May 13, 1941. E. E. CASEY 2,241,540

ATTACHMENT TO ELECTRICALLY OPERATED COIN CONTROLLED APPARATUS

Filed Aug. 22, 1938 3 Sheets-Sheet 1

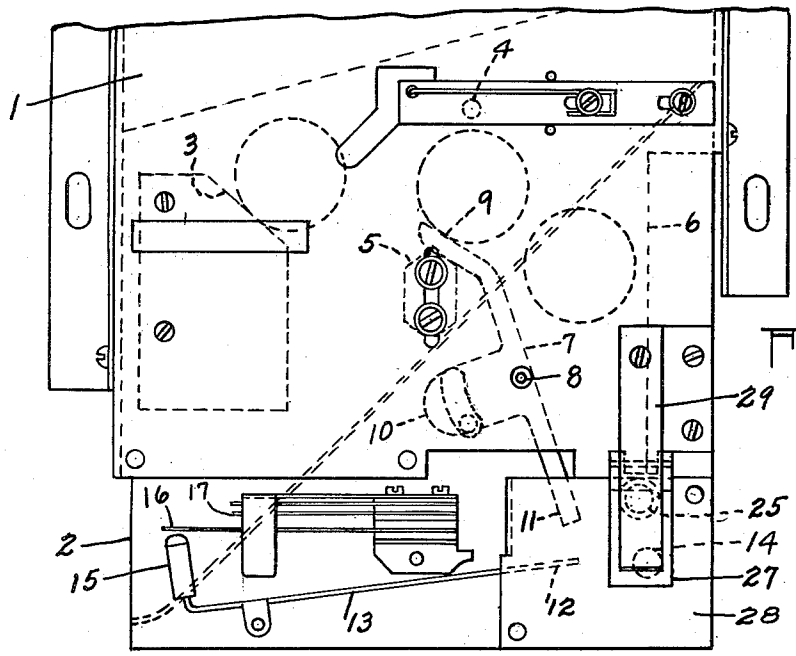


FIG. 1.

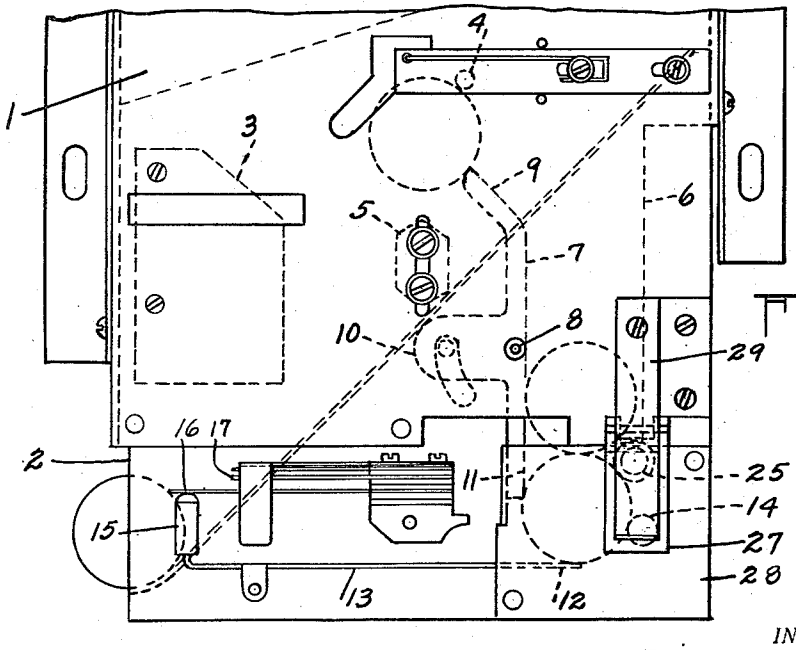


FIG. 2.

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FIG. 3

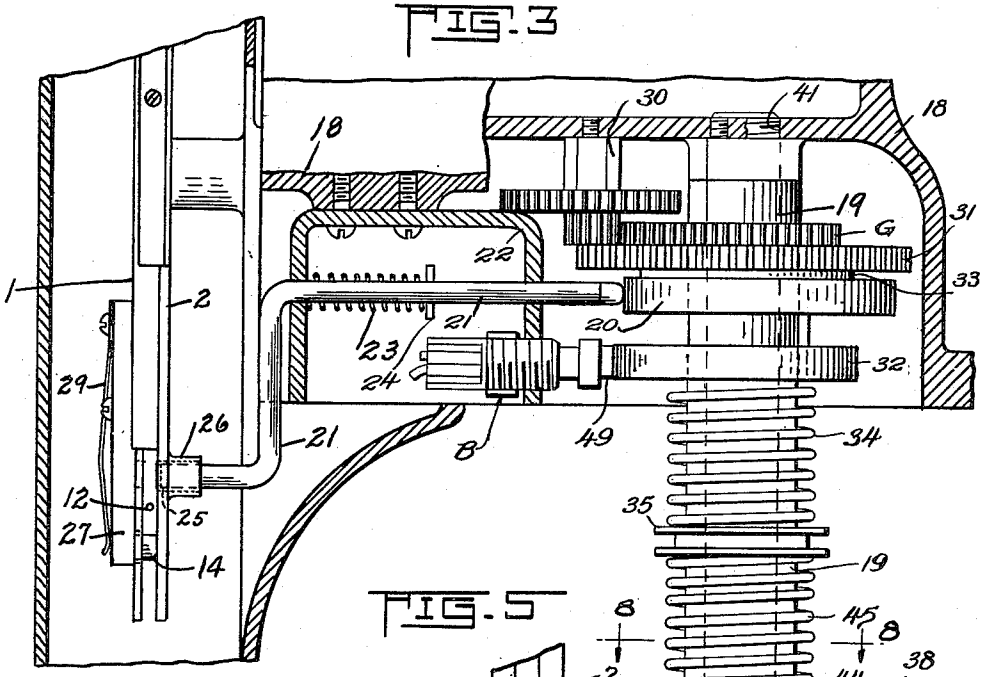


FIG. 4

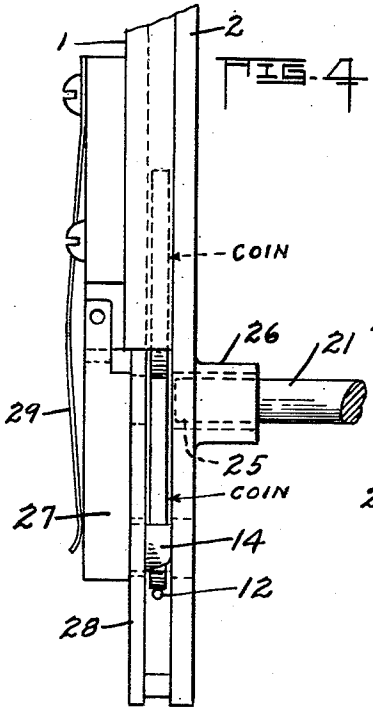


FIG. 5

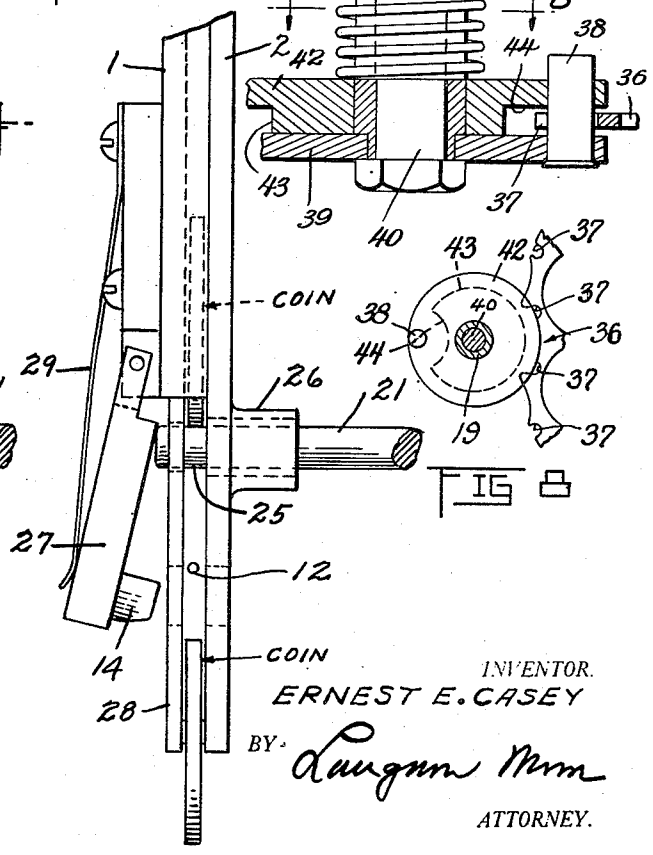


FIG. 8

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Fig. 6.

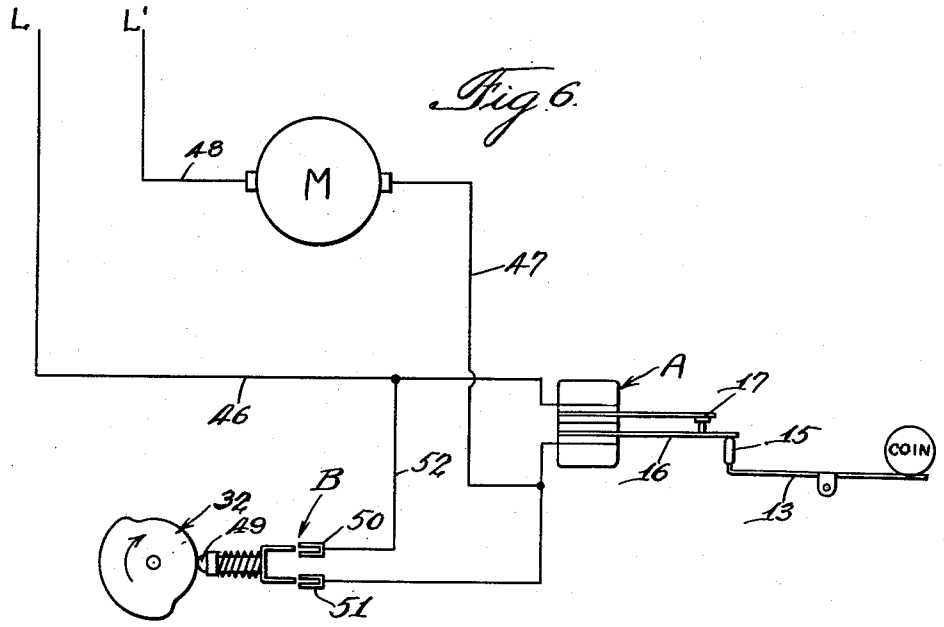
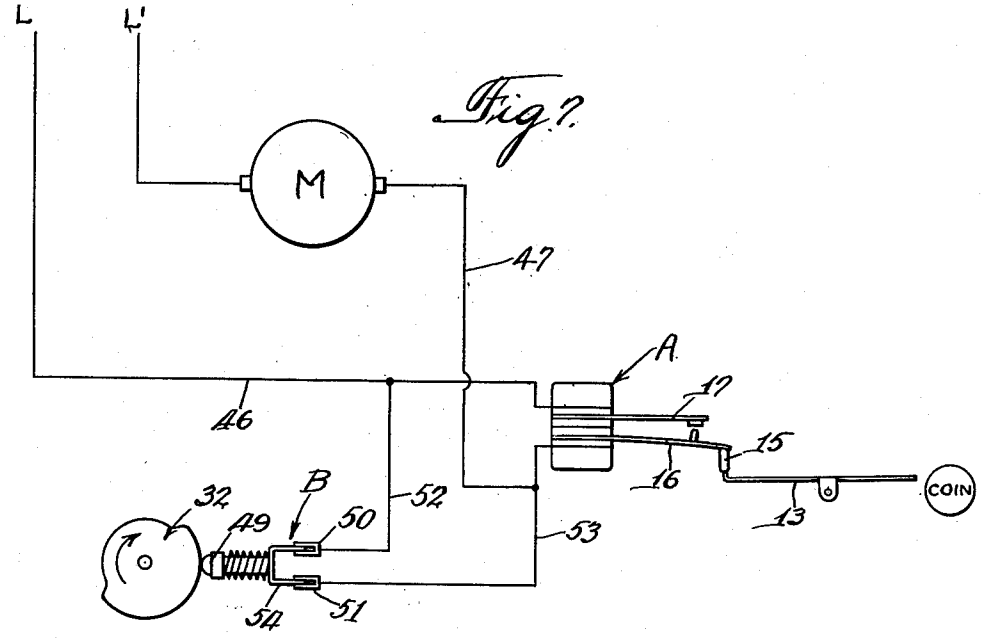


Fig. 7.



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UNITED STATES PATENT OFFICE

2,241,540

ATTACHMENT TO ELECTRICALLY OPERATED COIN CONTROLLED APPARATUS

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Application August 22, 1938, Serial No. 226,014

7 Claims. (Cl. 194—10)

This invention relates to improvements in electrically operated coin controlled apparatus and more particularly to an attachment therefor.

A number of cabinets for the dispensing of cool bottled beverages have been recently developed employing coin controlled mechanism whereby, upon the depositing of a coin, the operation of a lever will cause a bottle to be dispensed from the cabinet and in some cases the depositing of the coin will close an electric circuit to automatically dispense a bottle of the beverage. This invention relates to the latter type of dispensing apparatus and more particularly to an attachment which will allow the depositing of two or more coins in quick succession in the coin chute and will allow one coin at a time to close the circuit and withhold the other coins contained in the coin chute, one above the other, until the first coin has caused the dispensing of the bottle and the circuit broken and then release the next coin to initiate the same cycle while retaining any other coins which may be contained in the chute immediately thereabove.

This particular attachment is most advantageously employed in an automatic coin controlled electrically operated step-by-step mechanism such as disclosed in the co-pending application of Robert R. Witherell, Serial No. 206,115, filed May 5, 1938. In this type of mechanism an electric motor is employed in connection with a coin receiving, selecting, and positioning mechanism of commercial form. The electric motor operates a train of gears for operating step-by-step mechanism and a plurality of cams for making and breaking the circuit to the motor one of which acts in conjunction with the coin receiving mechanism whereby the depositing of a coin closes a switch in a circuit to initiate the operation of the motor and after the motor has operated the other cam closes a switch to continue the operation of the motor and the first cam releases the coil to allow the first switch to open.

Inasmuch as a complete disclosure of this type of mechanism is made in said co-pending application of Robert R. Witherell, only that part which relates to this invention is illustrated herein.

Reference is made to the accompanying sheets of drawing which illustrate a preferred form of this invention with the understanding that detail changes may be made without departing from the scope thereof.

In the drawings:

Figure 1 is a view in front elevation of the lower portion of a commercial coin receiving, selecting, and positioning mechanism of commercial form which has been adapted to cause the coin to close an electric switch in accordance with the disclosure in said Witherell application, illustrating in dotted lines two coins deposited one immediately after the other in the course of entering the coin chute leading to the switch.

Figure 2 is a view similar to Figure 1, illustrating the first coin in the position assumed in closing the switch with the second coin supported in the chute thereabove and in engagement with the first coin.

Figure 3 is a view partly in end elevation of the coin chute and partly in section illustrating the cams operated by the motor and the element actuated by one of the cams for positioning and releasing a coin from the position assumed in operating the switch.

Figure 4 is an enlarged fragmentary detailed view illustrating the coin positioning hinged member in the position assumed to direct a coin to close the switch and supporting a second coin thereabove.

Figure 5 is a similar view illustrating the operation of the member actuated by the cam to release the first coin and support the second coin.

Figure 6 is a schematic diagram illustrating the switches and their wiring connections to each other and to the motor, showing the first switch closed by the reception of a coin and the second switch open.

Figure 7 is a view similar to Figure 6 illustrating the first switch open by the release of the coin shown in Figure 6 and the second switch closed by the rotation of its operating cam.

Figure 8 is a detail view in section taken on the line 8—8 of Figure 3, looking in the direction of the arrows, showing the position assumed by the parts after the pin 38 has been rotated through 108°.

Figures 1 and 2 illustrate the lower portion of a coin receiving, selecting and positioning mechanism of commercial form in which two spaced apart plates 1 and 2 form a part of the mechanism. As shown, a coin is directed to strike upon an anvil 3 forming a part of the commercial mechanism and be directed from there between a pin 4, which has been added to the commercial mechanism, and an abutment 5 forming a part of the commercial mechanism, into a coin chute formed by a portion 6 along one edge of the plate 2 which also forms a part of the commercial mechanism and by a member 7 mounted upon a pivot 8 between the plates 1 and 2, such as

disclosed in said Witherell application. This member is provided with an upper angular extension 9 normally held in engagement with the upper side of the abutment 5 by the weight of an extension 10 from that side of the member 7 adjacent the pivot 8 as to cause the lower end 11 to form the other side of the coin chute and to direct the coin passing between the pin 4 and upper end 9 of the member 7, as shown in dotted lines in Figure 1, to rotate the lower end 11 of the member 8 and allow the coin to rest upon the end 12 of a switch operating lever 13 and rest against the end of a retractible stop 14 which projects into the path of the coin, as shown in Figures 2, 3 and 4.

When a coin has been received in the position above described and as shown in Figure 2, the rotation of the member 7 causes the angular end 9 to restrict the space between the abutment 5 and pin 4 so that as long as a coin remains in engagement with the switch operating lever 13 and retractible stop 14, other coins deflected by the anvil 3 will strike the pin 4 and end 9 of the member 7 and be ejected or returned to the operator, one of which is shown partly in dotted lines and partly in full lines in Figure 2. It very often happens that an operator will place two or more coins, one immediately after the other, in the coin slot so that two or more coins will pass between the pin 4 and end 9 of the member 7 before the first coin has rotated the member 7 into the position shown in Figure 2.

The switching mechanism operated by the lever 13 is shown in Figures 1 and 2. The lever 13 is pivoted and normally weighted by the end 15 to maintain the switch in open position with its free end 12 in position to be depressed by the weight of the coin to close the switch, as shown in Figure 1. The switching mechanism shown includes a resilient contact member 16 adapted to be engaged by the end 15 of the operating lever 13 and is normally spaced apart from a contact member 17 whereby the depression of the end 12 of the operating lever will cause the contacts to engage and make an electric connection, as shown in Figure 2.

The motor shaft 30 is extended below that portion of the housing 18 supporting the motor and is connected by a train of gears G to a gear 31 rotatably mounted upon the sleeve 19. Two cams 20 and 32 are keyed upon the sleeve 19 for longitudinal movement thereon and are urged in the direction of the gear 31 and a cylindrical fiber clutch member 33, interposed upon the sleeve 19 between the gear 31 and cam 20, by a coil spring 34 positioned about the sleeve 19, one end of the spring bearing upon the under side of the cam 32 and the other end being anchored to an abutment 35 secured upon the sleeve 19. Rotation is imparted to the sleeve 19 by the frictional engagement of the fiber clutch member 33 with the gear 31 and the cam 20, the spring 34 maintaining the frictional engagement.

The motor housing 18 is adapted to rest upon the top of a dispensing cabinet, the motor actuating a step-by-step mechanism. A rotatable turntable 36 is mounted to support the articles to be dispensed and advance them step by step to the dispensing aperture of the cabinet. In this form the turntable is provided with a scalloped periphery equally spaced apart between radial slots 37. The step-by-step mechanism includes an indexing pin 38 mounted upon a disc 39 secured to the lower reduced end of the sleeve 19 rotatably mounted and retained upon a stud 40 depending from and threadedly engaging a threaded aperture 41 on the under side of the motor housing 18.

The pin 38 is located on the disc 39 in such a manner that each time the disc is rotated the pin is engaged in a radial slot 37 and imparts a step in the movement of the turntable 36. The disc 39 is arranged below the periphery of the turntable 36 and in order to lock the turntable against movement after it has been disengaged by the pin 38 a similar plate 42 is provided having an integral depending spacer 43 concentric with the plate 39 and having a radius concentric with the radius of the arcuate scallops on the turntable 36. The plate 42 is provided with an aperture passing therethrough for receiving the pin 38, and the spacer 43 is provided with an arcuate cut-out portion 44 so arranged that when the pin 38 is received in the aperture and the pin-carrying disc 39 is rotated, the plate 42 will rotate therewith and be positioned above the periphery of the turntable 36 with the spacer 43 resting upon the upper surface of the plate 39 so that when both plates are rotated, the cut-away portion 44 will allow the apex formed between the arcuate scallops of the turntable 36 and the radial slots 37 thereof to pass into said cut-out space 44 and allow the pin 38 to pass into the radial slot 37 and engage the turntable 36 to advance the turntable therewith. The cut-out space 44 will allow the apex formed by the opposite side of the radial slot 37 and the contiguous scallop to pass thereinto and after the pin 38 has passed from engagement after imparting a step to the turntable 36, the cylindrical surface of the spacing member 43 will wipe over the arcuate surface of the contiguous scallop of the turntable and will prevent further rotation of the turntable until it is again engaged by the pin 38.

The disc 42, when positioned to receive the pin 38, is held with its spacing member 43 in engagement with the disc 39 by a coil spring 45 interposed about the sleeve 19 between the abutment 35 and the upper side of the disc 42. The clutch 33 allows a sliding of the gear 31 in the event that the turntable becomes jammed before the motor ceased to operate, thereby preventing damage to the train of gears G or to the step-by-step mechanism just described. The lifting of the disc 42 out of engagement with the pin 38 to remove the spacing member 43 from contact with the periphery of the scalloped edge of the turntable will allow the turntable to be rotated independently of the step-by-step mechanism in order to refill the cabinet.

The retractible stop 14 is carried upon the lower end of a member 27 hinged at its upper end to the plate 1 with the stop passing through an aperture provided therefor in a plate 28, spaced apart from plate 2 in continuation of plate 1, to maintain a coin in position against plate 1 when it has entered the coin chute and rotated the member 7 to engage and depress the end 12 of the lever 13 of the switching mechanism A and to be held in this position by the stop 14. The hinged member 27 is preferably held in its normal coin positioning engagement with the plate 28 by a leaf spring 29 secured at one end upon the plate 1. The boss 26 is so arranged on the back of the plate 2 as to direct the free end 25 of the reciprocating rod 21 above a coin which is held between the stop 14 and end 12 of the lever 13 after it has closed the switching mechanism and below a second coin which may be resting above the first coin. The rotation of the cam 20 will cause the

end 25 of the rod 21 to pass between the two coins and engage the adjacent side of the hinged member 27 to rotate it about its pivot to retract the stop 14 from engagement with the coin closing the switch mechanism so that the said coin may, by its own weight, roll over the end 12 and allow the switch mechanism to open while the coin thereabove is supported by engagement with the member 7 and the end 25 of the rod 21.

After the operation of the motor has completed the dispensing of a bottle, the motor circuit is broken and the mechanism is ready for another coin to operate the lever 13 to again close the circuit. The cam 20 is of such conformation that when this stage has been reached it will allow the spring 23 to retract the free end 25 of the rod 21 from engagement with the upper coin as it allows the hinged member 27 to again position the stop 14 to be engaged by said coin as it rests upon the end 12 to rotate the switch operating lever 13 to close the circuit through the switching mechanism.

Referring to the schematic diagram of Figure 6 it will be seen that when the switch A is closed a circuit will be completed from the commercial line L through the wire 46, contacts 17 and 16, wire 47, through the motor M, and by wire 48 back to the commercial line L'. The closing of the switch by the coin will then initiate operation of the motor which, through the train of gears, would impart a rotation to the sleeve 19 and cams 20 and 32 thereon. The cam 20 operates on the rod 21 in the manner described above. A second circuit connected in parallel to the first circuit is closed by a switch B mounted in the bracket 22 below the rod 21 to cause a reciprocating operating member 49 to normally engage the surface of the cam 32. Switch B includes spaced apart contacts 50 and 51 with wire 52, connecting contact 50 to wire 46 and contact 51 connected by wire 53 to wire 47. A connecting member 54 is normally held out of engagement with contacts 50 and 51 by the spring-pressed plunger 49 and when the plunger 49 is depressed by the cam 32, a connection is made between contacts 50 and 51 as shown in Figure 7, establishing a parallel circuit through the motor about open contacts 16 and 17.

When a coin is deposited the stop 14 co-operates with the end 12 of the operating arm 13 of the switch A to trap the coin, the pressure of the coin moving the operating arm to close the switch and thereby to operate the motor. After the energization of the motor the end 25 of the rod 21 will be extended into the coin chute to retain coins therein resting on top of the coin which has actuated the switch A to energize the motor. A continued advance of the end 25 of the rod 21 permits an engagement thereof with the hinged member 27 against the action of the spring 29 to move the pin 14 out of the coin chute thereby releasing the coin. Prior to the coin being released the second switch B will be closed by the cam 32 causing the circuit to be closed through the motor so that the release of the coin to open the first switch A will not open the circuit therethrough. After the pin 38 has imparted a complete step of the movement to the turntable 36 the cam 32 will allow the second switch to open so that the motor will be deenergized, the apparatus being in condition for a new cycle of operation. Should a second coin be held in position above the end 25 of the rod 21, the withdrawal of the rod will permit the coin to close the circuit through the switch A and cause a cycle of operation as above described.

From the above it is readily seen that the addition of the hinged member 27 carrying the retractible stop 14 cooperating with the reciprocating rod 21 when added to a coin receiving, selecting and positioning mechanism will permit an operator to deposit two or more coins substantially simultaneously one after the other in the coin chute and not interfere with the normal operation of the step-by-step mechanism in the dispensing of the articles contained within the cabinet but will cause a successive number of normal operations in accordance with the number of coins deposited.

What I claim is:

1. In a vending machine operated by an electric motor having a cam actuated thereby, the motor being controlled by a coin receiving mechanism including a coin chute, a normally open switch in the motor circuit having an operating arm, a retractable stop mounted on said mechanism in the path of a deposited coin for co-operation with the operating arm of said switch to trap said coin, the pressure of said coin moving the operating arm to close said switch and thereby to operate said motor, and a movable rod disposed above said operating arm for extension through said coin chute and actuated by said cam during the operation of said motor to retract said stop thereby releasing said coin, said rod moving into the path of a second coin prior to the release of said first coin.

2. In a vending machine operated by an electric motor having a cam actuated thereby, the motor being controlled by a coin receiving mechanism including a coin chute, a normally open switch in the motor circuit having an operating arm, a movable stop mounted on said mechanism, a spring for urging said stop in one direction in the path of a deposited coin for co-operation with the operating arm of said switch to trap said coin, the pressure of said coin moving the operating arm to close said switch and thereby to operate said motor, and a movable rod disposed above said operating arm for extension through said coin chute actuated by said cam during the operation of said motor against the action of the spring of said stop to move said stop in the opposite direction thereby releasing said coin, said rod moving into the path of a second coin prior to the release of said first coin.

3. In a vending machine operated by an electric motor having a cam actuated thereby, the motor being controlled by a coin receiving mechanism including a coin chute, a normally open switch in the motor circuit having an operating arm, a pivotal stop mounted on said mechanism, a spring for urging said stop in one direction in the path of a deposited coin for co-operation with the operating arm of said switch to trap said coin, the pressure of said coin moving the operating arm to close said switch and thereby to operate said motor, and a movable rod disposed above said operating arm for extension through said coin chute actuated by said cam during the operation of said motor against the tension of the spring of said stop to pivot said stop in the opposite direction thereby releasing said coin, said rod moving into the path of a second coin prior to the release of said first coin.

4. In a vending machine operated by an electric motor having a cam actuated thereby, the motor being controlled by a coin receiving mechanism including a coin chute, spaced plates form-

ing opposed sides of said coin chute, a normally open switch in the motor circuit mounted on one of said plates and having an operating arm extending therebetween, a retractable stop mounted on one of said plates and extending therethrough in the path of a coin deposited in the chute for co-operation with the operating arm of said switch to trap said coin, the pressure of said coin moving the operating arm to close said switch and thereby to operate said motor, and a movable rod disposed above said operating arm for extension through said coin chute and actuated by said cam during the operation of said motor to retract said stop thereby releasing said coin, said rod moving into the path of a second coin prior to the release of said first coin.

5. In a vending machine operated by an electric motor having a cam actuated thereby, the motor being controlled by a coin receiving mechanism including a coin chute, apertured spaced plates forming opposed sides of said coin chute, a normally open switch in the motor circuit mounted on one of said plates and having an operating arm extending therebetween, a hinged member pivotally mounted on one of said plates and having a stop extending through an aperture thereof in the path of a coin deposited in the chute for co-operation with the operating arm of said switch to trap said coin, the pressure of said coin moving the operating arm to close said switch and thereby to operate said motor, and a movable rod disposed above said operating arm for extension through said coin chute and actuated by said cam during the operation of said motor to engage and to pivot said hinged member and move said stop out of said chute thereby releasing said coin, said rod moving into the path of a second coin prior to the release of said first coin.

6. In a vending machine operated by an electric motor having a cam actuated thereby, the motor being controlled by a coin receiving mechanism including a coin chute, apertured spaced plates forming opposed sides of said coin chute, a normally open switch in the motor circuit mounted on one of said plates and having an operating arm extending therebetween, a hinged member pivotally mounted on one of said plates, a pin constituting a stop extending from said hinged member through an aperture in said plate, a spring normally urging said hinged plate in one direction to position said pin in said chute in the path of a deposited coin for co-operation with the operating arm of said switch to trap said coin, the pressure of said coin moving the operating arm to close said switch and thereby to operate said motor, and a rod disposed above said operating arm and longitudinally slidable in an aperture of said plates actuated by said cam during the operation of said motor to engage and to pivot said hinged member in an opposite direction to move said stop out of said chute thereby releasing said coin, said rod moving into the path of a second coin prior to the release of said first coin.

7. In a vending machine operated by an electric motor having a cam actuated thereby, the motor being controlled by a coin receiving mechanism including a coin chute, apertured spaced plates forming opposed sides of said coin chute, a normally open switch in the motor circuit mounted on one of said plates and having an operating arm extending therebetween, a hinged member pivotally mounted on one of said plates, a pin constituting a stop extending from said hinged member through an aperture in said plate, a spring normally urging said hinged plate in one direction to position said pin in said chute in the path of a deposited coin for co-operation with the operating arm of said switch to trap said coin, the pressure of said coin moving the operating arm to close said switch and thereby to operate said motor, and a rod slidably mounted in an aperture in the other of said plates and actuated by said cam during the operation of said motor, said rod being normally positioned outside of said chute and movable therethrough and through an aperture in the other of said plates at a position above said operating arm to engage and to pivot said hinged member in an opposite direction to move said stop out of said chute thereby releasing said coin, said rod moving through said chute into the path of a second coin prior to the release of said first coin.

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