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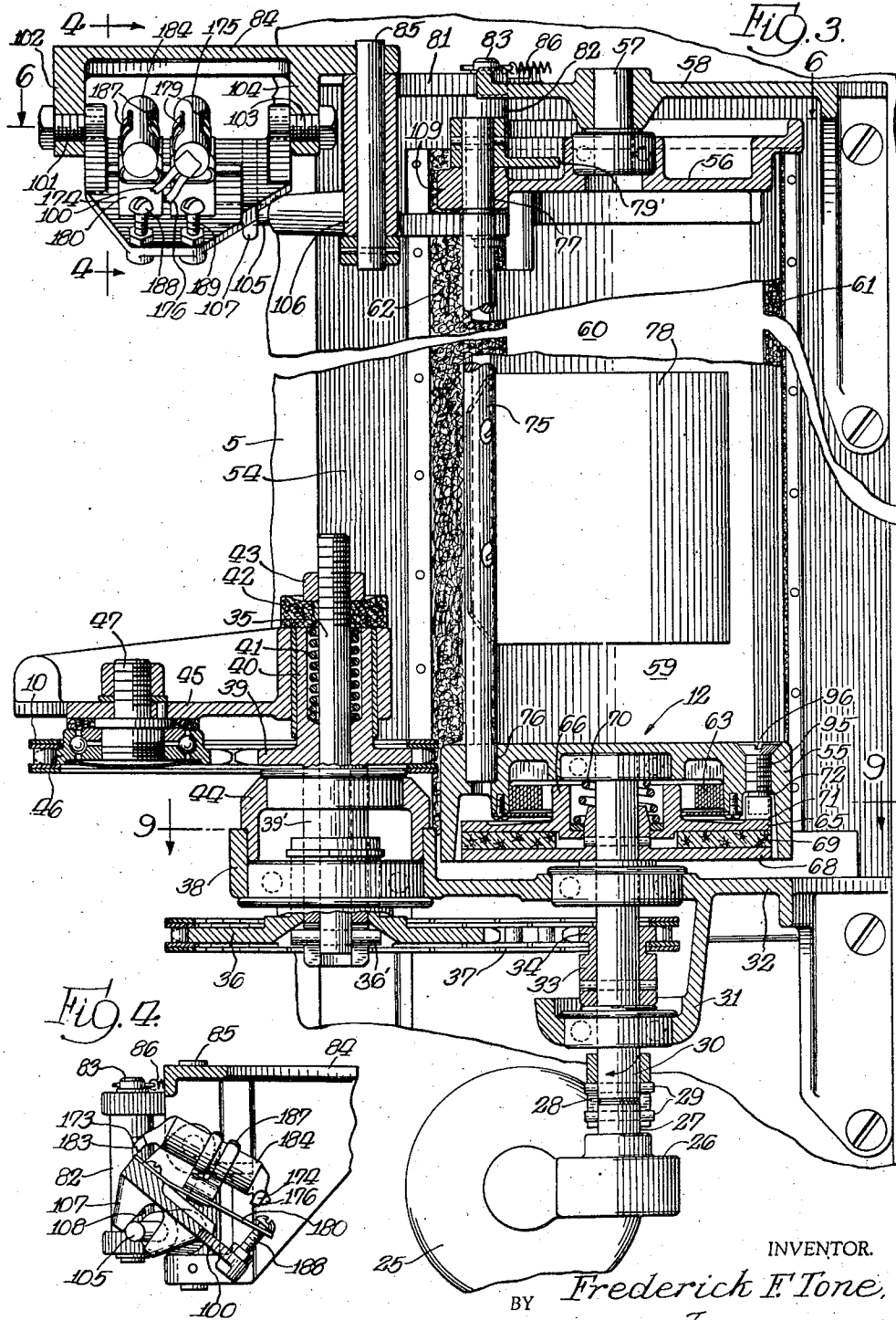
F. F. TONE

2,282,269

VENDING MACHINE

Original Filed Sept. 25, 1939

6 Sheets-Sheet 2



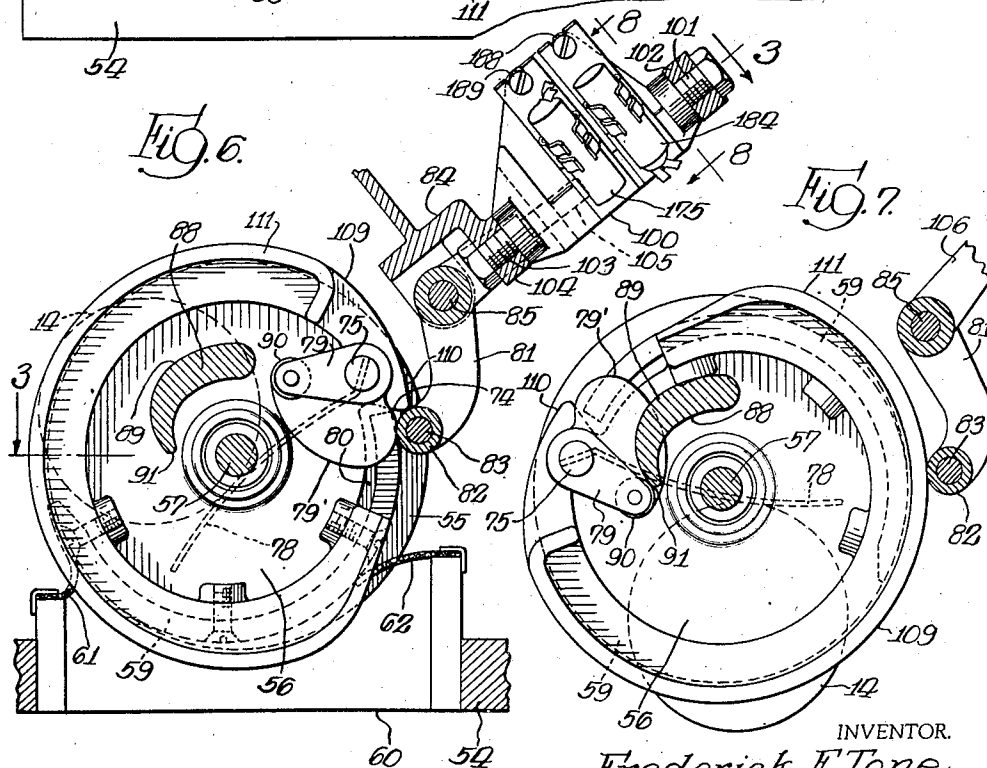
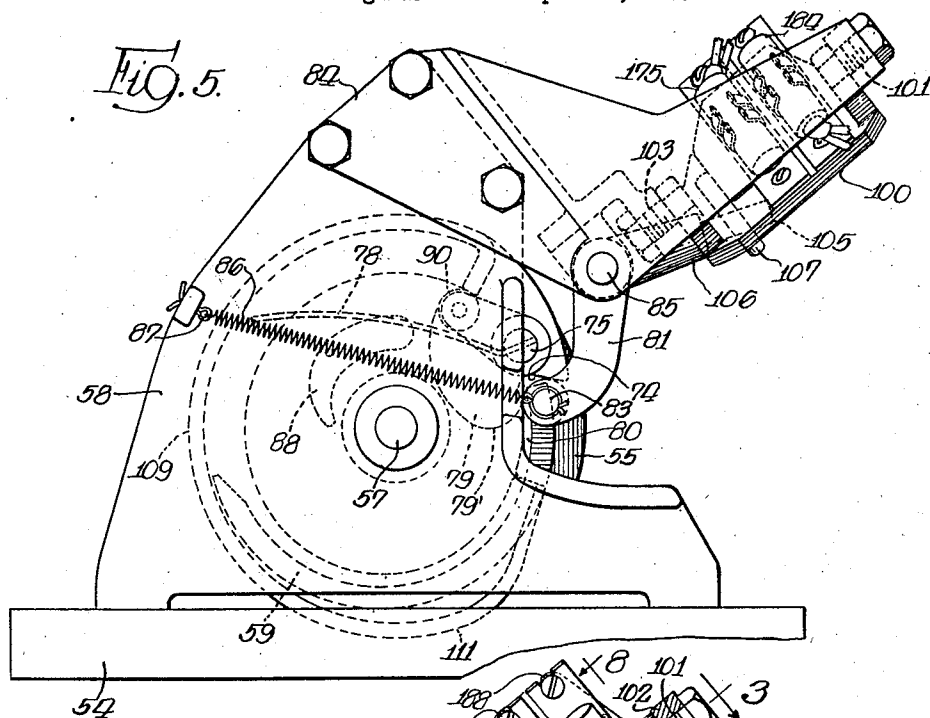
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VENDING MACHINE

Original Filed Sept. 25, 1939 6 Sheets-Sheet 3



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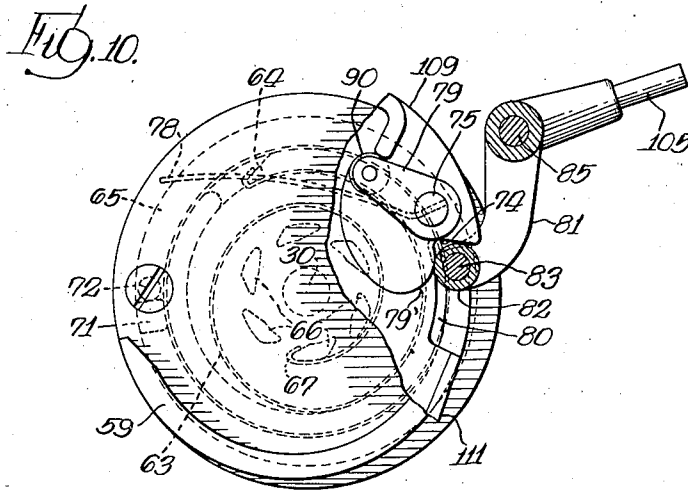
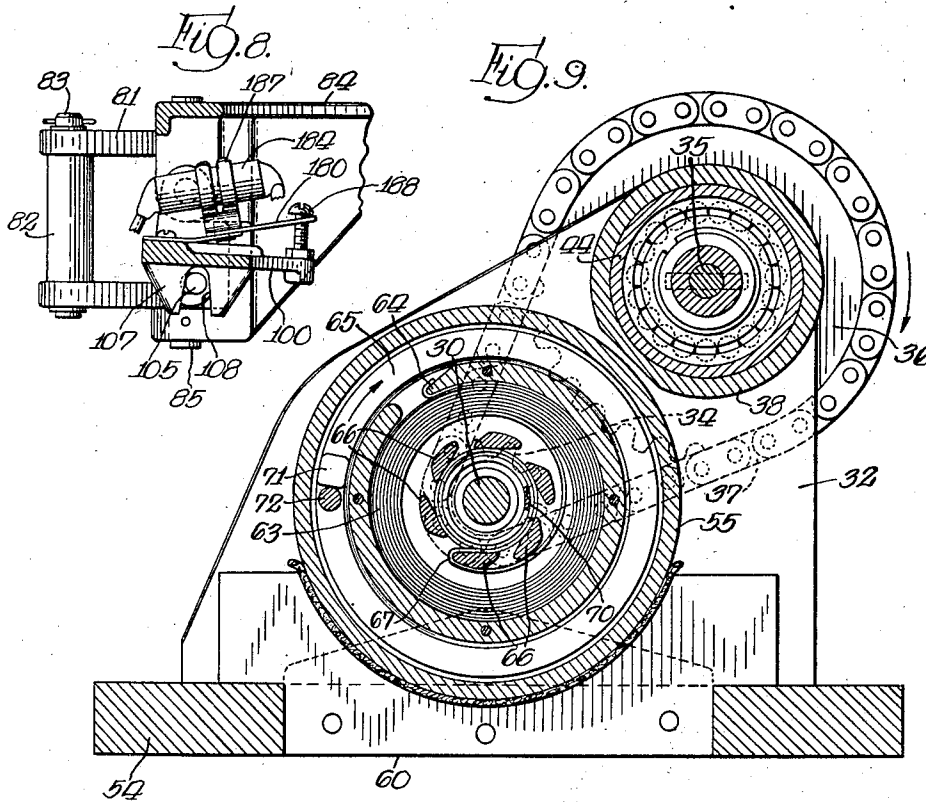
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VENDING MACHINE

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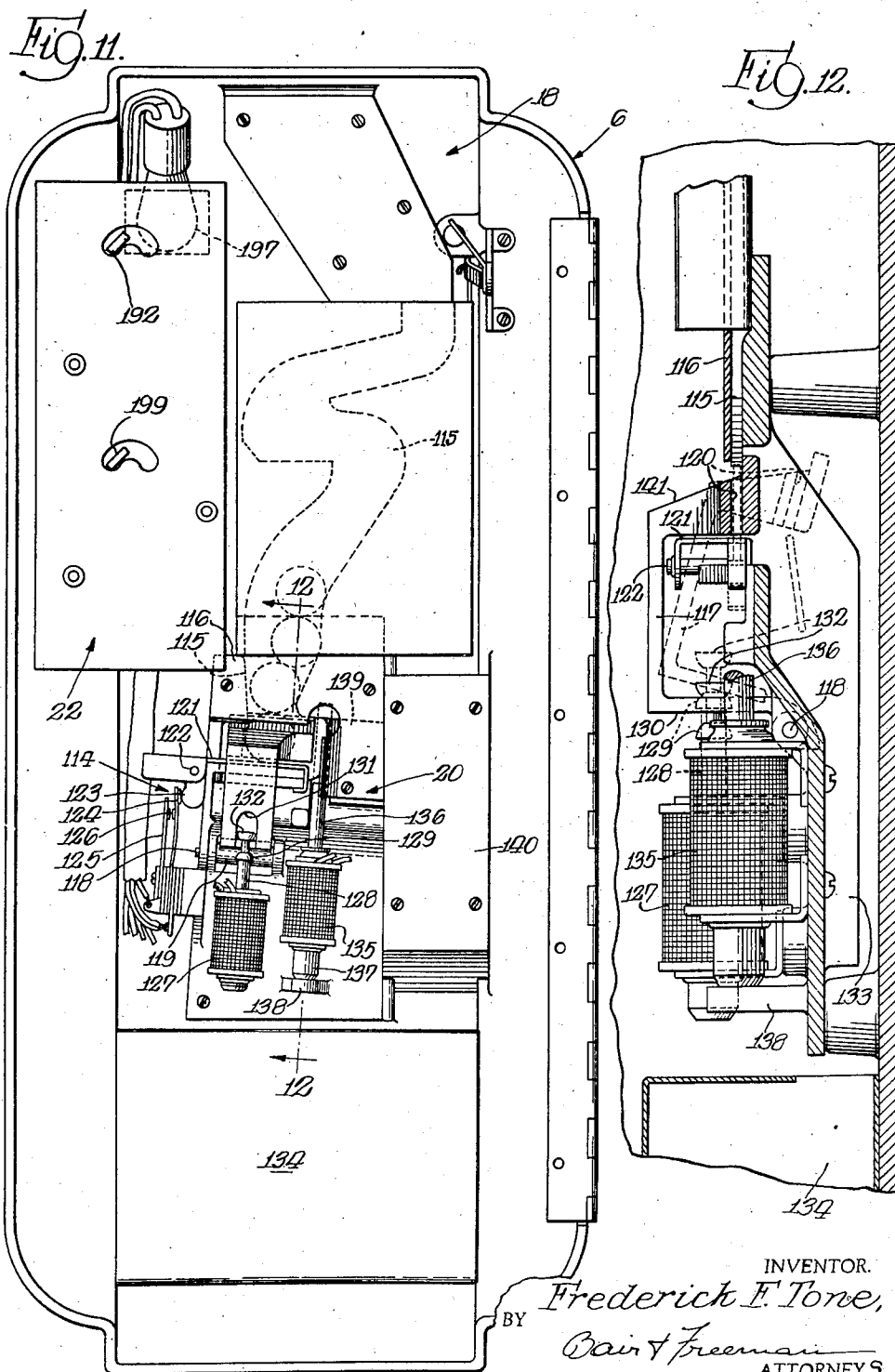
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VENDING MACHINE

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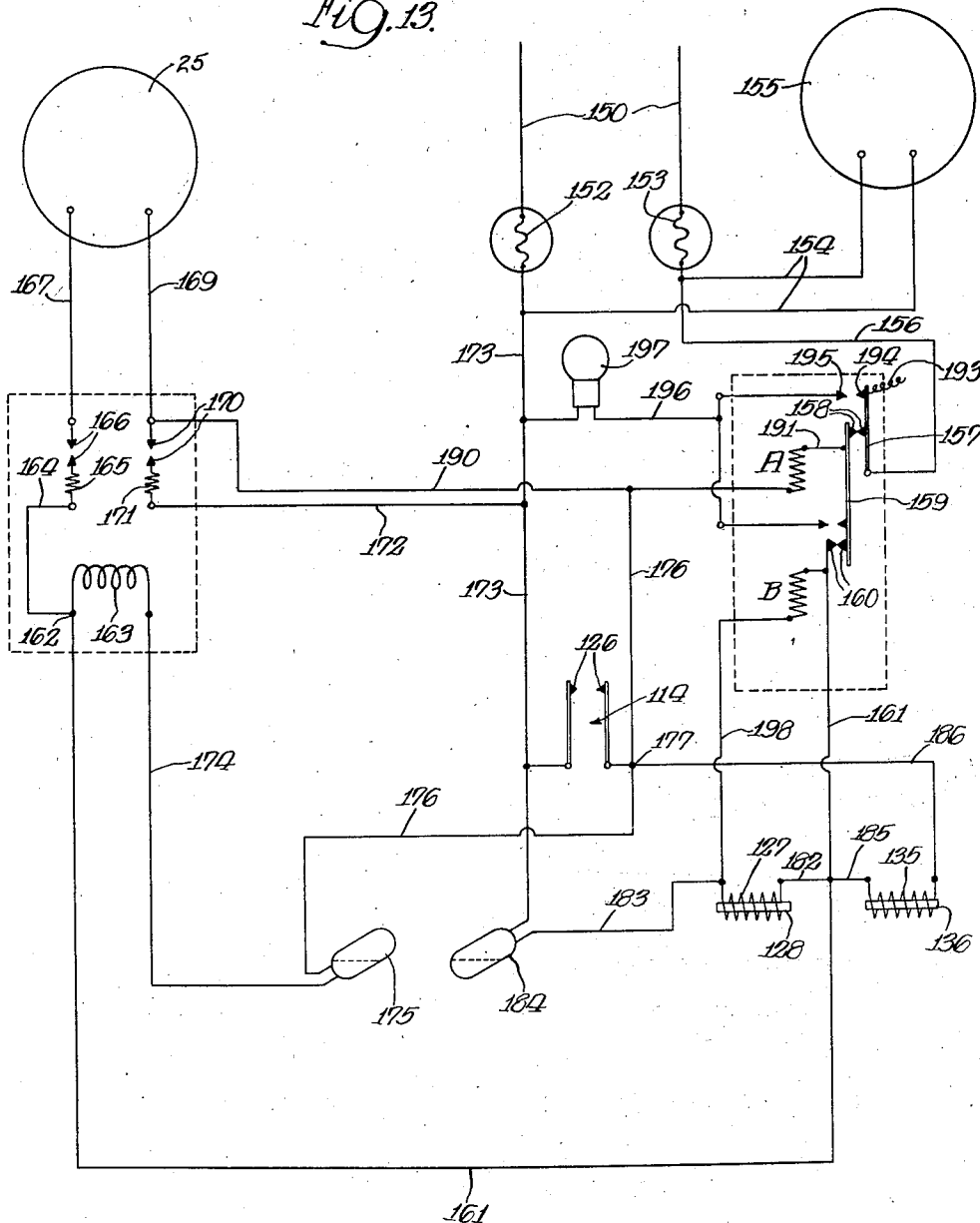
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VENDING MACHINE

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6 Sheets-Sheet 6

Fig. 13.



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UNITED STATES PATENT OFFICE

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VENDING MACHINE

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Original application September 25, 1939, Serial
No. 296,459. Divided and this application July
15, 1940, Serial No. 345,566

15 Claims. (Cl. 194—10)

My invention relates to vending machines and particularly devices which can be devoted to the purpose of vending packaged articles.

Among the objects of my invention is the provision of a new and improved vending machine which is provided with a rapidly moving ejector by means of which the articles to be vended can be quickly removed from within the machine to a point outside where they are delivered to the purchaser.

Another object of my invention is the provision of a new and improved electric operated vending machine which is adapted to dispense articles in a vertical position, and included further is the provision of a new and improved vending machine having a door normally closed and held by a mechanism which is adapted to be actuated by one of the articles vended in order to release the door for operation.

A further object is the provision of an electric coin operated vending machine wherein operation of a conveyor for articles to be vended is initiated by the deposit of a coin but wherein said operation is halted before the final delivery of the article by means of switches operating in connection with a delivery platform provided for the purpose of shutting off the conveyer power means and successively operating a coin collecting mechanism for depositing the coin in a purse, the several operative means being so arranged that they become immediately reset as the delivery platform is returned to an initial position.

A further object still includes the provision of time operated cut-out switches which will render the vending device completely inoperative, returning the coin to the purchaser whenever improper conditions exist such as an empty condition of the machine or a jammed condition wherein some mechanical part or other might become so inoperative as to prevent proper operation of the machine.

With these and other objects in view, my invention consists in the construction, arrangement and combination of the various parts of my device whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims and illustrated in the accompanying drawings, in which:

Figure 1 is an outside perspective view of the vending machine casing.

Figure 2 is an enlarged horizontal section of the dispensing portion of the machine taken on the line 2—2 of Figure 1.

Figure 3 is a vertical developed section through

the dispensing portion of the device taken on the line 3—3 of Figure 2.

Figure 4 is a detailed sectional view of a switch plate forming part of the dispensing portion of the device taken on the line 4—4 of Figure 3.

Figure 5 is a top plan view of the dispensing mechanism shown in Figure 3.

Figure 6 is a top view of the dispensing mechanism partly in section taken on the line 6—6 of Figure 3 showing the delivery platform in another position.

Figure 7 is a fragmentary view of the dispensing platform with the platform shown in dispensing or ejecting position.

Figure 8 is a side view of the switch plate taken on the line 8—8 of Figure 6.

Figure 9 is a horizontal cross section of part of the dispensing portion of the device taken on the line 9—9 of Figure 3.

Figure 10 is a phantom view of the delivery platform showing an adjustment for a spring power means for driving it.

Figure 11 is a vertical enlarged rear view of a coin mechanism for operating the machine.

Figure 12 is a vertical side view of the coin mechanism shown in Figure 11, on a large scale. Figure 13 is a wiring diagram of the device.

This case is a division of my copending case, Serial No. 296,459, filed September 25, 1939.

The vending machine here chosen to illustrate the invention consists in general of a refrigerated casing as shown in Figure 1 provided with a coin mechanism at one end and a delivery platform at the other. The device as shown is designed for vending bottle goods or similar containers in a vertical position.

In operation, after a coin is dropped into the coin mechanism a circuit is closed, causing operation of a motor which drives a conveyer bringing up a single bottle which is deflected to a position upon a delivery platform.

The movement of a bottle to the platform shifts a switch mechanism causing operation of the conveyer to discontinue and at the same time initiates operation of an auxiliary mechanism which rotates the delivery platform rapidly from a bottle receiving position to a bottle dispensing position approximately 180 degrees from the receiving position. In the dispensing position mechanism comprising part of the delivery platform pushes the bottle from the platform to a delivery balcony on the outside of the casing and immediately after this operation the delivery platform returns to its initial or normal position.

During rotation of the delivery platform from bottle receiving to bottle dispensing positions a switch is actuated by movement of the platform which causes collection of the coin previously deposited. If for any reason the conveyer is empty a time switch is operated which cuts out operation of the device after a predetermined time has elapsed causing the coin deposited to be returned to the would-be purchaser in a specially provided coin return box.

Under other circumstances if the machine should jam in open position, for example, the purchaser would be enabled to collect his purchase but could not reach into the machine and extract any bottles other than the single bottle purchased. Under these conditions a second time operated switch is placed in operation which renders the mechanism inoperative. Under such conditions it is customary to provide a warning light of some kind so that the service man will be prompted to examine the machine, correct the difficulties and reset the time operative switches so that the vending operations can be resumed.

Among the mechanisms provided for accomplishing the results described there is included a conveyer of particular design, the construction and operation of which is more completely described in a co-pending application, Serial No. 199,098, filed March 31, 1938. For this reason only a small portion of the conveying device is shown here and that particularly in Figure 2.

The vending machine is designed to be mounted within a casing 5, which for some purposes may be considered a portion of the framework, provided with suitable compartments, not shown, for a refrigerating machine and a reservoir of containers such as bottles or cans to be dispensed. On the left side of the casing as viewed in Figure 1 is mounted a housing 6 for a coin mechanism and on the right side is shown the outer portion of a casing 7 housing a delivery mechanism. The casing 5 is provided with a top 8 which can be lifted to give access to the upper portion of the interior and a door 9 at the side giving access to operating parts of the device within, and a supplemental storage compartment.

The conveyer comprising an endless chain is indicated by the numeral 10. This is operative to conduct articles to be vended to a delivery platform 12 operated by appropriate mechanism for shifting articles such as the cylindrical containers 14 from a receiving position as shown by the dotted line 14' in Figure 2 to a delivery balcony 16 likewise shown in Figures 1 and 2.

For initiating operation of the device there is provided a coin mechanism included in the housing 6 shown at the left of Figure 1 including conventional parts such as a coin selecting device 18 which selects good coins for deposit into a coin mechanism 20. The time operated switch devices of conventional design are enclosed in a box 22 and all of the operative parts are connected in an electric circuit, the diagram of which appears in Figure 13.

In order to understand the operation of the vending mechanism selected to illustrate the invention a portion of the conveyer mechanism will be included which is shown in detail in Figures 2 and 3. Power is supplied from a motor 25 in the electric circuit which operates through a gear reducer 26 connected by suitable gear to a stub shaft 27. The stub shaft 27 in turn is connected by means of a sleeve 28 and pins 29 to a supporting shaft 30 journaled in a bracket 31 which is supported by a frame 32 comprising a casting

supporting the major portions of the delivery part of the mechanism. The supporting shaft is directly and positively rotated by the motor. Keyed to the supporting shaft is a sleeve 33 including a sprocket wheel 34.

A shaft 35 is mounted at one side of the supporting shaft 30 in parallel relation thereto and is provided at the bottom end with a sprocket wheel 36 joined in operation to the sprocket wheel 34 by a drive chain 37 shown in Figure 3. The shaft 35 is suitably mounted within a bracket 38 and extends upward a substantial distance.

A drive sprocket 39 having a sleeve portion 40 is rotatably mounted upon the shaft and has a downward extending sleeve portion 39' keyed to the sprocket 36 by a pin 36'. The pin is carried by the shaft 35 and is held upward in place by means of a coiled spring 41 positioned within the sleeve 40 and retained in place by a felt packing 42 and packing nut 43. The drive sprocket 39 is permitted to shift axially upon the shaft 35. In addition a bracket 44 and an upper sprocket arm 45 are mounted with sleeve portions surrounding the shaft 35 and rotatable relative to the drive shaft. These sleeve portions can likewise be shifted endwise a slight amount when moved against the drive sprocket 39 for the purpose of permitting them to be properly mounted upon the vending machine even though the parts of the machine to which they may be attached might be slightly out of alignment in a vertical or horizontal direction.

The upper sprocket arm 45 has mounted thereon an idler sprocket 46 shown in Figure 2 which is designed to bear against the endless conveyer chain 10 and hold it in position against the drive sprocket and in proper position with relation to the delivery platform. The sprocket is secured to the sprocket arm by means of a suitable shaft 47 and other structural essentials not important to this invention.

Likewise on an upward extending portion of the bracket 44 there is mounted another idler sprocket 48 which also contacts the endless conveyer chain 10 pressing it into position against the drive sprocket 39 and positioning the conveyer chain otherwise with respect to the device.

Other portions of the conveying part of the mechanism include opposite side walls 49 which are curved at alternate ends 50 for guiding the bottles or cans around corners. A deflector vane 51 is stationarily mounted upon the frame in the path of bottles carried along the conveyer adjacent the delivery platform.

In operation when the motor is started by dropping a coin into the device the conveyer is driven by means of the sprocket just described and the endless chain 10 of the conveyer moves around in a generally counterclockwise direction as viewed in Figure 2 until, aided by the deflector vane 51, the endmost can or bottle 14 is pushed by the can or bottle next behind it into a position upon the delivery platform 12, after which appropriate mechanism which will be later described opens a switch shutting off the motor, thereby causing the conveyer to cease further operation.

After cans or bottles are delivered upon a delivery platform the mechanism set in operation releases the platform from an initial or bottle receiving position whereupon it is rotated about its vertical axis an angular distance substantially 180 degrees at which point the can or bottle is ejected onto the delivery balcony 16. Mean-

while the platform continues rotating until it returns to an initial position.

The delivery platform

The rotating delivery platform consists generally in a lower hollow disc 55 rotatable about the supporting shaft 30 and an upper hollow disc 56 in which is secured a shaft 57 mounted in a portion 58 of the frame for permitting the upper disc to rotate about a vertical axis. The upper and lower hollow discs are connected together by a rigid arcuate door 59 of some insulating material which extends approximately 180 degrees about the perimeter of the hollow discs forming together with the discs a rotating platform and door. It is significant that the rearward side 12' of the door is nearer the center of the platform than the forward side 12''. This is so that if the end bottle remaining chances to be urged forward against the door during rotation the outside wall of the door will recede from contact with the article and permit unrestricted rotation. The frame in turn is secured to a vertical base 54 attached to the casing in which is an opening co-incident with a rectangular opening 60 in the casing somewhat larger than the can or bottle to be vended. The opening 60 is immediately adjacent the delivery balcony 16. This opening 60 is designed to be normally closed by the arcuate door 59 which is slightly wider and higher than the opening. In order to seal the edges of the opening there are provided flexible strips 61 and 62 which rub against the arcuate door as it turns permitting rotary movement but closing the space between the edges of the opening and door so as to seal the opening between the inside refrigerated space within the casing and the atmosphere.

Power for driving the delivery platform is supplied by an auxiliary power means, such as the coiled spring 63 shown in Figure 3 and also in Figure 9, stationarily secured at the outer end to the lower hollow disc 55 by means of an anchor 64.

An upper clutch plate 65 is mounted rotatably about the supporting shaft 30 and is provided with six upward extending projections 66 any one of which may provide a means for securing the other end 67 of the coiled spring. A lower clutch plate 68 is mounted upon the supporting shaft 30 and non-rotatably keyed thereto so that it is positively driven by the supporting shaft. A friction disc 69 of some material such as cork mounted on one of the clutch plates provides a friction contact with the other. These details are best shown in Figure 3.

Shown above the upper clutch plate is a coiled spring 70 pressed against it by the central portion of the lower hollow disc 55 thereby urging the friction surfaces of the respective clutches together.

In normal position the delivery platform is releasably held in the position shown in Figures 2 and 3. When the supporting shaft 30 is rotated by the motor the lower clutch plate 68 is likewise positively rotated which by reason of the clutch engagement rotates the upper clutch plate 65. As shown in Figure 9, the upper clutch plate is anchored to the end 67 of the coiled spring and the spring will therefore be wound up since the lower hollow disc 55 being a part of the delivery platform is prevented from moving.

In order that the spring may not be overwound a stop is provided for the upper clutch plate which consists of an abutment 71 at the

outer edge of the upper clutch plate and a pin 72 anchored in and extending downwardly from the underside of the lower hollow disc.

After the upper clutch plate has been rotated an angular distance slightly less than 360 degrees from the normal position shown in Figure 9, in a clockwise direction as viewed in that figure, the abutment 71 will be driven against the opposite side of the pin 72 forcing the upper clutch plate to cease rotation. In view of the fact that the lower clutch plate continues to be positively driven by the supporting shaft 30 and the motor, the lower clutch plate will merely slide around the friction surface between itself and the upper clutch plate, thereby continuing to rotate while the upper clutch plate is stopped at a maximum tension position for the spring. When this operation has been completed the spring is set all ready to rotate the delivery platform whenever the platform is released for a delivery operation.

In initial or normal position the delivery platform is held by a suitable latch means so that it cannot be rotated from a loading position to a vending position. When the proper mechanism has been set into operation for vending an article the article, such as the bottle or can previously referred to, is pushed upon the platform and in being so pushed moves a lever arm extending across the platform which when rotated releases a latch mechanism permitting the auxiliary power spring previously described to rapidly rotate the platform in a clockwise direction as viewed in Figure 2, in order to open the door and dispense the article.

The latch mechanism is shown in released position in Figure 6 with the bottle or can loaded on the platform, and in a partially ejected position in Figure 7.

The specific structure comprising the latch mechanism includes a vertically mounted rod 75 rotatable at the lower end 76 in the lower hollow disc 55 and at the upper end 77 in the upper hollow disc 56. The rod is provided at a point approximately midway between the ends with a lever arm 78 somewhat curved in design as shown in Figures 2, 6 and 7 projecting over the platform.

As indicated by the full and dotted lines, respectively, the lever arm is adapted to swing or pivot between the full line position shown in Figure 2, and the dotted line position there shown.

At the top 77 of the rod above the point where it is journaled in the upper hollow disc a cam device 79 having a curved face 79' is non-rotatably fixed so that it rotates when the rod is rotated. In initial or normal position shown in Figure 5 the latch means is operative to prevent the platform from rotating. This latch means consists of a notch or recess 80 in the periphery of the upper hollow disc 56 and a hook-like arm 81 which carries upon it a roller 82 mounted upon a spindle 83 which is positioned for engagement with a shoulder 74 forming a side of the recess 80, thereby preventing clockwise movement of the platform. The hook-like arm 81 in turn is pivotally mounted upon a bracket 84 by means of a pin 85 in such a manner that it can swing about the pin 85 in a horizontal plane.

In operation the latch means by engagement normally of the roller 82 with the shoulder 74 holds the platform against the clockwise rotating force exerted by the auxiliary power spring 63. In this position there is no bottle or can upon the platform.

The arm 81 is resiliently held in latch posi-

tion by a coiled spring 80 which is attached at a point 87 to a stationary portion of the frame.

As soon as a bottle or can is forced upon the platform by operation of the conveyer the lever arm 78 is swung from the full-line position shown in Figure 2, which is the same as the dotted-line position shown in Figure 5, to the dotted position shown in Figure 2, which is the same as the dotted-line position in Figure 6. In this last position the cam face 79' pushes the roller 82 out of engagement with the shoulder 74 and since there is then nothing to hold the platform from rotating the spring acts to rotate the platform substantially 360 degrees and during the rotation it passes through the position shown in Figure 7.

Figure 7 shows the ejecting or vending position of the platform and in this position a mechanism operates to reverse the direction of pivoting of the lever arm 78 so that instead of being actuated by a bottle or can it moves the bottle or can to actually push it from the platform. The movement is accomplished by a cam 88 positioned upon the underside of the portion 58 of the frame provided with a curved cam face 89.

Working with the cam is a roller 90 which is rotatably mounted on one side of the cam device 79. Figure 5 shows the lever arm 78 and cam 79 indicated by dotted lines in normal position. In this position also the arm 81 engages the shoulder 74 and prevents the platform from being rotated. As evidenced by Figures 6 and 7, when a container 14 is forced on the platform by the container behind it the lever 78 is rotated and moves the cam device 79 toward the position shown in Figure 6 by rotation of the rod 75. An instant later when a bottle or can is positioned on the platform all the way the cam face 79 shifts the arm 81 out of contact with the shoulder 74 and the roller 82 rides on a cam face 109, being held thereby out of contact with the cam 79. Since there is no force tending to return the cam to its normal position operative at this stage of rotation the cam and the lever 78 remain in the rotated position and the container or bottle remains in place on the platform during the first part of its rotation. However, when the platform by rotation reaches the position shown in Figure 7, the cam device 79 and accompanying roller will be at the opposite side. Here the roller 90 will engage a point 91 of the cam 88 and begin to roll up the curved face 89. By rolling along the face 89 the cam device 79 is itself pivoted clockwise about the axis of the rod which supports it, a direction opposite to that moved when the container was forced against the lever arm 78, and the lever arm is then forceably moved in a clockwise direction thereby forcing the bottle or can from the platform in a direction from the center outwards as viewed in Figure 7. In this ejecting or delivery position of course the arcuate door is in a position away from the opening 80 leaving the opening 80 unobstructed so that the bottle or can is readily ejected through the opening upon the balcony 16. The last described movement takes place usually with extreme rapidity but not with greater force than necessary to rather gently slide the can from the platform to the balcony.

The platform is rotating all the time under force of the auxiliary power spring 83 so that immediately following the ejection of the bottle or can the platform continues rotation back to an initial or normal position shown by the dotted lines in Figure 5, and the full lines in Figure 2. With the bottle or can moved by the pivoting of

cam device 79 clockwise, the cam device is removed from its position blocking the recess 80 and when the recess continues its rotation to a position again opposite the roller 82 that roller will be pulled into the recess by the coiled spring 86 and the platform will then be ready for a second vending operation.

When the automatic rotating platform device is used to vend articles from refrigerated casings wherein the casing is kept at a very low temperature it is highly desirable that it work very rapidly in order that the opening 80 may remain open for as short a space of time as possible. It therefore becomes advisable to provide some means for determining the wind-up tension of the auxiliary power spring 83 so that it may rotate the platform with the desired rapidity. Accordingly, the series of projections 66 previously described is provided, any one of which may be engaged with the end 67 of the coiled spring. For making the adjustment the pin 72 is made removable by placing it upon the end of a threaded screw 95 which has a screw driver slot 96 in the top and which can be inserted threadably through a hole in the lower hollow disc 55 from its top. When an adjustment is to be made upon the spring for either tightening it or loosening it the pin 72 is removed. This of course withdraws the pin out of contact with the abutment 71.

It will of course be obvious that with the provision of six projections 66, tension on the spring may be adjusted to gradations of $\frac{1}{6}$ of the increase in tension made possible by a complete revolution in a tightening direction. When the spring is not quite tight enough the screw 95 is withdrawn which withdraws the pin 72 from contact with the abutment 71. Then the delivery platform is rotated in a clockwise direction as viewed in Figures 9 and 10 until, for example, the hook end 67 of the spring slides over and engages the projection 66 next along in a clockwise direction from the projection 66 with which it is shown in engagement in Figure 9.

Since the clutch disc 65 of which the projections 66 are a part is held relatively stationary due to the inertia of the conveyer and attendant mechanism the tendency will be for the increase in tension of the spring to rotate the lower hollow disc 55 comprising the delivery platform in a clockwise direction. Accordingly, with the pin 72 withdrawn, the lower hollow disc can be forceably rotated in a counterclockwise direction as viewed in Figure 9 until the pin 72 again occupies a position behind the abutment 71 after which it can be screwed into place. By this adjustment there will be an added tension upon the spring equivalent to an increase in winding of $\frac{1}{6}$ of a revolution.

It will thereupon become obvious that even further increases in tension can be secured by first rotating the disc 55 in a clockwise direction until the end 67 of the spring engages a second, third or fourth projection 66 in advance, for example, after which the lower disc can be forced rotatably in a counterclockwise direction before replacing the pin 72 behind the abutment.

Obviously, for an increase in tension equal to the rotation of the platform a full 360 degrees it would not be necessary to first turn the disc clockwise at all since instead of advancing the end 67 to a sixth projection which is again the same projection at which it is originally engaged, it is only necessary to withdraw the pin 72, rotate the platform a full 360 degrees and then a little bit farther in order to give access to the screw

bearing the pin from the outside of the casing, screw the pin into place and then let it be drawn into engagement with the abutment 71 under the increased tension.

Switch mechanism

In order that the device may be operated by the electric circuit provided for it there is provided a mechanism for tilting a pair of mercury switches and while the description of this portion of the operation has reference to the electrical set-up a description of the mechanical principles involved in tilting the switch table follows here in order that the operation of the electric set-up may be better understood.

A tiltable mounted switch table is provided upon which is mounted a pair of mercury switches normally tilted in one direction wherein one switch is closed and the other is open, but which can be tilted about a horizontal axis to another position wherein the open and closed positions of the switches are reversed. The tilting is accomplished by and in timed sequence with the rotation of the delivery platform.

The tilting mechanism comprises specifically a tiltable switch table 100, various views of which are shown in Figures 3 through 7. The table has one horizontal pivot pin 101 in a downwardly projecting flange 102 on the bracket 84 and another horizontal pivot pin 103 in a downwardly projecting flange 104 of the bracket 84 so arranged that an axis through the pivot pin lies in a horizontal direction permitting the switch table to be tilted thereabout. The force of tilting is applied through a lateral pin 105 extending in a horizontal direction outwardly from a casting 106 which has the hook-like arm 81 attached to it. Below the switch table there is provided a fork-like projection 107 in which is a recess 108 adapted to loosely receive the lateral pin 105. As the hook-like arm 81 is rotated in a horizontal plane back and forth the lateral pin 105 is similarly rotated and when rotated serves to tilt the table in one direction or another about its horizontal axis, thereby changing the relative positions of any switches mounted upon the switch table.

In initial or normal position the switch table is tilted in the direction shown in Figures 3, 4 and 5, in which position the roller 82 is in the recess 80 provided for it. As the roller 82 is moved outward by the cam face 79 urged by a bottle or can placed upon the delivery platform the hook-like arm 81 is rotated in a counterclockwise direction as is also the lateral pin 105 and movement in that direction, which is from left to right as viewed in Figure 4, serves to tilt the switch table more nearly to a horizontal position.

To further tilt the switch table there is provided a cam face 109 on the periphery of the upper hollow disc 56 and this cam surface is so fastened that the distance from the surface to the center of rotation is gradually increased from a minimum distance at 110 to a maximum distance at 111. As the cam face 109 rolls past the roller 82 the roller is therefore rotated gradually farther in a counterclockwise direction about its own axis, thereby increasing the tilting of the switch plate from a position approximating that of Figure 4 to a position more nearly approximating that shown in Figure 8.

Upon the completion of a 360 degree rotation of the delivery platform the roller 82 again drops into the recess 80 moving the hook-like arm 81

in a clockwise direction, which thereby serves to return the tilting switch table to the position shown in Figure 4, which is the initial position for it.

Coin mechanism

In the embodiment of the invention here presented the delivery platform is designed for operation by a coin controlled mechanism which is connected electrically to other various parts of the device. The coin mechanism itself includes the coin selection means already referred to, not included as a part of this invention, in which is provided a coin slot 115 which conducts properly selected coins to the coin operated mechanism. The mechanism itself includes, in addition to the coin slot 115 located within a portion 116 of the casing, a coin holding member 117 which is pivoted about an axis 118 by means of a pivot 119 positioned at a slight tilt from the horizontal as viewed in Figure 11.

In the upper end of the coin holding member is a coin recess 120 which in initial position is directly in line with the coin slot 115. Directly beneath the coin recess in the path of a coin deposited therein from the slot there is an electric switch arm 121 which lies directly below the recess as well as the coin slot 115 and which is pivoted about a horizontal axis 122. The switch is provided with a projection 123 extending below it adjacent the pivot which is adapted to bear upon one terminal 124 of a switch herein termed a coin switch 114 and which when rotated moves the terminal 124 in the direction of another terminal 125 of the switch in order to close the contact points 126. This results by reason of the weight of a coin deposited upon the switch arm.

Subject to certain operation of the device which will be later explained in detail, a cash solenoid 127 is energized which drives a core 128 of the solenoid upward so that shoulder 129 on the core is brought into contact with a lower horizontal leg 130 of the coin holding member on both sides of a slot 131 cut therein. A second projection 132 is provided at the end of the core 128 to prevent the core from dropping downwardly out of contact with the coin holding member upon deenergization of the current through the solenoid.

When the solenoid is energized, the core is forced upwardly as shown in Figure 12, the motion of which tends to tilt the coin holding member 117 in a clockwise direction about its axis. As the coin holding member is tilted it carries the coin held within the recess 120 to a point at the side of the mechanism whereupon the coin drops by gravity through a passage 133 into a coin purse 134 wherein coins are collected.

In order that, under ordinary operation, a coin may be retained upon the tilted coin switch arm there is provided a second or hold solenoid 135 in which is a core having a portion 136 at the top and a portion 137 at the lower side, designed to rest in retracted position upon a shelf 138.

If for any reason the machine should not function properly there is provided a coin return slot 139 which forms a passage from a point adjacent the hold solenoid to a return box 140 at the side of the coin collecting mechanism, as shown in Figure 11, but accessible to a prospective purchase as shown in Figure 1. The hold solenoid is so positioned in the electric circuit that as soon as the circuit is closed the core is raised extending the portion 136 upwardly into the coin return slot 139, thereby blocking the slot and holding the coin on the coin switch until

it is collected by the mechanism described. If for any reason it should be desirable to return the coin to the would-be purchaser a current through the hold solenoid 135 is deenergized permitting the core to drop downwardly out of the return slot 139 whereupon a coin will roll from the coin switch through the return slot into the return box 140.

For circumstances wherein more than one coin is dropped at a time into the coin slot it is of course necessary that only one coin operate the machine at a time. To render this operation certain there is provided at the side of the coin recess in the coin holding member a sloping shelf 141 which when the coin holding member 117 is tilted clockwise as shown in Figure 12 is interposed in the path of the coin slot and remains in that position until the coin holding member is returned to initial or normal position. Therefore, while the coin holding member is being tilted in order to deposit the coin in a suitable purse the shelf 141 holds back the next successive coin until the now empty recess is again positioned in alignment with the coin slot after which the next operation takes place.

Electrical operation

As has been indicated, all the mechanical parts of the device are designed to be operated by electricity by means of an electrical circuit of a particular sort. This circuit is shown diagrammatically in Figure 13 and includes likewise, diagrammatically represented, the various mechanical parts of the device already described in detail.

Line wires 150 supply a suitable current of electricity to the apparatus through fuses 152 and 153 of the customary sort. Wires 154 are connected between the line wires and a compressor motor represented diagrammatically at 155, the latter being provided to supply the proper refrigeration for the unit. Likewise connected to one of the line wires is a line 156 which passes through a switch arm 157 and contact points 158 to a second switch arm 159.

From the switch arm 159 the current passes normally through a second set of contact points 160 and thence through a line 161 around to a point 162 from which the line branches in one direction to a relay 163 and in another direction to a wire 164 from which it is conducted through a pig tail lead 165 of the customary sort and contact points 166 to a line 167 connected with the conveyer motor 25.

The conveyer motor 25 is the conveyer motor previously referred to which operates the gear reducer 26 and hence the operating parts of the machine. The other connection to the conveyer motor is supplied by a wire 169 in which are contact points 170, a pig tail lead 171, from which a wire 172 connects through to a line 173 connected with the other line wire through the fuses 152. Thus a circuit is completed from the line wires through the conveyer motor whenever operating conditions permit. The motor, however, is operated by means of the relay 163 and hence control of the motor is exercised through the circuit passing through the relay. One side of the relay circuit connects to the line wires by means of the line 161 previously described and the other side through a line 174 passing through a motor mercury switch 175 and thence through a line 176 to a point 177 adjacent the coin switch 114. When the coin switch is closed connection is made therethrough from the point 177

through the line 173 to the fuses 152 and the corresponding line wire. The switch points 158 and 160 are under ordinary circumstances continuously closed and therefore when the coin switch 178 is closed by a coin, slug or similar piece deposited as described in connection with the coin collecting mechanism, a circuit is completed through the motor switch and motor relay which properly throws the motor contacts connecting it into the circuit and the motor is thereupon started.

Tilting switch table

To provide for the operation described, the motor switch 175 and cash switch 184 are made in the form of conventional mercury switches which include casings supported on the switch table respectively by spring clips 179 and 187. The motor switch in its initial position is tilted so that the wires 174 and 176 enter the bottom and thereby form a closed circuit, while the cash switch is positioned so that the wires 173 and 183 enter the top side of the tilted switch, thereby rendering the circuit through them normally open.

To vary the sensitivity of the cash switch, for example, the spring clip 187 is mounted upon a spring arm 180, the position of which is controlled by an adjusting screw 188 by means of which the tilt of the motor switch can be varied. The motor switch 175 is provided likewise with an adjusting mechanism to vary its tilt operated by an adjusting screw 189.

Likewise, in the circuit there is provided the solenoid 127 designated as the cash solenoid which includes the core 128. One end of the solenoid is connected by means of a wire 182 to the wire 161 and hence to the appropriate side of the line wire. The other end of the solenoid is connected through a wire 183 to the mercury switch 184 which has been termed the cash switch, the other side of which is connected to the wire 173 previously referred to.

In normal position the cash switch is open so that the cash solenoid 127 is normally inoperative. Also, in the circuit is the solenoid 135 which is herein described and referred to as the hold solenoid. One end of the hold solenoid is connected through a wire 185 to the wire 161 and hence to the appropriate side of the line wire. The other end of the hold solenoid is connected through the wire 186 to one side of the coin switch 114 and hence when the coin switch is closed forms a continuous circuit with the wire 173 and thereby with the other line wire, thus establishing a circuit through the hold solenoid.

In operation when a coin or other slug is deposited into the coin selecting mechanism 18 and finds its way through the coin slot 115 to the coin recess 120 in the coin holding member, it immediately depresses the electric switch arm 121 which when pivoted about its axis closes the contact points 126. Operation is initiated by reason of the current passing through the motor relay, thereby starting the motor, since the motor switch 175 is initially and normally in a closed position, as shown in the diagram.

At the same time, the coin switch being closed, a circuit is closed through the hold solenoid 135 and with this solenoid energized the core including the portion 136 is shifted upwardly against gravity so that said portion 136 lies within the path of the return slot 139, thereby immediately blocking the return slot and forcing the coin to remain upon the electric switch arm 121.

As soon as the motor starts, the conveyor chain 10 begins to move and advances the foremost can or bottle to a position against the deflector 51 which deflects the can or bottle to a position on the rotating platform where it is pushed against the lever arm 78. As the lever arm 78 is pivoted due to the pushing of the can or bottle, the rod 75 is rotated in a counterclockwise direction moving the cam device 79 in a similar direction as previously described, thereby moving the roller 82 out of its position against the shoulder 74 in the recess 80 and with this unlatching movement the delivery platform is released from its initial position.

When the conveyor motor 25 starts, the friction clutch discs 68 and 65 are rotated immediately, winding up the auxiliary power spring 63 to its maximum position. Therefore, that position having been reached previous to the unlatching of the delivery platform, the delivery platform will, as soon as the unlatching takes place, be immediately rotated through a delivery or ejecting position and thence onward back to an initial position.

At the same time as, or preferably a small fraction of a second before the cam device 79 pushes the roller and hook-like arm 81 out of contact with the shoulder 74, the lateral pin 105 in the embodiment shown is shifted in a direction from left to right, as viewed in Figures 4 and 8, or counterclockwise as shown in Figure 5, thereby tilting the switch table 100. With the tilting of the switch table in the direction indicated, in a counterclockwise direction as viewed in Figures 4 and 5, the slug of mercury at the low or contact end of the motor switch is shifted to the opposite end breaking the motor contact and operation of the motor immediately ceases. There is sufficient inertia of movement of the conveyor to carry the can or bottle just a little bit farther into its position upon the delivery platform sufficient to completely release the platform for rotation although the conveyor motor stops a small fraction of a second earlier.

Up to the presently described stage the mercury switch 184 although tilted to some extent has not been tilted quite sufficiently to run the mercury in it from the neutral end to the contact end. This additional tilting, however, is accomplished during rotation of the delivery platform and is provided for by the cam surface 109.

The roller 82 is deposited at the end 110 of the cam surface at what may be termed an initial rolling position immediately after release from the shoulder 74. As the delivery platform continues to rotate in a clockwise direction, the cam surface 109 is extended progressively farther away from the center of rotation, thereby gradually rotating the hook-like arms 81 still farther in a counterclockwise direction. The effect of this further rotation is transformed into a further movement of the lateral pin 105 in a direction from left to right, as viewed in Figures 4 and 5.

The result of this further movement is a further tilting of the switch platform and cash switch 184 to a point where the mercury in the switch moves to close the switch and accordingly closes a circuit through the cash solenoid 127. As soon as the cash solenoid 127 is made operative the core 128 of the solenoid is driven upwards and through its contact with the coin holding member 117 tilts the member to the dotted position shown in Figure 12.

In tilting the coin holding member moves the coin recess 126 from left to right as viewed in Figure 12 so that the coin previously held thereon drops from the bottom of the recess and tumbles down the passage 133 into the purse 124.

In the meantime, the next successive coin in the slot is held there by the sloping shelf 141 designed for that purpose. The energizing of the cash solenoid is instantaneous, moves the coin holding member quickly and instantaneously to a coin collecting position and then as the rotating platform continues to rotate back to an initial position the cash switch is again opened, the cash solenoid deenergized and gravity immediately draws the coin holding member back to its initial or solid line position, as shown in Figure 12, ready for the next operation.

The movement of the tilting switch table which returns the cash switch to an open position likewise returns the motor switch to a closed position ready for the next operation. When the coin holding member is pivoted to a coin collecting position the coin is removed from its position on the electric switch arm which is immediately urged to its initial position by the leaf 124 which is inherently resilient, thereby opening the coin switch 114 by spreading the contact points 126 apart. A break in the circuit through the entire device immediately results and deenergizes the hold solenoid also so that all of the parts resume their initial positions.

If there chances to be another coin immediately behind the first, the cessation of operation of the entire device would be very short for as soon as the coin recess in the coin holding member resumed its position under the coin slot the next coin in line would immediately drop into it, depress the electric switch arm, close the coin switch, and immediately start operation of the machine again to vend the next can or bottle located upon the conveyor.

Safety features

Although the mechanism just described is sufficient to completely operate the machine for specific purposes there are provided in the device certain safety features which render it a device better adapted to all sorts of conditions of operation.

Safety features include time operated cut-outs which under certain circumstances will break the circuit through the device rendering it inoperative until the circumstances causing the break can be remedied. For example, if the machine is empty of bottles or cans the deposit of a coin into the coin mechanism would nevertheless start operation of the conveyor motor and hence operation of the device. If therefore there were no can or bottle on the conveyor there would be nothing to rotate the lever arm 78 so as to shut off the conveyor motor and it would continue to run interminably. No can or bottle would be vended and the coin deposited would not be returned to the would-be purchaser. To remedy this there is provided a time operated cut-out designated by the character A on the wiring diagram and which is included within the box 22. The special mechanism comprising the cut-out A does not form a portion of this invention except that as an operative structure the presence of a relay operating after the lapse of a predetermined time forms an operative part under certain circumstances.

In operation, when the conveyor is empty cur-

rent will flow through the conveyer motor through a circuit which includes a wire 190, which carries a portion of the current. The wire 190 is connected at one end to the motor and at the other end to the cut-out A and thence through a short section 191 through the points 158 and wire 156 to one of the line wires.

The cut-out A is so constructed by means, for example, of a heating element that it will operate only after having been heated for a predetermined length of time, and that length of time is made longer than the time ordinarily required for completion of a vending operation if the conveyer is loaded.

When the conveyer is empty, after the conveyer motor has run for this predetermined length of time the cut-out A will be actuated and separate the contact points 158 by movement of the switch arm 159. By breaking contact between the points 158 the circuit through the machine will be broken causing the conveyer to stop running, causing all electrically operated devices to be returned to their initial or normal position. Movement of these devices to normal position includes return of the hold solenoid 135 to its normal position, as shown in Figure 11, by gravity, thereby releasing the coin held on the electric switch arm so that it rolls down the coin return slot 139 into the coin return box 140 from which it can be extracted by the would-be purchaser.

Once the cut-out A has been actuated, the device cannot be started again until the cut-out has been reset manually by adjusting a device such as a button 192 shown on the outside of the box 22 of Figure 11. This is usually done by the service man who reloads the conveyer with bottles or cans to be vended.

When the cut-out A is actuated as just described, and the points 158 are separated, the switch arm 157 is released and by means of a light coiled spring 193 is moved so that contact points 194 and 195 are closed, thereby closing a circuit through a wire 196 which operates an empty light 197 visible on the outside of the machine, giving notice that the machine is empty and needs servicing.

Other conditions may arise putting the machine out of order, which are not due to the conveyer being empty, and to guard against damage as a result a second cut-out designated by the character B in the diagram is included. This cut-out is designed to operate under conditions wherein the motor switch would be opened and consequently no current flowing through the first cut-out A.

This might happen, for example, if the delivery platform were jammed in a partly open position or for a variety of other causes. If the platform were thus jammed the coin would remain on the electric switch arm instead of being collected or returned and hold the coin switch closed. If then an additional number of coins were deposited there would be no action and all of the coins would be retained in the machine.

Under such circumstances current would be continuously flowing through the points 160, the cut-out B and thence through a wire 198 through both cash and hold solenoids, the wire 186 and thence through the coin switch 114 back to the other side of the line.

The cut-out B under the influence of a thermal unit is adjusted to actuate after a predetermined period of time under circumstances such as just described and when actuated serves to separate

the contact points 160, thereby breaking the circuit through the device and especially through the hold solenoid. Once this solenoid were de-energized the portion 136 of the core would drop back by gravity out of the return slot 139 and the coin on the electric switch arm would immediately roll through the return slot 139 into the return box 140 as would also any other successive coins which might have been deposited after the first.

As thus described it will be evident that the time operated cut-out B will serve to render the entire device inoperative, even though both the motor switch and the coin switch were open, so long as the cash switch might be closed causing current to be supplied to the device, since the circuit through the cut-out B does not depend upon either the closing or opening of the coin or motor switches.

The cut-out B is likewise provided with a button 199 by means of which it can be manually reset after the jammed or breakdown condition of the machine just described has taken place and is made so for the purpose of requiring the service man to open the machine and thereby become acquainted with the troublesome conditions before he can reset the cut-out B.

As a further precaution where, for example, the neck of a bottle might stick between the edge of a door and the edge of the opening 60, the apparatus is such that the door could be rotated backward by hand a sufficient amount to permit the bottle to be extracted whereupon the delivery platform would continue its rotation.

If under somewhat similar circumstances the delivery platform were jammed in an open position without its continuing its rotation back to an initial position, thereby passing the point where the cash solenoid would be energized, the time operated cut-out B would again become operative to disconnect the circuit through the machine and thereby prevent any accidental damage to the electric parts of the device meanwhile rendering the hold solenoid inoperative so that all subsequent coins which might be deposited would be immediately returned to the would-be purchaser.

With the door in open position under any circumstances the interior of the casing is closed off from the would-be purchaser by the position of the door in front of the bottles or cans still on the conveyer so that it is impossible for anyone to reach through the opening 60 into the interior to extract bottles or cans for which coins have not been previously deposited.

With the safety devices just described, the machine is made so inoperative under any but the proper conditions that it will not act to continuously discharge any bottles or cans, preventing the fault which is termed "jack-potting," which frequently happens in vending machines where, when a machine breaks down, it continues to deliver all of the bottles or cans with which it is loaded without any further coins being deposited.

By the precautionary measures thus provided any would be purchaser is assured of either the delivery of a can or bottle for the coin or else the return of coin to the coin return box so that no purchaser is ever deprived of the value of his purchase.

There has thus been provided an electric actuated coin controlled vending machine operable in a sealed container to cause the rapid ejection of articles to be vended when operation is initiated by the article itself, the electric operation of

which is so designed that regardless of the condition of the machine a purchaser when depositing a coin of the required denomination will always get one of the articles vended or else the return of his coin.

Some changes may be made in the construction and arrangement of the parts of my device without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims any modified forms of structure, or use of mechanical equivalents, which may be reasonably included within their scope.

I claim as my invention:

1. In a coin actuated vending machine, a casing, an article ejecting mechanism therein, electrically controlled power means for initiating actuation of said mechanism, a coin control mechanism including a frame, a coin actuated switch connected to said electric control means, a shiftable coin receiving and retaining member on the frame and means for initially holding a coin therein for a temporary period and in operating position on said switch for initiating operation of said ejecting mechanism, a cash collecting means operable by said ejecting mechanism after ejection of said article for shifting the coin retaining member to coin collecting position.

2. In an electric coin actuated vending machine, a casing, an article ejecting mechanism therein, electrically controlled power means for initiating operation of said mechanism, a coin control mechanism including a frame, a coin actuated switch connected with said power means, a shiftable coin receiving and retaining member on the frame and means for initially holding a coin on the switch for a temporary period for operating said switch during initiation of operation of said ejecting mechanism, said last means being adapted to be released to return said coin on failure of operation of said ejecting member, a coin collecting element connected to the coin retaining member and a cash collecting switch connected to said collecting element operable by said ejecting mechanism after successful ejection of said article for shifting the coin retaining member to coin collecting position.

3. In a coin operated vending machine, a delivery platform, a conveyer for conducting articles thereto and a motor for actuating the conveyer, the combination of power means for moving the platform between loading and delivery positions having a potentially active position and means connected between said power means and said motor for setting the power means in said potentially active position, a coin operated switch, a circuit through said motor adapted to be closed and opened by said switch for operating the conveyer, latch means for initially holding said platform at one position having a lever connected therewith adapted to be moved to unlatching position by an article to be vended, a movable switch plate having a motor switch adapted to be shifted by said lever to open the motor circuit and stop said motor upon positioning an article on the platform, and cooperative means on the platform and frame for returning the switch plate to initial position.

4. In a coin operated vending machine, a delivery platform, a conveyer for conducting articles thereto and a motor for actuating the conveyer, the combination of auxiliary power means for moving the platform from loading to delivery position shiftable to active position by said motor, a coin holding element, electric operated power mechanism for shifting said element to a

coin collecting position, a coin operated switch, a circuit through said motor adapted to be closed and opened by said switch for operating the conveyer, latch means for initially holding said platform at loading position having a lever projecting therefrom adapted to be moved to unlatching position by an article to be vended, a movable switch plate having a motor switch adapted to be shifted by said lever to open the motor circuit and stop said motor upon positioning an article on the platform, and means on the platform for returning the switch plate and switches to initial position.

5. In a coin operated vending machine including a casing having a dispensing opening, a conveyer for conducting articles thereto, a motor for actuating the conveyer and a delivery platform including a door rotatably mounted in the opening for opening and closing said opening, the combination of auxiliary power means for rotating the platform shiftable into active position by said motor, a coin holding element, a coin switch actuated by said coin, an electric circuit through said motor adapted to be closed and opened by said switch for starting and stopping the conveyer, latch means for initially holding said platform in closed position including a lever projecting over the platform in latched position adapted to be moved to unlatching position by an article to be vended, a tiltable switch plate having a liquid motor switch adapted to be tilted by said lever having an open tilted position wherein said motor is stopped upon positioning an article on the platform, and means on said plate and said platform for restoring said plate to its initial position.

6. In a coin operated vending machine including a casing having a dispensing opening, a conveyer for conducting articles thereto, a motor for actuating the conveyer and a delivery platform including a door rotatably mounted in the opening for opening and closing said opening, the combination of normally inactive auxiliary power means for rotating the platform connected with said motor and transformable to a potentially active condition by said motor, a coin holding element having coin holding and coin releasing positions, a coin switch actuated by said coin, an electric circuit through said motor adapted to be closed and opened by said switch for respectively starting and stopping the conveyer, latch means for initially holding said platform in closed position including a lever normally projecting over the platform in latched position and having an unlatching position removed from said latched position, said lever being subject to movement by an article to be vended, a tiltable switch plate on the frame operably engaged with said latch means having a liquid motor switch in tiltable engagement with said lever to open the motor circuit and stop said motor upon positioning an article on the platform, a cam on said platform, and a cam on said tiltable plate adapted to further tilt said plate upon subsequent rotation of the platform, and a second liquid switch on the platform, an electric coin collecting means connected with the coin holding element and an electric circuit connected with said second switch adapted to be closed upon said subsequent rotation to move the coin holding element to a coin releasing position for collection when an article is vended, and means to return said parts to their initial positions.

7. In an electric coin operated vending machine including a conveyer for conducting arti-

cles thereto and a motor for actuating the conveyer, the combination of a coin holding member having coin holding and coin releasing positions, an electric coin switch connected to the coin-holding member, a cash solenoid for moving said coin holding member to a coin releasing position, a circuit through said motor including said coin switch having alternate closed and open conditions for operating the motor and conveyer, a motor switch in said circuit, normally closed, a cash switch in circuit with said cash solenoid normally open and means actuated by said platform for operating said motor switch and said cash switch, a hold solenoid in the circuit having an initial position holding said coin in coin switch closing position at the starting of said machine.

8. In an electric coin operated vending machine including a delivery platform, a conveyer for conducting articles thereto and an electric motor for actuating the conveyer, the combination of a coin holding member having alternative coinholding and coin releasing positions, an electric coin switch actuable by a coin deposited in said machine, a cash solenoid for shifting said coin holding member to a coin releasing position, an electric circuit through said motor and said coin switch, said coin switch having alternative closed and open conditions for operating the motor and conveyer, a motor switch in said circuit normally closed, a cash switch in circuit with said cash solenoid normally open and means actuated by said platform for operating said motor switch and said cash switch, a hold solenoid in the line circuit having an energized initial position holding said coin in coin switch closing position at the starting of said machine and a de-energized position released from the coin, a permanent cut-out switch having a time period of operation in the line circuit in series with said motor circuit adapted to operate after the motor has operated for said time period to break the line circuit thereby deenergizing the hold solenoid permitting return release of the coin from the switch and the stopping of all operating parts of the vending machine.

9. In an electric coin operated vending machine including a delivery platform, a conveyer for conducting articles thereto and a motor for actuating the conveyer, the combination of a coin holding member having coin holding and coin releasing positions, an electric coin switch connected thereto actuable by weight of a coin deposited in the machine, a cash solenoid for shifting said holding member to coin releasing position, a circuit through said switch, solenoid and motor, said coin switch having alternative closed and opened conditions for operating the motor and conveyer, a motor switch in said circuit normally closed, a normally open cash switch in circuit and means actuated by said platform for operating said motor switch and said cash switch, a hold solenoid in the circuit having an initial position holding said coin in coin switch closing position at the starting of said machine, a time operated thermal cut-out switch having a time period of operation in the line circuit in series with said cash switch circuit adapted to operate when said cash switch remains closed and said motor switch remains open for said time period of operation to permanently break the line circuit thereby rendering the machine inoperative.

10. In an electric coin operated vending machine including a delivery platform, a conveyer

for conducting articles thereto and a motor for actuating the conveyer, the combination of a coin holding member having coin holding and coin releasing positions, an electric coin switch actuable by weight of a coin deposited in the machine, a cash solenoid for shifting said holding member between coin holding and coin releasing positions, a circuit through said switch, solenoid and motor having alternative closed and opened conditions for operating the motor and conveyer, a motor switch in said circuit normally closed, a cash switch in circuit with said cash solenoid normally open and movable means for mounting said motor switch and cash switch positioned for actuation by said platform to shift the relative positions of said switches, a hold solenoid in the circuit having an initial position holding said coin in coin switch closing position during the start of operation of said machine, a cut-out switch having a time period of operation in the line circuit in series with said motor circuit adapted to operate after the motor has operated for said time period to break the line circuit thereby deenergizing the hold solenoid, said solenoid having a coin released position when deenergized, and a second cut-out switch having a time period of operation in the line circuit in series with the cash switch circuit adapted to operate when said cash switch remains closed and said motor switch remains open a length of time corresponding to said last time period to break the line circuit thereby rendering the machine inoperative and an empty light in a normally open circuit in series with said cut-out switches operable to be lighted by closure of said circuit upon the opening of either of said cut-out switches.

11. In an electric coin actuated vending machine, a coin control mechanism comprising a frame, a housing therefor, a coin receiving member mounted for tilting upon a horizontal axis on said frame, said frame having an inlet slot forming a path for coins within the casing leading to said member and a coin recess in the member in line with said path, a coin receiving purse adjacent said recess, a coin switch member having a portion thereof in said path adapted to be operated by a coin, and means on said coin receiving member for holding said coin temporarily on said coin switch member, an electric circuit including the coin switch member, an electric actuated coin collecting member normally deenergized having an element thereof operatively connected with the tiltable coin receiving member and connected in circuit with the coin switch, a normally open cash switch in said circuit having a closed position energizing said electric actuated collecting member, thereby to tilt said coin receiving member into collecting position.

12. In an electric coin actuated vending machine, a coin control mechanism comprising a frame, a housing therefor, a coin receiving member shiftably mounted on the frame, said frame having an inlet slot forming a path for coins within the casing leading to said member and a coin recess in the member in line with said path, a coin switch having a portion thereof in said path, an electric circuit including the switch, said frame having a coin return slot in line with the coin recess and a coin return box at the end of said return slot, an electrically actuated member in circuit with the coin switch having an energized position projecting into the return slot to retain the coin in the recess and a deenergized

position removed from the return slot to permit passage of the coin to the return box.

13. In an electric coin actuated vending machine, a coin control mechanism comprising a frame, a housing therefor, a coin receiving member mounted for tilting upon a horizontal axis on said frame, said frame having an inlet slot forming a path for coins within the casing leading to said member adapted to hold a plurality of coins and a coin retaining member on the frame in line with said slot, a coin receiving purse adjacent said retaining member, a coin switch member having a portion thereof in the coin path adapted to be operated by a coin, a circuit including the coin switch, said frame having a coin return slot in line with the coin retaining member and a solenoid in circuit with the coin switch including a core having an energized position wherein a portion of the core is projected into the return slot adjacent the retaining member to retain the coin in the retaining member, a cash solenoid including a core and an element operated thereby operatively connected with the tiltable coin receiving member and connected in circuit with the coin switch, a cash switch in said circuit having a closed position wherein said cash solenoid is energized thereby tilting said coin receiving member to a position directed toward the purse, said member including a portion at the side of the coin retaining member having a tilted position blocking the inlet slot and holding the next successive coin therein until the first coin has been removed from the retaining member.

14. In an electric coin actuated vending machine, a coin control mechanism comprising a frame and a housing having a path therein for coins, a coin switch having an operating arm in the path in closed position when a coin from the passage is positioned thereon, a circuit including the switch, said frame having a coin return passage, a movable coin collecting member including a releasable coin retaining member normally positioned in the coin path, an electric device in circuit with said coin switch normally deenergized having an energized position wherein the coin collecting member is in a collecting position and a coin holding member including an electric actuated device in circuit with said coin switch having a portion normally projected into the return passage when the device is energized by action of a coin deposited on the switch to hold the coin in place, said last device having a retracted position when the circuit is deenergized by removal of said coin from said coin switch through actuation of said first electric device.

15. In a coin-operated vending machine, a frame, a conveyer having a delivery station, a delivery platform rotatably mounted on the frame adjacent the delivery station in position to receive articles from the conveyer, electric power means operatively connected to the conveyer, a coin switch and an electric coin collecting mechanism having a shiftable mounting on the frame, an electric circuit interconnecting said electric power means, said coin switch and said coin-collecting mechanism, a switch plate tiltable mounted on the frame including a tilting lever extending over the platform, said plate having an initial normal position and a second tilted position, a portion of said platform having tilting contact with the plate upon rotation of the platform, and a pair of liquid switches on the plate one being in a portion of the circuit including the motor and normally closed and having an open position when said plate is in tilted position and the other being in a portion of the circuit including the coin collecting mechanism and normally open having a closed position when said plate is in tilted position, said plate being tilted by contact with a portion of said platform during rotational movement thereof wherein the motor switch is in open position stopping the motor, the coin-collecting switch is in closed position and said coin-collecting mechanism is in collecting position effecting collection of the coin, said plate having a subsequent normal position wherein said switches are returned to normal positions during the delivery cycle.

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