11. An end 181 is doubled back to bear on the side wall 177. The guide serves to crowd the tubes 15 toward the chute 183 leading to the turret.

Mounted between a flange 185 which is mounted on the inside of the side wall 177, and an angle 187 which is mounted on top of the housing 175 is a sheet 189 of plastic material, glass or other suitable material. The sheet is supported at the edges adjacent the flange and angle by U-shaped edges 191, 193 to which are fixed the ends of studs 195, 197 which extend through slots 199, 201 in the flange and angle respectively. The studs are fitted with suitable thumb nuts so that the sheet 189 can be raised or lowered relative to the belt 9 to accommodate wrappers or tubes of different lengths. The sheet serves to prevent the tubes from rising up off the belt 9 and to aid in preventing them from toppling over under the forces applied by the various conveyors 9, 11 and 169.

The cross feed conveyor 11 comprises a pair of pulleys 203, 205 suitably mounted on the frame and connected by the belt 207. A base plate 209 is mounted on the

frame by screws 211 which ride in slots 213 in the base plate. A series of back up rolls 215 are mounted for rotation on spindles 217 mounted on the plate. A suitable housing 219 is provided for this mechanism.

The housing has a down turned flange 221 and the lower guide plate 223, which is disposed just below the base plate 209, has an upturned flange 225. The flanges form the other side of the channel or chute 183 and serve to guide the tubes 15 toward the turret and also prevent the tubes from tilting about the belt 207 to an undesired extent. Plate 223 is also held in adjusted position by screws 211. The housing 219 is adjustable toward and away from chute 183 by the screw and slot means 227.

The roll 205 is driven in a manner to be described below.

It will be seen that the tubes 15 are stacked on the belt 9 and are fed by it under the sheet 189 toward the cross feed belt 207.

The guide 179 urges the tubes toward the back feed conveyor housing assembly 13. The cross feed conveyor belt 207 urges the tubes transversely of belt 9 toward the chute 183, formed by 184 and 219.

The back feed conveyor serves to withdraw tubes 15 which are moving in the direction of the channel but which are not aligned with the channel and thus prevents jamming of a large number of tubes in the vicinity of the channel.

Turret mechanism

(Figs. 1, 12 to 20)

Referring to Figures 1, 12, 13 and 14, the numeral 229 indicates the turret which is rotatable about its central axis and is provided with a series of peripheral pockets or receptacles 231, each adapted for receiving one of the tubes or wrappers 15 from the chute 183.

The turret is made up of a hub 233 to which are fixed the three notched plates 235.

Mounted on the base member 237 by screw 239 is a non-rotatable shaft 241 which extends up through a guide frame member 243.

Rotatably mounted on the shaft is a sleeve 245 which carries a gear 247, a spacer 249, a perforated plate 251 and a spacer 253. A centering plate 255 is carried by the gear 247 and screws 257 pass through the various parts and screw into spacer 253 to hold the assembly together.

Pins 259 are fixed to the assembly in positions comparable to those occupied by the screws 257. The pins project beyond the spacer and enter corresponding holes in the lower plates 235 of the turret to drive it.

The turret motor 261 is mounted in the cabinet and by means of belt 263 drives a pulley 265 on the main turret drive shaft 267 which is mounted in suitable bearings 269, 271 in the front plate 273 and the member 242.

Shaft 267 drives the following gear train; gears 275, 277, shaft 279, gears 281 283, one revolution clutch 295, shaft 285, gears 287, 289, shaft 291, pinion 293 to gear 247 which drives the turret. The ratios are such that one revolution of shaft 267 produces one eighth of a revolution of gear 247 and consequently of the turret so that the eight pockets 231 are advanced one station.

Gear 283 and shaft 285 are connected by a one revolution clutch 295 which is actuated by the clutch solenoid 297. The detailed structure of these components is found in Figures 16 and 17.

The gear 283 is keyed to the clutch drive housing 299 at 301 while the driven member 303 is keyed to shaft 285. A spring anchor 305 is also keyed to the shaft while the clutch control plate 307 is rotatable on the shaft and carries the rollers 309 which are disposed between the drive and driven members. A spring 311 connects the anchor and the control plate.

A pin 313 is set in the control plate and is adapted to control a stop 315, pivotally mounted at 317 and urged into a position in the path of the pin by spring 319. The armature 321 of the clutch solenoid 297 is connected to

the stop to pull it out of the path of the pin 313 when the solenoid is energized.

Each time the pin is freed by the retraction of the stop 315 by solenoid 297, the spring 311 turns the control plate 307 far enough to move the rolls 309 into engagement between the driver 299 and driven member 303, so that shaft 285 rotates. Since the energization of the solenoid is only momentary, the stop 315 will be returned by spring 319 to a position in the path of the pin so that when the latter comes around it will be stopped and will thus disconnect the clutch elements and shaft 285 will stop. Thus, while gear 283 is continuously driven, the shaft will rotate only one revolution each time the clutch solenoid is energized.

Referring particularly to Figures 14 and 20, the centering plate 255 has eight equally spaced notches 323 formed in its periphery, corresponding to the eight pockets 231 in the turret. A lever 325 pivoted at 327 carries a detent 329 which is held in contact with the plate 255 and urged into the nearest notch by spring 331 and link 333 which is pivotally attached near the midpoint of the lever.

Coin juggler and cross feed drive

(Figs. 18 to 20)

The shaft 279 carries, at its upper end, a pinion 335 which drives a gear 337 rotatably mounted on a fixed, vertical shaft 339 on frame 243. The hub 341 of the gear extends upwardly and receives the drive roll 205 of the cross feed conveyor 11.

The gear 337 carries an eccentric flange 343. A pair of aligned bearings 345, mounted on member 243 by means of a U-shaped bracket 347, have pivotally mounted therein, parallel to member 243, a juggler shaft 349. One end of the shaft carries a depending follower pin 351 which is engaged by the eccentric 343 while the other end has fixed to it a spring arm 353 which carries at its free end a coin juggler button 355. The latter extends through the perforations 357 in plate 251 which are aligned with the pockets 231 in the turret when the latter is positioned by the centering means.

Since the shaft 279 forms a part of the train which drives the one revolution clutch 295, the gear 337 and juggler are continuously driven and the juggler button 355 projects into and is withdrawn from the bottom end of a coin wrapper, which is supported on the plate 251, through the perforations 357 at a rapid rate. This serves to shake any coins which do not occupy a horizontal position, into a horizontal position so that the coins will not spill out of the top of the tube.

Coin spill mechanism

(Figs. 1, 13, 14, 20 to 23)

In view of the fact that there may be an occasional, accidental spilling of coins, adequate provision is made for returning such spilled coins to an accessible position.

The top of the turret is fitted with a coin deflector cap 361 which has holes 363 in its lower surface to receive pins 365 fixed in the top plate of the turret 229. The cap is generally conical and is provided with vertical slots 367 which tend to tilt any coins falling on the cap to an edgewise position so that they will roll, rather than slide, onto the spill block 369 which surrounds the turret and which is mounted on the frame member 371 (Fig. 14).

As shown, particularly in Figure 13, the spill block surrounds substantially three quarters of the turret which corresponds roughly to the travel of the wrappers from their entrance to the turret to the crimping station. It is obvious that all spills will occur in these three quadrants.

The spill block is suitably contoured, as shown in Figures 13 and 21, so that some of the coins spilled on the cap or block will be conducted toward the chute 373 down which they will roll into the hopper 375 while other coins will move from the first and second quadrants directly into the spill box or hopper, which is disposed below the level of the frame on which the block rests.

The hopper is provided with a neck 377, the bottom of which is closed by a shelf 379 pivoted at 381. Below the shelf is a chute 383 which is closed by a gate 385 pivoted at 387 and urged closed by spring 389. A push rod 391 is pivotally connected to the gate and suitably guided so that depression of the rod will open the gate 385 and the spring 389 will return the gate and rod when pressure is removed from the latter.

The shelf 379 has a projecting crank 393 which underlies the actuating lever 395 of the spill switch 397 which is normally closed.

When a coin falls upon the shelf, it will tilt the shelf counter-clockwise (Fig. 22) and hold the shelf depressed. The lever 395 opens switch 397 and holds it open. This stops the operation of the machine as will be described below and makes it necessary for the operator to correct the difficulty and take such other action as may be necessary.

As a part of the acts necessary to restore the machine to operation, the operator must depress the push rod 391 to open the gate 385. The coin or coins resting on the shelf 379 drop into the drawer 399 for subsequent removal. The switch actuator restores the shelf to its position for closing the neck of the spill box.

Crimping mechanism

(Figs. 1, 12, 13, 14, 15, 23 to 27)

The crimping mechanism performs the function of closing the coin wrappers after the required number of coins have been deposited therein.

Referring particularly to Figures 12, 13 and 23, the pressure block 401 rests slidably on the frame member 371 which carries a vertical guide pin 402 that enters an elongated slot 403 in the pressure block. A lateral projection 405 on the spill block overlies the top surface of the pressure block which is in sliding contact therewith. A sliding shaft 407 is pinned in a hole 409 in the rear face of the pressure block and extends through a guide bushing 411 in the support plate 413 which is mounted by means of bosses 415 and set screws 417 on a support rod 419 which is fixed to the frame member 243. The shaft 407 is threaded to receive a pair of collars 421, 423 and a pressure member 425 is slidably mounted on the small diameter of collar 423. A relatively strong spring 424 is confined between the flanges of the collar 421 and member 425.

The end of shaft 407 which extends through the support plate 413 is reduced in size so that the shoulder formed thereby serves as a stop against bushing 411 when the spring 427 which is confined between spring seats 429, 431 is expanded. The spring 427 is not as strong as spring 424.

A pressure block solenoid 433 is mounted on the support plate 413 and its armature 435 is connected to one end of the lever 437 which is pivotally mounted at 439 on the support plate. The other end of the lever bears on the pressure member 425 in such a manner that when the solenoid is energized the lever urges the member 425 toward the spring 424. The pressure block is advanced, against the action of spring 427, until the face 441 contacts a filled roll which is in crimping station, whereupon further movement of the arm 437 compresses the spring 424 to permit the solenoid armature to complete its stroke.

When the solenoid is deenergized the springs 424 and 427 retract the pressure block from the crimped roll.

Hingedly mounted at 443 on the support plate 413 is the motor base 445 which supports the crimper motor 447. The screw 440 adjusts the base to vary the tension on the belt 451 which is driven by the motor and which drives the pulley 453 and shaft 455.

A gear 457, fixed to shaft 455, drives a gear 459 which is rotatably mounted in bearing 461 in the top plate 463 which is supported on the rods 419 and similar columns 465.

A spindle 467 is provided with an elongated key 469 which works in a keyway in gear 459 and the spindle may slide axially of the gear while it is rotating.

Shaft 455 carries at its upper end a worm 471 which drives a worm wheel 473 which drives the case 475 of a one revolution clutch 476 which is similar to 295 shown in Figure 17. The shaft 477 extends from both ends of the clutch, is connected to the driven member thereof and carries a crank 479 at each end.

The control disc 481 carries a pin 483 which is controlled by the latch lever 485 pivotally mounted at 487 and urged toward pin engaging position by spring 489. The lever is connected to the armature 491 of the clutch actuating solenoid 493 which when energized, pivots the lever momentarily against the action of the spring and releases the pin for one revolution of the clutch. The lever 485 extends through the cover or housing 495 (Fig. 1) so that it may be manually operated, if desired.

The two bearing brackets 497 which support the shaft 477 each have a forward extending arm 499 which terminates in a laterally extending boss 501 which carries a trunnion 503 on which the lever 505 is rotatably mounted. An outboard bearing 507 supports the outer end of the trunnion.

A spring 509 is wrapped about each boss 501 and has one end hooked under the lever forward of the trunnion and the other end hooked under the arm 499 so that the spring will urge the lever in a clockwise direction (Figs. 23, 25, 26).

Each lever is provided with an elongated slot 511 at one end which receives the crank 479 and with an elongated, open ended slot 513 at the other end which receives the roll 515 which is supported in the yoke 517 of a pitman 519.

Each pitman is suitably guided in a bushing 521 in platform 463 and at the lower end passes through a cross-head 523 which is guided at each end by the guide rods 525 which are fixed to it and ride slidably in bushings 527 in the platform.

Each pitman is provided with a collar 529 below and in contact with the cross-head and with a collar 531 above and spaced from the cross-head and a spring 533 confined between the latter elements.

Referring particularly to Figure 25, the cross-head is adjustably mounted on a collar 535 and is fixed in position thereon by set screw 537. The collar is screwed on a sleeve 539 and a lock nut 541 also on the sleeve serves to lock the collar in position on the sleeve.

A thrust bearing 543 is disposed between the upper end of the sleeve and a collar 545 which is pinned to the spindle 467 while a thrust bearing 547 is confined between the lower end of the shaft and a collar 549, also pinned to the spindle. A radial, needle bearing 551 is preferably disposed between the lower portion of the spindle and the interior of the sleeve so that the spindle is supported by the cross-head.

The lower end of the spindle has screwed on it the crimper head 553 which carries the crimping pins 555 which serve to turn the end of the tube inwardly and form it into an annulus in a well known manner as the head is moved axially downwardly by the mechanism just described.

As seen in Figures 23 and 26, the cross-head 523 carries a screw 557 which is movable in the path of an actuator 559 of the pressure block solenoid switch 561. This switch is normally held open by the screw and as the cross-head moves down, the switch closes to energize the solenoid.

Referring to Figures 15 and 23, the shaft 291 carries a coin tube switch cam 563 which operates the actuating arm 565 of the fill tube solenoid switch 567, which is paralleled by condenser and resistor 740 and which causes the fill tube which was raised by the holding relay 709 and solenoid 111 to be held up for the required portion of the cycle, as will be explained below.

The cam 569 also attached to shaft 291 operates the actuator 571 of the switch 573. This switch is a single pole, double throw switch which is connected to energize the crimper clutch mechanism when it is actuated by the cam. Also, when the switch occupies this actuated position, it normalizes the holding circuit of the deflector relay, as will be described below.

In general, the operation of the crimping section is as follows:

The motor 447 is continuously in operation so that the crimper spindle 455, worm 471 and clutch housing 475 are also in operation, since they are directly connected with the motor.

Closure of the cam switch 573 to its normally open side energizes the crimper clutch solenoid 493. This pulls the lever 485 out of contact with the pin 483 on the clutch control. This frees the clutch for one revolution of the crank shaft 477 and cranks 479. The levers 505 are oscillated through one cycle to reciprocate the pitman 519, the cross-head 523, the crimper spindle 467 and the crimper head 553.

As the crimper head comes to rest on the tube, the cross-head and spindle are retarded while the pitmen continue to move, thus compressing the springs 533 between the collar 531 and the cross-head 523.

As the cross-head moves down, the screw 557 moves with it and the actuator 559 closes the switch 561 to energize the pressure block solenoid 433 which advances the pressure block 401 into holding contact with the filled roll which is to be crimped by means of the mechanism described above. The switch is deenergized on the up stroke of the cross-head to permit spring 427 (Fig. 12) to retract the pressure block so that the turret can again be indexed.

Wrapper entry and removal means

(Figs. 1, 13, 23, 23A and 27A)

Referring particularly to Figures 13 and 27A, the block 575 is mounted on the member 371. A remover bar arm 577 is removably mounted on the block by means of a hand screw 579. The arm enters the turret as shown in Figure 23 and lies closely adjacent the bottom portion thereof. The upper corner is rounded at 581 to prevent damage to the rolls.

The arm is slotted at 583 and an entry switch lever 585 is passed through the slot and pivotally mounted at 587 in the slot. The lever 585 has one end disposed across recess 231 of the turret which is in position to receive an empty wrapper from the conveyor 11 while the other end carries a roll 589 which is adapted to move the actuator 591 of the entry switch 593 which is adjustably mounted by means of the collar 596 and thumb screw 597 on the column 465.

The pivot pin 587 enters the block 575 to prevent turning of the block on the arm.

The entry switch lever 585 is urged in a clockwise direction by the switch actuator 591 and in the opposite direction by the empty coin wrapper which is forced into the turret recess 231 by the conveyor 11. If for any reason a recess is not filled after the turret indexes, the switch 593 will be opened and the machine will be disabled, as will be described below.

As the turret indexes, the roll which has been crimped will be moved to the left (Fig. 13) along the remover bar 577 to force the prior crimped rolls toward the chute 595 and tilt them so that they will slide down the chute toward the trapdoor 597.

The rolls passing over the chute switch actuator plate 599, positioned in the bottom of the chute, in advance of the trapdoor, momentarily open this switch 601 which is normally closed. However, if the rolls for any reason pile up in advance of the trap door and a roll lies on the actuator plate, the switch will remain open and disable the machine as described below.

The plate 603, mounted at 605 on the spill block and to one side of the crimper head (Figs. 13 and 23), serves to prevent the rolls from being projected upwardly as they are forced toward the chute.

Electrical control box

The control box 741 contains a panel 742 (Fig. 28) on which are mounted suitable connector strips 743, 745, the clutch relay 679 and its resistor-condenser unit 739, the cam relay 675 and its resistor 738, the rectifier 665, the holding relay 709, the deflector relay 695 and its resistor 737, the condenser 667, the "Agastat" 701. The fuses 615, 616, 636, 629 and 633 for the circuits A, B, D, F and K are mounted at the top of the panel.

Circuits and electrical components

(Figs. 28 and 29)

Referring to Figure 29, two input mains 607 and 609 and one neutral main 611 of 110 volts A. C. are used as a power supply. Two separate supply mains are employed to prevent the voltage drop due to the load, from affecting the control functions of the machine.

Circuit A: This circuit runs from main 607 through the main switch 613, fuse 615, a manually operable switch 617 to the turret motor 261 and the ground 611.

Circuit B extends from main 607, through switch 613, fuse 616, the manually operated crimper motor switch 619 in line 621 to the crimper motor 447 and the ground 611.

Circuit C is a parallel circuit from the crimper motor switch of line 621 through line 623 to the pressure block solenoid switch 561, the pressure block solenoid 433 to ground 611.

Circuit D runs from the main 609 through main switch 625, line 627, fuse 629, manually operable belt motor switch 631, belt motor 135 to ground 611.

Circuit E runs from main 609 and switch 625 through fuse 633, line 635, fill tube solenoid 111, fill tube solenoid switch 567 to ground 611.

Circuit F is the counter motor control circuit which runs from main 609, switch 625 and line 627 to the fuse 636, manually operable counter switch 637, line 639 to the blade 646 of the latch relay 640 which is normally latched in contact with the point 641 leading to the normally closed thermal switch 643, the field 645 of the counter motor and line 647 to the ground 611.

Circuit G: This is a shunt circuit around the field 645 and comprises a line connected between the thermal switch 643 and field 645 through a centrifugal switch 649, the starting coil 651 of the motor and to the line 647 and ground 611.

Circuit H: In the event the latch relay 640 becomes energized, it will draw its armature 642 and the latch 644 out of latching position so as to permit the blade 646 to move into contact with the point 653 to set up a shunt circuit around both coils 645, 651 through line 655 and lamp 657 to line 647 and ground 611. Circuits F and G are simultaneously broken.

Circuit J to the latching relay coil runs from a point between the centrifugal switch 649 and coil 651 through line 659 to the relay 640, thence through lines 661 and 647 to ground 611.

Circuit K through the rectifier, runs from main 609, switch 625, fuse 633 and line 663 to rectifier 665, thence through condenser 667 and line 669 to ground 611.

Circuit L through the index switch 73 is a direct current circuit from the rectifier 665 through line 671, the double throw index switch 73 which in its normal condition extends the circuit through line 673, cam relay 675, line 677 to spill switch 397, entry switch 593, chute switch 601 to the ground 611. This closes switch 683 and opens switch 687.

Circuit M is established by the cam relay from main 609, line 627, fuse 629, clutch relay 679, line 681, switch 683 on the cam relay and line 685 to ground 611.

Circuit N is opened by the energization of cam relay 675 which opens switch 687. This circuit runs from main 609, fuse 633, line 663, switch 687, lines 689, 655, lamp 657, line 647 to ground 611.

Circuit O is set up by energization of the clutch relay from main 609, fuse 633, lines 663, 691, normally open switch 693 of the deflector relay 695, line 697 through the switch 699 of "Agastat" 701, line 703, the switch 705 of the clutch relay, line 707 to the turret clutch solenoid 297 and line 711 to ground 611.

Circuit O' is a shunt circuit from line 703 through 708, holding relay coil 709 to 711. Coil 709 is thus paralleled with clutch relay 679 and the turret clutch solenoid.

Circuit P: Since circuit O depends upon the energization of the deflector relay, it will be seen that this is effected by the movement of the deflector and index switch 73 to its abnormal position, as shown in dashed lines in Figure 29. This circuit runs from rectifier 665 through line 671, switch 73, line 713, deflector relay 695, line 715, cam switch 573 to ground 611.

This relay, when energized, closes switches 693 for circuit O and 717 for circuit Q.

Circuit Q is a holding circuit from rectifier 665, lines 671, 719, 721, switch 717, line 713, relay 695, line 715, cam switch 573 to ground 611.

Circuit R: The closure of switch 693 by the deflector relay also closes the parallel or shunt circuit R, from main 609 to the switch 693, as described above, and line 697 through the deflector solenoid 91 to ground 611.

Circuit S: A similar shunt circuit, controlled by switch 693, runs from line 697 through lamp 723 to ground 611.

Circuit T: A similar shunt circuit is controlled by switch 693 and runs from line 697 through the coil of "Agastat" 701 to the ground 611.

Circuit U is a shunt circuit for the deflector and index switch 73 and comprises the lines 719, 725 and the manual switch 727, which joins the lines 671 and 713.

Circuit V is closed by the switch 729 of the holding relay 709 which is energized by circuit O described above. The circuit is established from main 609 through fuse 633, fill tube solenoid 111, line 635, line 731, switch 729, line 733 to ground 611.

Circuit W controls the crimper clutch solenoid 493 and extends from main 609, fuse 633, line 663 through the crimper clutch solenoid 493 and line 735, cam switch 573 to ground 611.

Operation

Coins to be packaged are loaded into the hopper 3 (Fig. 2) as needed by the mechanism of our previous application, Serial No. 282,966 under control of the level switch 5.

The counter mechanism must be adjusted to provide the required gap between the star wheel 33 and the coin guide 39 to accommodate the particular denomination of coins to be counted and the switch 73 must be adjusted by the mechanism 77 to set the predetermined mechanism for the number of coins to be placed in each package.

The proper diameter of coin tube 121 must be mounted on the carriage 99. The register 45 is preferably reset to zero so that the total number of coins counted will be registered.

Also the required size of coin wrappers must be deposited on belt 9 and the guides 13, 184 must be adjusted to secure the proper width of the passage 183 leading to the turret. The plate 189 must be adjusted to secure the proper head room for the wrappers on belt 9. The wrappers are preformed into a cylinder and the bottom is pre-crimped.

Further, referring to Figure 14, the proper turret 229 for the size of wrappers to be handled must be installed on pins 259 and the corresponding deflector cap 361 and spill block 369 must be installed. The bar 577 must be removed by removing screw 579 to change turrets.

The spill switch 593 and its bracket 595 must be ad-

justed on post 465 to the proper relation with respect to roller 589.

Referring to Figure 12, if necessary, the collars 421 and 425 on the pressure block rod 407 must be adjusted to insure proper pressure on a filled coin tube to hold it while the tube is being crimped.

Also, if necessary, the set screw 537 and nut 541 (Fig. 25) may be loosened and the collar 535 and sleeve 539 may be screwed up or down relatively to adjust the spindle 467 to the proper starting height for the length of the particular wrapper being filled.

The proper size of crimping head 553 must be installed on the spindle 467.

Since the machine cannot be operated without an empty wrapper in the recesses 231 (indicated by A in Figure 13) adjacent the chute 183 and, of course should not be operated without an empty wrapper at the filling station (indicated at B, Figure 13), these recesses and the two intermediate them may be manually filled with empty wrappers.

Assuming that these adjustments and requirements have been fulfilled and that all of the other parts occupy their normal positions, the operator will perform the following functions preferably in the order set forth:

1. Close the master switches 607, 609.
2. Close the turret switch 617, the belt motor switch 631 and the crimper motor switch 619. These switches close circuits A, D and B respectively.
3. Close the counter switch 637 which establishes circuit F to start the counter motor 27.
4. If there are no empty wrappers at the entry station A and the filling station B, the manual index switch 727 may be operated a sufficient number of times to fill these and the intervening stations with empty wrappers, as will be explained below.

When the counter switch 637 is closed, the latching relay switch 641 must be manually held closed for about 1/4 of a second to permit the counter motor to come up to speed. The relay will then automatically latch in this position due to the elimination of the field of the latch relay coil 640 which occurs when the centrifugal switch 649 opens circuit J and also circuit G to the starting coil 651. The motor is then running on its regular field coils 645.

Should the motor at anytime thereafter slow down or be stalled as by a jammed coin in the counter mechanism, the centrifugal switch will close and energize circuit J. The latch relay 640 will then open switch 641 to break the circuits F, G and J and will close switch 653 to energize circuit H and the signal lamp 657. This condition prevails until the latch relay is reset as stated above and the motor restarted.

The signal lamp 657 should be extinguished when the motor is up to speed. If it is not extinguished at this time, it indicates that the cam relay 675 and circuit L are not energized by reason of the fact that the index switch 73 is not in normal condition or that the spill switch 397, the entry switch 593 or the chute switch 601 is in the open condition and circuit N through the lamp 657 is energized. The condition must be corrected before proceeding, whereupon the cam relay and circuit are energized, circuit N is opened and the lamp is extinguished. At the same time the cam relay closes switch 683 to establish circuit M through the clutch relay 679.

The clutch relay 679 when energized closes switch 705 to condition circuit O for operation.

Now, assuming that the counter has been started as described above and the machine has been otherwise conditioned for operation, the predetermined number of coins are immediately run past the star wheel 33 and the deflector and index switch 73 is moved, momentarily, by the proper pin on the pin drum 53 from the position in which it closes the circuit L to the dashed line condition (Figure 29) in which it closes the circuit P through

the deflector relay 695. The switch returns immediately to its solid line position.

The energization of the relay closes switch 717 to set up the holding circuit Q for the deflector relay. This makes it independent of the deflector and index switches.

The energization of the relay also closes switch 693 which:

1. Closes circuit R through the deflector solenoid 91 so that the cam 89 is set to cam the deflector pins 43 into position to eject all coins from the pick-up disc 25 before they can reach the star wheel.

2. Closes circuit S through the lamp 723.

3. Closes circuit T through the "Agastat" 701. The "Agastat" is merely a relay equipped with a dash pot 702 which slows the action in closing switch 699.

4. Event 3 closes circuit O' so that the relay 709 which closes switch 729 and circuit V through the fill tube solenoid 111 which raises the carriage 99 and fill tube 121 so that it clears the now filled wrapper.

5. Event 3 also completes circuit O which was previously conditioned by the closure of switch 705 by the clutch relay.

The "Agastat" switch 699 closes slowly since its closure is impeded by a dashpot 702, to give the last coin counted time enough to get into the wrapper.

The circuit O energizes the turret clutch solenoid 297 so that the one revolution clutch 295 will be tripped and one revolution will be imparted to the shaft 285 and the direct driving train. The turret will be indexed one step to position an empty wrapper beneath fill tube 121. The conveyor 11 will fill the newly positioned empty recess 231 of the turret.

During the rotation of the shaft 291 of the turret drive (Fig. 15), the cams 563 and 569 operate the switches 567 and 573. Switch 567 is operated at once and is held closed for substantially the full revolution of shaft 291. The switch closes circuit E and thus holds the filler tube solenoid energized during the entire indexing cycle to prevent the filler tube from damaging or displacing the empty wrapper which is being positioned at the filling station B (Fig. 13).

The cam switch 573 is operated to its dashed line position (Fig. 29) after shaft 291 has turned through about its second 45 degrees of rotation and is held operated for about an additional 90 degrees after which it returns to the full line position.

The deflector relay 695, is held energized by the holding circuit Q as described above. The opening of the cam switch 573 breaks this circuit and normalizes the relay 695 with the result that the circuits R, S and T, controlled by the relay, are restored to normal, deenergized condition as well as circuit O which is controlled by the "Agastat" and the circuit V controlled by the holding relay 709.

The movement of the cam switch to its dashed line position closes the circuit N to the crimper clutch solenoid 493. As a result, the shaft 477 (Fig. 26) and cranks 479 (Fig. 26A) will make one revolution to move the crimping head 553 down and up through a cycle.

As the crimper descends, the screw 557 removes the pressure from the actuator of the pressure block solenoid switch 561 which closes circuit C through the pressure block solenoid 433, and the pressure block (Figs. 13 and 23) is forced into contact with a filled wrapper (if there is one) in the crimping station C. As described, no roll is so stationed, since it is only after three wrappers have been filled and the turret indexed thrice that the first filled roll is in position and is crimped.

Circuit C is, of course, opened as the crimping head is again raised and the pressure block is retracted.

The cam switch 573, of course, is returned to its normal, full line position before the indexing of the turret is completed.

The return of the crimping mechanism completes the normal cycle of the machine.

The second cycle of coin counting starts as soon as the deflector solenoid 91 is deenergized. Since a number of stations on the counter pick-up disc are empty due to the deflector pins and since some time is consumed in deenergizing the solenoid, the flow of coins to the newly positioned wrapper does not occur until positioning of the wrapper and lowering of the fill tube have been effected.

It should be understood that the deflector solenoid must be energized promptly upon the completion of a count or the count will be wrong. For this reason we have utilized a direct current system for this portion of the controls since, such a system has a much faster response than an alternating current system.

Safety controls

As pointed out above, the deflector and index switch 73 when in normal (solid line) position, the spill switch 397, the entry switch 593 and the chute switch must all be closed to close the circuit L and energize the cam relay 675.

If coins are spilled on to the shelf 379 and the spill switch is opened, if the conveyor for any reason fails to supply an empty wrapper at the loading station A so that the entry switch 593 remains open, if the chute switch 601 is held open by reason of a pile up of coin rolls on the actuator 599, or if the index switch fails to return to the solid line position, the cam relay 675 is deenergized with the result that the switch 687 is closed and the circuit N is established through the lamp 657 to signal the inoperative condition of the circuit L. Also circuit M, through the clutch relay is inoperative due to the fact that the switch 683 of the cam relay is open. The fact that this relay is deenergized prevents the conditioning of circuit O so that the turret clutch solenoid cannot be energized.

Also, since the indexing of the turret is prevented, the cam switch 573 will not be operated and the circuits R, S and T, if they have been established, will be held so that all of the functions of the machine will be held in status quo until the difficulty can be cleared up.

The safety mechanism for protection of the counter motor in case of a jam has been explained above.

The resistors or resistor-condensor combination indicated above by numerals 737, 739 have been provided to prevent arcing across the contacts of the various switches.

It should be noted that the manual indexing switch 727 should be operated only when the counter motor 27 is not running or when the counter hopper is empty. The indexing serves to load empty coin wrappers into the turret or work the last filled and crimped tubes out of the machine.

From the above description it will be seen that the machine will fill an empty coin wrapper with a predetermined number of coins of a certain denomination, stop the delivery of such coins at the end of a count, raise the fill tube, index the turret, fill the empty turret recess with an empty wrapper, eject a crimped roll, substantially simultaneously lower the fill tube, restart the count of coins, clamp the tube to be crimped, by pressure, and crimp a filled tube. As a coin wrapper is filled, the coins in the wrapper are jiggled so that they will be aligned in parallel, stacked relation. Should any coins be spilled, should the supply of empty wrappers fail, should the filled rolls pile up in the chute, then the operation of the machine is stopped at the completion of the current delivery of coins and remains stopped until the trouble is cleared. If the coins jam in the counter or the motor is slowed beyond a certain speed, the motor circuit will be opened.

Should it be desired to change to packaging of a different denomination of coins, the required changes of parts and the required changes of settings in certain parts will readily convert the device for such different denominations of coins.

It will thus be seen that the objects stated at the outset of this specification have been fulfilled.

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, applicants do not desire to be limited to the specific embodiment disclosed herein primarily for purposes of illustration; but instead they 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 packaging machine, the combination of a turret having a plurality of coin wrapper receptacles, means for indexing said turret to advance said receptacles successively through a number of stations, a supply of coin wrappers, means for feeding wrappers from said supply toward a first receptacle loading station, a coin counter, means for delivering counted coins to a wrapper in a second station, a wrapper crimping mechanism disposed at a third station for crimping the filled wrappers, means for ejecting the crimped rolls from the turret in advance of said first station, means disposed at said first station and responsive to the presence of a wrapper in the receptacle in said first station, for conditioning said indexing means for operation.

2. In a coin packaging machine, the combination of a turret having a plurality of coin wrapper receptacles, means for indexing said turret to advance said receptacles successively through a number of stations, a supply of coin wrappers, means for feeding wrappers from said supply toward a first receptacle loading station, a coin counter, means for delivering counted coins to a wrapper in a second station, a wrapper crimping mechanism disposed at a third station for crimping the filled wrappers, means for ejecting the crimped rolls from the turret in advance of said first station, means disposed adjacent the turret for receiving spilled coins, and means responsive to the presence of coins in said receiving means for preventing the operation of said indexing means.

3. In a coin packaging machine, the combination of a turret having a plurality of coin wrapper receptacles, means for indexing said turret to advance said receptacles successively through a number of stations, a supply of coin wrappers, means for feeding wrappers from said supply toward a first receptacle loading station, a coin counter, means for delivering counted coins to a wrapper in a second station, a wrapper crimping mechanism disposed at a third station for crimping the filled wrappers, means for ejecting the crimped rolls from the turret in advance of said first station and into a chute, and means disposed at a predetermined station in said chute and responsive to the presence of a roll of coins in said station for preventing the operation of said indexing means.

4. In a coin packaging machine, the combination of a turret having a plurality of coin wrapper receptacles, means for indexing said turret to advance said receptacles successively through a number of stations, a supply of coin wrappers, means for feeding wrappers from said supply toward a first receptacle loading station, a coin counter, means for delivering counted coins to a wrapper in a second station, a wrapper crimping mechanism disposed at a third station for crimping the filled wrappers, means for ejecting the crimped rolls from the turret in advance of said first station, means disposed adjacent the turret for receiving spilled coins, means responsive to the presence of coins in the receiving means for opening a switch, means responsive to a wrapper in said first station for closing a switch, and means responsive to the joint closure of said switches for conditioning said indexing means for operation.

5. In a coin packaging machine, the combination of a turret having a plurality of coin wrapper receptacles, means for indexing said turret to advance said receptacles successively through a number of stations, a supply of coin wrappers, means for feeding wrappers from said supply toward a first receptacle loading station, a coin counter, means for delivering counted coins to a wrapper in a second station, a wrapper crimping mechanism dis-

posed at a third station for crimping the filled wrappers, means for ejecting the crimped rolls from the turret in advance of said first station, means disposed adjacent the turret for receiving spilled coins, means responsive to the presence of coins in the receiving means for opening a switch, means responsive to a wrapper in said first station for closing a switch, means responsive to the joint closure of said switches for conditioning said indexing means for operation, and means responsive to the completion of a count by said coin counter for energizing said indexing means.

6. In a coin packaging machine, the combination of a turret having a plurality of coin wrapper receptacles, means for indexing said turret to advance said receptacles successively through a number of stations, a supply of coin wrappers, means for feeding wrappers from said supply toward a first receptacle loading station, a coin counter, means for delivering counted coins to a wrapper in a second station, a wrapper crimping mechanism disposed at a third station for crimping the filled wrappers, means for ejecting the crimped rolls from the turret in advance of said first station, through a chute, means disposed adjacent the turret for receiving spilled coins, means responsive to the presence of coins in the receiving means for opening a switch, means responsive to a wrapper in said first station for closing a switch, means responsive to the presence of a roll of coins at a predetermined location in said chute for opening a switch, and means responsive to the joint closure of said switches for conditioning said indexing means for operation.

7. In a coin packaging machine, the combination of a turret having a plurality of coin wrapper receptacles, means for indexing said turret to advance said receptacles successively through a number of stations, a supply of coin wrappers, means for feeding wrappers from said supply toward a first receptacle loading station, a coin counter, means for delivering counted coins to a wrapper in a second station, a wrapper crimping mechanism disposed at a third station for crimping the filled wrappers, means for ejecting the crimped rolls from the turret in advance of said first station, said delivering means including a fill tube mounted for movement toward and away from the wrapper at the second station, means operated at the completion of a count by said counter for moving the fill tube away from said wrapper and for energizing the turret indexing means, means disposed adjacent the turret for receiving spilled coins, means responsive to the presence of coins in the receiving means for opening a switch, means responsive to a wrapper in said first station for closing a switch, and means responsive to the joint closure of said switches for conditioning said indexing means for operation.

8. In a coin packaging means, the combination of a turret having a plurality of coin wrapper receptacles, means for indexing said turret to advance said receptacles successively through a number of stations, a supply of coin wrappers, means for feeding wrappers from said supply toward a first receptacle loading station, a coin counter, means for delivering counted coins to a wrapper in a second station, a wrapper crimping mechanism disposed at a third station for crimping the filled wrappers, means for ejecting the crimped rolls from the turret in advance of said first station, said delivering means including a fill tube mounted for movement toward and away from the wrapper in the second station, means operated at the completion of a count by said counter for moving the fill tube away from said wrapper and for energizing the turret indexing means, means disposed adjacent the turret for receiving spilled coins, means responsive to the presence of coins in the receiving means for opening a switch, means responsive to a wrapper in said first station for closing a switch, means responsive to the joint closure of said switches for conditioning said indexing means for operation, said wrapper crimping means including a crimping head, cyclical means for moving said

gizing it as the cross-head is retrieved, said solenoid and plunger connecting means including a spring loaded, lost motion mechanism which limits the force applied to the roll by the plunger.

25. In a coin packaging machine, the combination of a turret having a plurality of coin wrapper receptacles, means for indexing said turret to advance said receptacles successively through a number of stations, a coin counter, means for delivering counted coins to a wrapper in a second station, a wrapper crimping mechanism disposed at a third station for crimping the filled wrappers, means for ejecting the crimped rolls from the turret in advance of said first station, means disposed adjacent the turret for receiving spilled coins, and means responsive to the presence of coins in said receiving means for preventing the operation of said indexing means.

26. In a coin packaging machine, a coin counter comprising a counting device, a predeterminer mechanism connected to be driven by the device and means for supplying coins in continuous succession to said device, a source of current, a motor for driving said supplying means having field and starting coils, a centrifugally opened switch disposed between the current source and said starting coil, a relay coil connected in parallel with said starting coil, a self-opening switch disposed between said source and said centrifugally opened switch, means for normally latching said switch closed, and means responsive to said relay when energized for unlatching said switch to prevent overloading of said coils.

27. In a coin packaging machine, the combination of a turret having a plurality of coin wrapper receptacles, means for indexing said turret step-wise to advance said receptacles consecutively through a station, a coin counter comprising a counting device, a predeterminer mechanism connected to be driven by said device, an index switch connected for operation by said mechanism at the end of a count, means for supplying a stream of individual coins to the device, means including a deflector solenoid for deflecting said stream of coins away from said device, a source of alternating current, a rectifier, means connecting said index switch to be supplied with rectified current, and means connecting said deflector solenoid to be supplied with said rectified current when said index switch is operated by said mechanism.

28. In a coin packaging machine, the combination of a turret having a plurality of coin wrapper receptacles, means for indexing said turret step-wise to advance said receptacles consecutively through a station, a coin counter comprising a counting device, a predeterminer mechanism connected to be driven by said device, an index switch connected for operation by said mechanism at the end of a count, means for supplying a stream of individual coins to the device, means including a deflector solenoid for deflecting said stream of coins away from said device, a source of alternating current, a rectifier, means connecting said index switch to be supplied with rectified current, means connecting said deflector solenoid to be supplied with said rectified current when said index switch is operated by said mechanism, and a direct current relay connected in parallel with said deflector solenoid, said relay serving to energize the turret indexing means.

29. In a coin packaging machine, the combination of a turret having a plurality of coin wrapper receptacles, means for indexing said turret to advance said receptacles successively through a number of stations, a supply of coin wrappers, means for feeding wrappers from said supply toward a first receptacle loading station, a coin counter, means for delivering counted coins to a wrapper in a second station, a wrapper crimping mechanism disposed at a third station for crimping the filled wrappers, means for ejecting the crimped rolls from the turret in advance of said first station, said delivering means including a fill tube mounted for movement toward and away from the wrapper at the second station, and means operated at the completion of a count by said counter for moving the fill tube away from said wrapper and for energizing the turret indexing means.

References Cited in the file of this patent

UNITED STATES PATENTS

1,047,304	Sattley	Dec. 17, 1912
1,092,106	Holt	Mar. 31, 1914
2,355,100	Nordquist	Aug. 8, 1944
2,489,765	Emerson	Nov. 29, 1949
2,556,214	Pottle	June 12, 1951