Dec. 31, 1940. A. DAHLSTROM 2,227,069

DISPENSING APPARATUS

Filed March 21, 1938 4 Sheets-Sheet 1

Fig. 1

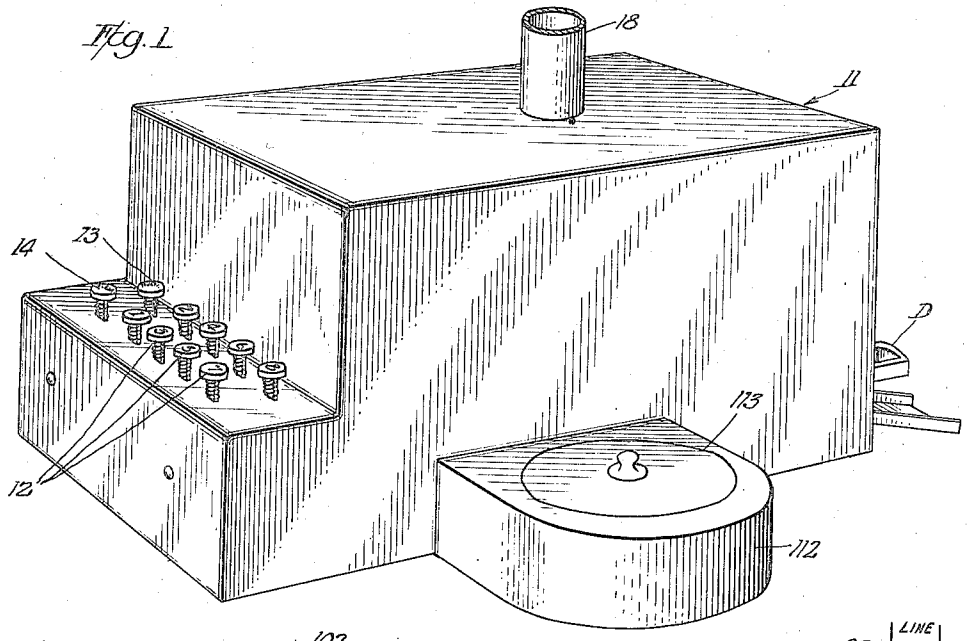
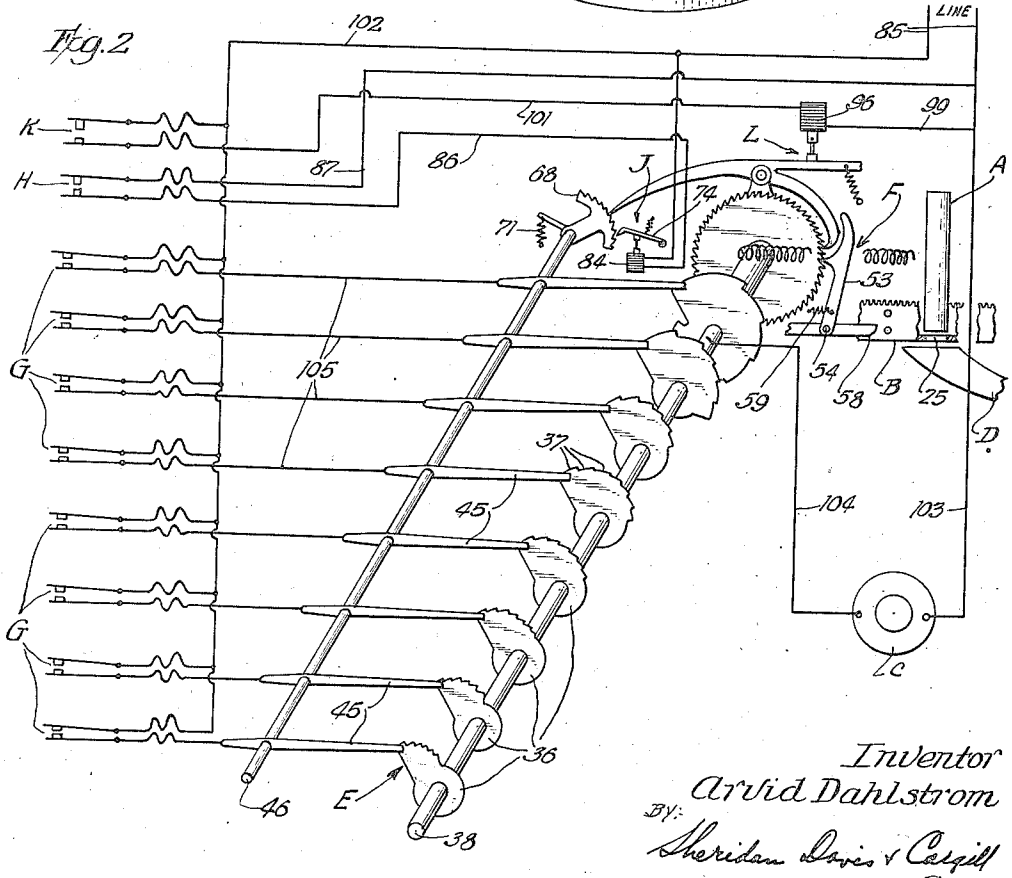


Fig. 2



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DISPENSING APPARATUS

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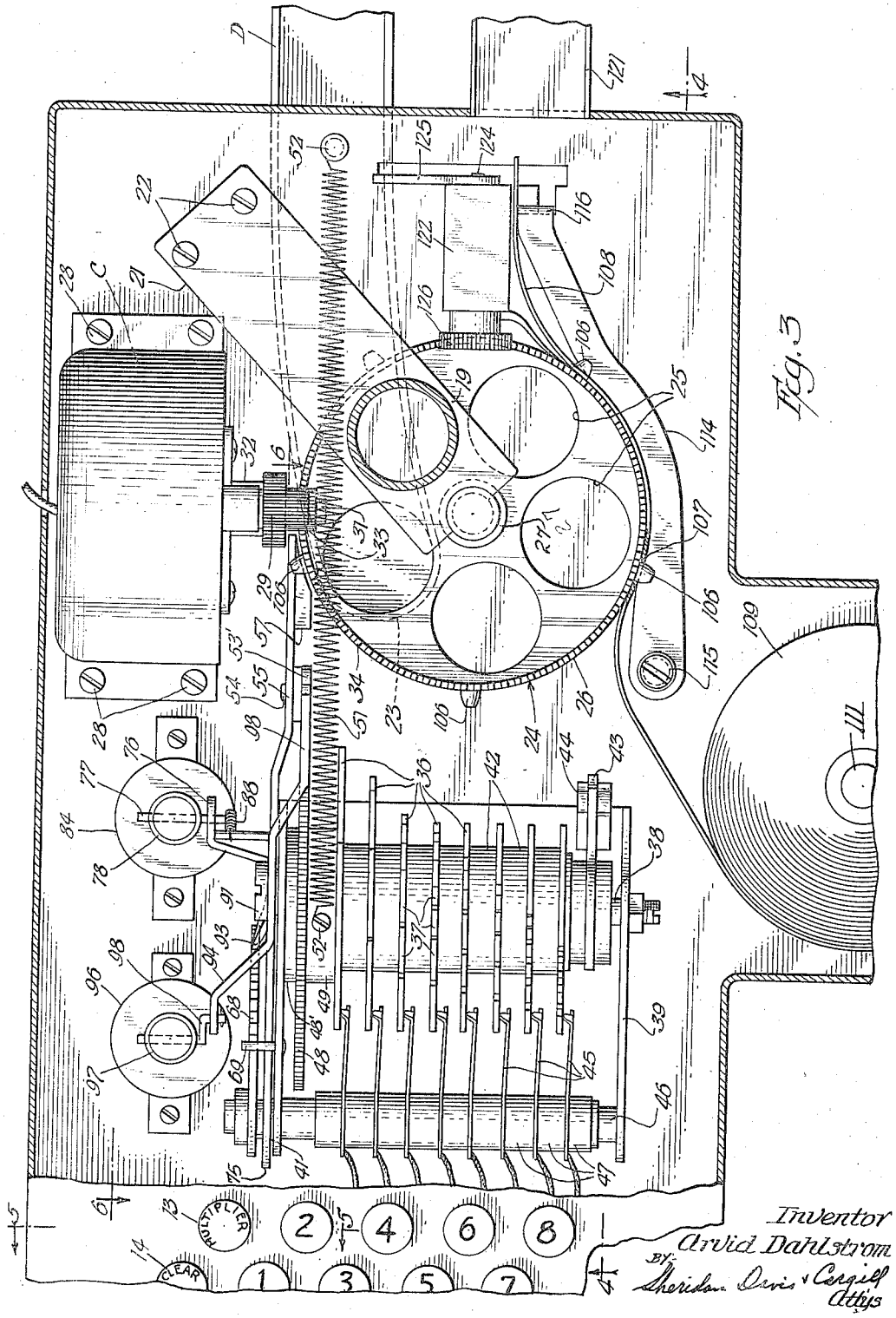


Fig. 3

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DISPENSING APPARATUS

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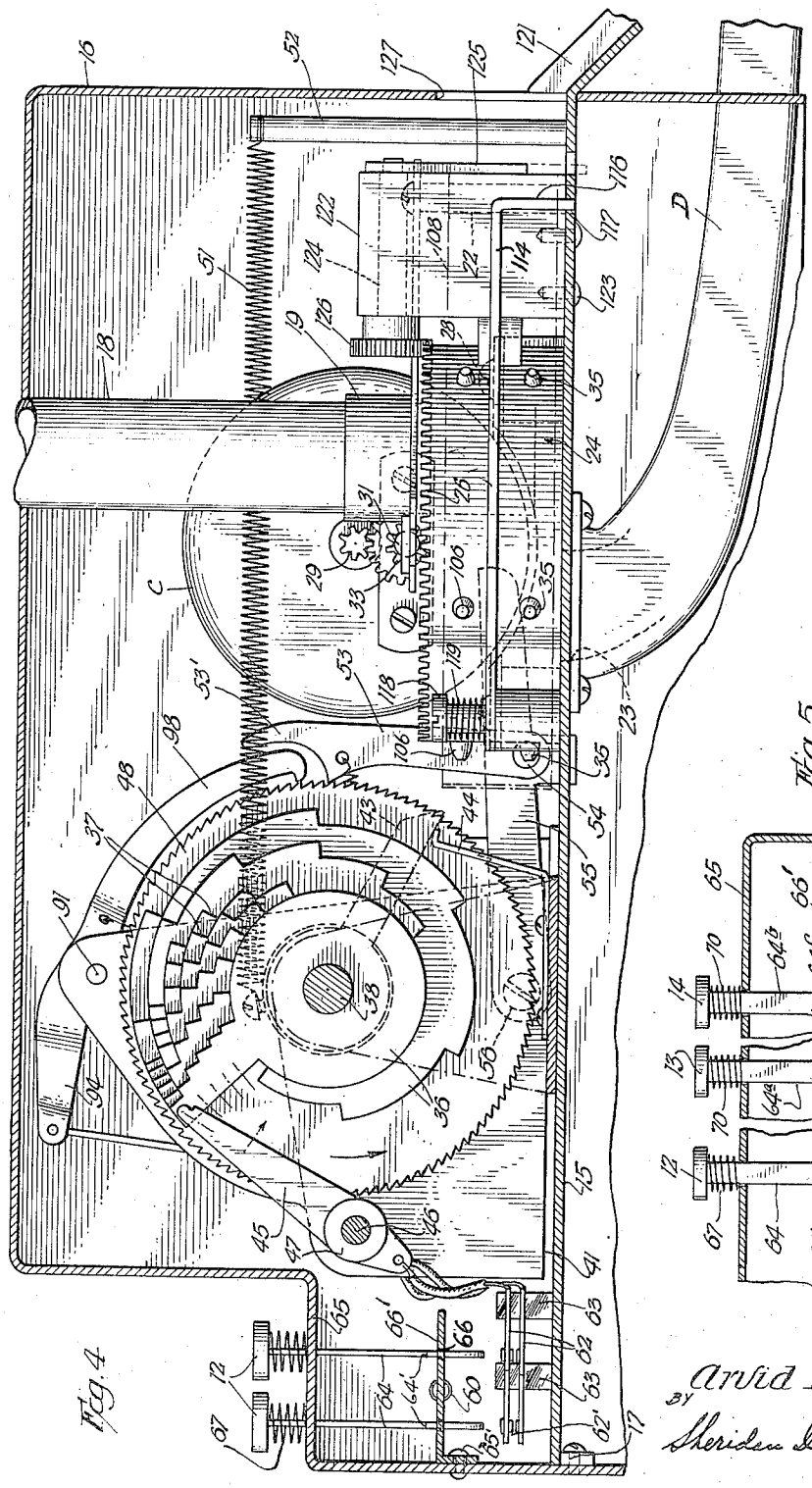


Fig. 4

Fig. 5

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DISPENSING APPARATUS

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Fig. 6

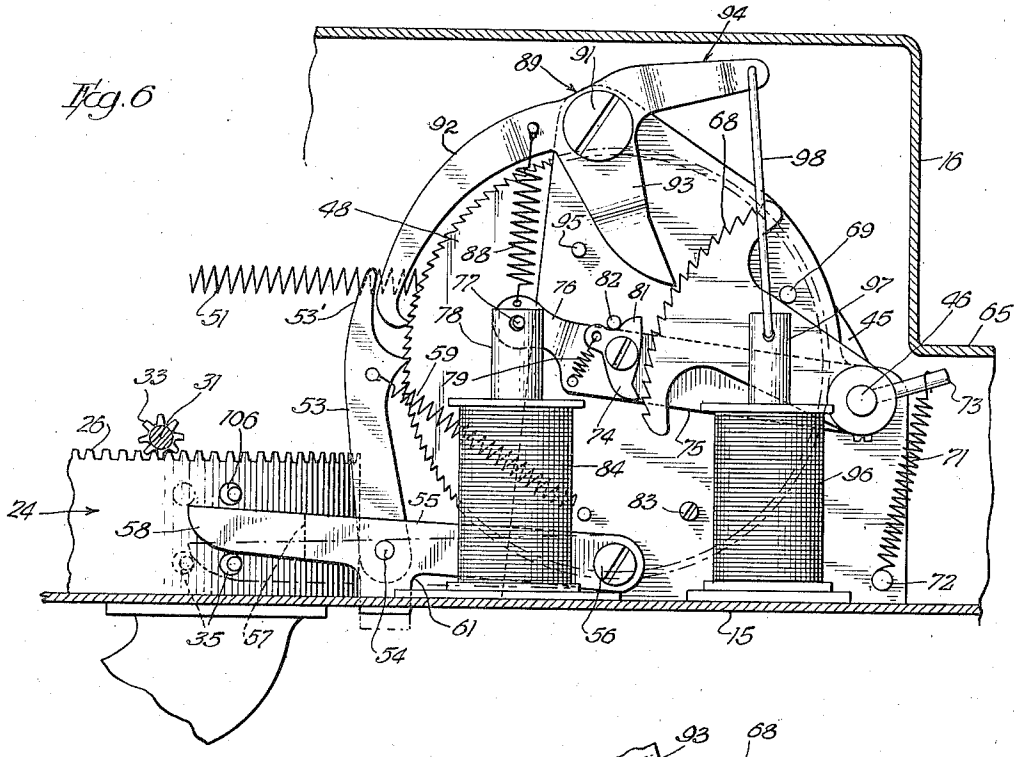
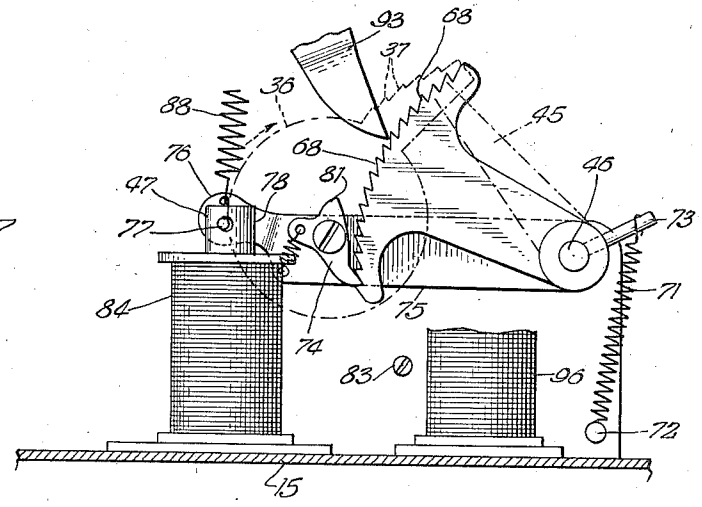


Fig. 7



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Patented Dec. 31, 1940 2,227,069

UNITED STATES PATENT OFFICE

2,227,069

DISPENSING APPARATUS

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Application March 21, 1938, Serial No. 197,155

16 Claims. (Cl. 312—35)

This invention relates in general to dispensing apparatus and has more particular reference to a novel ejecting mechanism whereby a selected number of coins and, if desired, tickets may be delivered upon operation of the apparatus.

An object of the invention is the provision of a novel and an improved dispensing apparatus for the delivery of coins, tokens or similar articles with or without tickets.

A further object of the invention is to provide an improved electrically controlled dispensing apparatus wherein by closing a selected one of a plurality of electrical circuits, a predetermined number of coins may be ejected.

Another object is to provide a novel dispensing apparatus for delivering a predetermined number of coins with or without tickets wherein the number of coins as well as the number of tickets, if any, may be varied.

A further object of the invention is to provide an improved dispensing apparatus which may be remotely controlled.

A further object of the invention is to provide an improved dispensing apparatus which is electrically controlled and which may be utilized as a unit in any kind of a machine that is to be used for the delivery of coins, tokens or similar articles with or without tickets.

Other objects will appear from the following description, reference being had to the accompanying drawings, in which

Fig. 1 is a perspective view of a machine embodying the features of the invention;

Fig. 2 is a wiring diagram of the machine;

Fig. 3 is a plan view thereof with portions of the casing broken away or otherwise removed to reveal the working parts of the apparatus;

Fig. 4 is a vertical sectional view taken substantially along the lines 4—4 of Fig. 3;

Fig. 5 is a fragmentary cross-section taken substantially along the lines 5—5 of Fig. 3;

Fig. 6 is a fragmentary vertical sectional view taken substantially along the lines 6—6 of Fig. 3; and

Fig. 7 is a fragmentary detailed view showing certain parts of Fig. 6 in an operated position.

Illustrative of the invention, as shown more or less diagrammatically in Fig. 2, a coin or token magazine A is associated with an ejector B. The ejector B is drivable by operating means including a suitable motor C operable to eject one token or coin at a time from the magazine for delivery to a suitable delivery chute or tray D.

The motor C is preferably of the electric type and is in an electrical circuit including adjustable switch means E having switch operating means F which, upon energization of the motor C, will automatically operate the switch means E to interrupt the motor circuit when the ejector B has been operated through a selected one of a plurality of predetermined numbers of ejecting operations. For predetermining the number of ejecting operations through which the ejector B is operated by its operating means, a plurality of individually operable switch means G are connected in circuit with the motor C and the switch means E.

Each such switch means G is adapted to cooperate with the switch means E to cause the motor C to operate the ejector B through a certain number of ejecting operations and thereupon to stop the motor. The switch means G and the switch means E are adapted to cooperate with switch means H and with switch adjusting means J controlled thereby for changing the number of ejecting operations corresponding to any particular one of the switch means G. Another switch means shown at K in Fig. 2 is adapted to control means L for resetting the switch means E to its initial position after operation thereof and for cancelling any adjustment of the switch means E by the switch means H and the switch adjusting means J.

Briefly, by closing any one of the switch means G, a number of coins, depending upon the particular switch means closed, will be ejected from the machine and delivered to an accessible position in the tray D. By closing the switch means H, the number of coins ejected in response to the operation of any switch means G will be increased by, for example, succeeding multiples of the number normally ejected in response to the operation of that switch means G so that by operating the switch means H one or more times, the number of coins ejected in response to the operation of any switch means G will be varied, depending upon the number of times the switch means H is operated. And by closing the switch means K, the machine is restored to its initial position.

As shown in Fig. 2, the switch means G, H and K may be remotely positioned with respect to the other apparatus and may be operable by any suitable means. In another form of the invention, those switch means are, as shown in Figs. 1 and 3 to 7, arranged in a suitable casing 11 and are adapted to be operated by a plurality of depressible keys or members 12 for the switch means G, a depressible key or member 13 for the switch means H, and a depressible key or member 14 for the switch means K.

As best shown in Figs. 3 and 4, the casing 11 includes a substantially rectangular plate 15 and a box-like hood 16 adapted to receive through its open bottom the plate 15 which is suitably secured therein as at 17 intermediate the top and bottom of the hood 16. The plate 15 serves as suitable mounting means for the magazine A illustrated as a coin stacking tube 18 secured on the plate 15 in upright relation by a supporting

bushing or bracket 19 having a laterally extending arm 21 secured as at 22 on the plate 15.

The coin stacking tube 18 is arranged to cooperate with the ejector B which includes means for transferring one coin at a time from the bottom of the stack to an aperture 23 in the plate 15 communicating with the inner end of the delivery tray D. As illustrated in Figs. 3 and 4, the transferring means of the ejector B comprises a substantially cup-shaped member 24. It has an annular bottom of substantially the same thickness as the intended coin and the annular bottom is provided with a plurality of coin receiving and transferring apertures 25 therein which are equidistant from its center and which are spaced from one another about the center of the bottom. The cup-shaped member is provided with an upstanding peripheral wall or flange 26 and is rotatably mounted as at 27 with its apertured bottom adjacent the plate 15. The cup-shaped member 24 is so mounted on the plate 15 that the coin receiving and transferring apertures 25 are adapted successively to register with the aperture 23 in the plate 15 when the cup-shaped member is rotated. The coin stacking tube 18 is so arranged and mounted on the plate 15 that its lower end extends into the cup-shaped member to a position adjacent the bottom thereof and is at the same distance from the center of rotation of the cup-shaped member as are the coin receiving and transferring apertures 25.

Various means may be employed for operating the coin transferring member 24. Illustrative of suitable operating means, the electric motor C is mounted as at 28 on the plate 15 and is provided with suitable speed reducing gearing 29 connecting its shaft with a stud shaft 31 journaled as at 32 in a bearing carried by the motor casing. That stud shaft 31 carries a gear 33 driven from the motor and meshing with and adapted to drive a gear 34 for operating the cup-shaped member 24. Preferably, the gear 34, as shown in Fig. 3, is cut in the upstanding flange 26 of the cup-shaped member 24. The cup-shaped member 24 of the ejector B is provided with a plurality of lugs or teeth 35 which are arranged in spaced relation about the periphery of the cup-shaped member and which extend laterally outwardly from the upstanding flange 26. Those lugs 35 are adapted to cooperate with the switch operating means F for operating the switch means E in controlling the motor C whereby the ejector B is automatically stopped after it has been operated through the number of ejecting operations predetermined by the switch means G.

The switch means E comprises a plurality of disc-like members 36, each carrying a series of electrical contact portions 37 which are substantially arcuately shaped and of different lengths and which are concentrically arranged with respect to one another. The members 36 are fixed in spaced relation on and are rotatable with a shaft 38 which is journaled at its opposite ends in a pair of spaced plates 39 and 41 upstanding from the plate 15. The succeeding disc-like members 36 are held in spaced relation from one another by suitable spacers 42 on the shaft 38. At the end of the shaft 38 adjacent the plate 39 an arm 43 fixed on the shaft and projecting radially therefrom is adapted to cooperate with a bracket or member 44 secured on the plate 15 and extending upwardly therefrom for limiting the rotation of the shaft 38 and the disc-like members 36 in one direction.

The contacts portions 37 of the discs 36 are respectively engageable by a plurality of contact strips or arms 45 which are fixed in spaced relation on and are rotatable with a shaft 46 journaled at its opposite ends in the plates 39 and 41. The contact strips 45 are insulated from one another and from the shaft 46 by suitable insulating spacers 47. The arrangement is such that in the normal positions of the shafts 38 and 46 with the arm 43 engaging the stop bracket 44, each contact strip 45 makes electrical contact with, for example, the outermost contact portion 37 of the corresponding disc-like member 36 and will remain in such electrical contact during the rotation of the shaft 38 in a counter-clockwise direction, as viewed in Fig. 4, throughout the length of the engaged arcuate contact position.

The operating means F, as already stated, is actuated by lugs 35 to rotate the shaft 38 in step by step increments, one step for each ejecting operation of the ejector B. Each contact portion 37 on each disc-like member 36 is made of a length such that after the shaft 38 is thus rotated a certain number of steps, the contact portion 37 will disengage the corresponding contact strips 45, whereby to cause the switch means E to interrupt the circuit of the motor C after the motor has driven the ejector through a predetermined number of ejecting operations. The operating means F which I have found suitable for accomplishing such a result is illustrated as comprising a ratchet 48 fixed to rotate with the shaft 38 and spaced from the plate 41 by a shoulder 48' and from the end disc-like member 36 by a shoulder 49. A spring 51 has one end thereof secured as at 52 to the shoulder 49. The other end of the spring is secured to a stud 52 anchored on the plate 15 for yieldably holding the shaft 38 in a position at which the arm 43 engages the stop bracket 44 and for returning the shaft to that position when the switch means K is operated for resetting the switch means E.

For rotating the shaft 38 in the opposite direction against the action of the spring 51, a pawl 53 having an operating projection 53' at one end is pivotally mounted as at 54 on and intermediate the ends of an arm 55 which has one end pivoted as at 56 to the plate 41 adjacent the plate 15 and which has its opposite end extending rearwardly therefrom and carrying at its outer end a lug or other member 57 which has its lower edge beveled or otherwise configured as at 58 for lifting engagement by succeeding lugs 35 during the rotation of the cup-shaped member 24. A suitable spring 59 tends to urge the pawl 53 into driving relationship with the ratchet 48 when a lug 35 moves the arm 55 upwardly about its pivot to drive the shaft 38 and the disc-like members 36 in a counter-clockwise direction, as viewed in Fig. 4, i. e., toward the open position of the switch means E, and to permit sliding engagement between the pawl 53 and the ratchet 48 when the pawl 53 and arm 55 are returned by the action of the spring 59 and gravity to their lower positions after the lug 35 is rotated out of engagement with the member 57. During the operation of the arm 55, as just described, an arm 61 depending from the arm 55 through the plate 15 may be employed for guiding the movement of the arm 55.

Thus, by suitable spacing of the lugs 35, each time a coin transferring aperture 25 is moved from registration with the coin stacking tube 18 to registration with the aperture 23, the lug 35 will swing the arm 55 upwardly and permit it to return to its lower position whereby to rotate the

ratchet 48 and hence the shaft 38 and the discs 36 a definite distance. By arranging the contact portions 37 of the discs 36 of various lengths ranging from a length substantially equal to that definite distance to a plurality of lengths equal to successive multiples of that definite distance, I have succeeded in providing switch means which may be operated to stop the ejector after any one of a plurality of numbers of predeterminable ejecting operations.

The switch means G for predetermining the number of ejecting operations comprises a plurality of pairs of contact carrying strips 62 which are secured in suitable insulating strips 63 on the plate 15. Each pair of the contact carrying strips 62 is provided with cooperable contacts 62' and is electrically connected in circuit with one of the contact strips 45. For selectively operating the contacts 62', the keys 12, 13, and 14 are each provided with shanks 64, 64*a*, and 64*b*, respectively, depending through apertures in a portion 65 of the casing 11. The lower ends of the shanks 64, 64*a* and 64*b* extend through elongated apertures 66 in a plate or bracket 66' secured as at 65' beneath the casing portion 65 to the casing end for slidable movement laterally of the casing.

Each shank 64 is provided with an inclined projection providing a shoulder 64' for camming the plate 66' against the action of a suitable spring 60 in one direction when the corresponding button 12 is depressed. As the shoulder 64', during the downward movement of the shank 64, clears the plate 66', the lower end of the shank closes the contact 62' and the spring 60 moves the plates 66' in the opposite direction to engagement on the shoulder for releasably latching the depressed shank 64 in its contact closing position. The shank 64*b* has a cam projection 64*c* intermediate its ends for moving the plate 66' in a direction against the action of the spring 60 to disengage the shoulder 64' of any depressed shank 64 whereby a spring 67 returns the key 12 and shank 64 to their contact open positions. Springs 70 are provided for returning the buttons 13 and 14 and their respective shanks 64*a* and 64*b* to the positions shown in Fig. 5 after each operation thereof. Each key 12 and its shank 64 are adapted to close the corresponding pair of contacts 62' whereby to select the contact strip 45 which shall be effective for stopping the ejector after it has been operated through the number of ejecting operations corresponding to the operated key 12.

An object of the present invention is to provide means for varying the number of coins which will be delivered in response to the operation of any key 12. For that purpose, the shaft 46 is mounted for rotative adjustment whereby the contact strips 45 may, upon succeeding adjustments of the shaft 46, be caused to engage the succeeding contact portions 37 of the respectively corresponding disc members 36. In that manner the required number of ejecting operations to cause the pawl 53 and ratchet 48 to index the shaft 38 sufficiently to move the contacting portion 37 out of electrical contact with the selected contact strip 45 may be increased or otherwise changed.

That is accomplished by rotatably mounting the shaft 46 and fixing a ratchet-like member 68 at an end thereof. The shaft 46 is yieldably held in its initial position (Fig. 6) with the ratchet-like member 68 engaging a stop or limit pin 69 projecting laterally outwardly from the plate 41 by a spring 71 anchored at one end as at 72 to the plate 41 and secured at its other end to a pin or other radial projection 73 on the shaft 46. The ratchet-like member 68 is operable to index the shaft 46 against the action of the spring 71 by a pawl 74 pivoted intermediate the ends of a lever 75 which is loosely pivoted at one end on the shaft 46 between the plate 41 and the ratchet-like member 68.

The other end of the lever is offset to extend outwardly from the plate 41 and the offset portion, as shown best in Figs. 3 and 6, is provided at its outer end with a lateral projection 76 which is loosely pivoted on a pin 77 secured in the upper end of a reciprocable plunger or member 78. A spring 79 is employed to urge the pawl 74 toward engagement with the ratchet-like member 68. The pawl 74 is provided with an arm or other projection 81 which is engageable with a pin 82 on the plate 41 for limiting the movement of the lever 75 in one direction and for disengaging the pawl 74 from the ratchet-like member 68 after each step by step movement thereof toward a stop pin 83 on the plate 41.

In order to adjust the switch means E for changing or varying the number of ejecting operations available in response to the operation of any switch means G, I employ suitable means for reciprocating the plunger 78 sufficiently during each operation thereof to cause the pawl 74 to rotate the ratchet-like member 68 and hence the shaft 46 a definite distance whereby to rotate the contact strips 45 from engagement with one set of contact portions 37 into engagement with the next succeeding group of contact portions 37.

Such means as illustrated comprises a solenoid coil 84 arranged on the plate 15 outwardly adjacent the upstanding plate 41 to move the reciprocable plunger 78 in a direction to cause the pawl 74 to engage and to drive the ratchet-like member 68. The solenoid coil 84 is electrically connected in series with the switch means H and a suitable source of electrical energy diagrammatically shown at 85 in Fig. 2 by conductors 86 and 87.

For returning the plunger 78 and the pawl 74 to engagement with the pin 82, a spring 88 has one end secured to the lateral projection 76 of the lever 75. The other end of that spring is secured to a detent pawl 89 pivoted as at 91 to the upper end of the plate 41 and having a detent arm 92 yieldably urged by the spring 88 into engagement with the teeth of the ratchet 48, a detent arm 93 yieldably urged by the spring 88 into engagement with the teeth of the ratchet-like member 68, and an arm 94 for simultaneously moving the detent arms 92 and 93 against the action of the spring 88 out of engagement with the ratchet 48 and the ratchet-like member 68. The arrangement is such that the detent arms 92 and 93 permit rotation of the ratchet 48 and the ratchet-like member 68 by the driving pawls 53 and 74, respectively, but normally prevent reverse rotation of those ratchet members while the respective driving pawls are being returned to their initial positions.

The resetting and cancelling means L is adapted to actuate the arm 94 to swing the detent arm 92 away from the ratchet 48 and into engagement with the operating projection 53' for moving both the pawl 53 and the detent arm 92 out of engagement with the ratchet 48 and at the same time to swing the detent arm 93 out of engagement with the ratchet-like member 68 toward a

stop pin 95 on the plate 41. The spring 51 will thereupon reset the switch means E and the spring 71 will thereupon return the ratchet-like member 68 and hence the contact strips 45 to their initial positions. As illustrated, the means L comprises a solenoid having a coil 96 supported adjacent the coil 84 on the plate 15 and a reciprocable solenoid plunger or member 97. The plunger 97 is operatively connected by a link 98 to the arm 94. The solenoid coil 96 is electrically connected in series with the switch means K and the source 85 of electrical energy by conductors 99, 101 and 102.

It will be understood as illustrated in Fig. 2 that the motor C is provided with suitable electrical connections 103 and 104 for connecting it in series with one side of the source of energy 85 and with each of the contact portions 37 of the switch means E through the shaft 38 and the disc-like members 36 thereon. Each of the contact strips 45 of the switch means E is electrically connectable by conductors 105 and 102 with the other side of the source 85 of energy through the corresponding one of the switch means G.

In operation, any pair of contacts 62' of the switch means G may be closed by depressing the corresponding button 12 until the shoulder 64' on the button shank 64 engages under the plate 66' releasably latching the button in its depressed or contact closing position. That closes an electrical circuit which extends from one side of the source 85 of energy through the conductor 102, the closed pair of contacts 62', the conductor 105 and contact strip 45 corresponding to the closed pair of contacts 62', the contact portion 37 engaged by that contact strip 45, the conductor 104, the motor C, and back to the other side of the energy source 85 by way of the conductor 103. In that manner, by choosing one of the buttons 12, the particular disc-like member 36 and contact strip 45 of the switch means E, which shall be effective for controlling the operation of the motor C, is predetermined.

The motor thus energized continues to drive the cup-shaped member 24 of the ejector B until the contact portion 37 of the disc-like member 36 disengages and thereby breaks electrical contact with the contact strip 45 corresponding to the depressed button. The operation of the cup-shaped member by the motor causes the teeth 35 to cooperate with the arm 55 to actuate the pawl 53 whereby the ratchet 48, the shaft 38 and the disc-like members 36 are driven or indexed with a step by step movement toward a position at which the engaged contact portions 37 will disengage the contact strips 45 and will thereby open the motor circuit and cause the motor to stop when the predetermined contact strip 45 is so disengaged by the contact portion 37 of the corresponding disc-like member. By spacing the teeth 35 the same number of degrees apart as the transferring apertures 25 and likewise spacing the coin stacking tube 19 from the delivery aperture 23, the disc-like members 36 will be indexed one step toward the switch open or motor stopping position for each ejecting operation through which the motor drives the ejector B.

Each contact portion 37 of the switch means E is of such length that it will be rotated sufficiently to disengage the corresponding contact strip 45 after a predetermined number of the indexing movements of the shaft 38 just described. The outer contact portions 37 of the respective disc-like members provide for the numbers of such indexing movements, and hence ejecting operations, corresponding respectively, for example, to the numbers appearing on the buttons 12 in Fig. 1, i. e., "1" to "8" inclusive. Thus, with the apparatus set as shown in Fig. 2, by closing the lowermost pair of contacts in the switch means G, corresponding in Fig. 1 to the button numbered "1," the motor will be energized sufficiently to drive the ejector B through one ejecting operation and to index the shaft 38 one step, at the end of which the outermost contact portion 37 of the disc-like member 36 will disengage the corresponding contact strip 45 to open the motor circuit. Likewise, when any one of the buttons numbered "3," "4" and "5" to "8," inclusive, are depressed, the motor will drive the ejector B through respectively corresponding numbers of ejecting operations which causes the shaft 38 to be indexed through respectively corresponding numbers of steps to cause in each case the deenergization of the motor after it has driven the ejector through the number of ejecting operations corresponding to the number of depressed buttons.

When it is desired to change the number of ejecting operations corresponding to each of the buttons 12 or switch means G, the button 14 is depressed momentarily to close the circuit including the switch means H and the solenoid coil 84. Each time that circuit is closed by the switch means H, the solenoid operates the pawl 74 to cause it to engage the ratchet-like member 68 and to drive it and the shaft 46 one step in a direction to move the contact strips 45 fixed on the shaft 46 inwardly of the corresponding disc-like members 36 toward the shaft 38 as seen in Fig. 2. The spring 88, upon opening of the switch means H and the consequent deenergization of the solenoid coil 84, returns the pawl 74 to its position of engagement with the pin 82 causing the pawl to disengage the ratchet-like member 68 as shown in Fig. 5, the detent arm 93 holding the ratchet-like member and hence the shaft 46 and contact strips 45 in advanced position. Each such step of movement of the contact strips 45 brings them into engagement with progressively longer contact portions 37 on the discs 36 whereby to increase the number of ejecting operations corresponding to each button 12 or switch means G. As illustrated, the inwardly succeeding contact portions 37 on each disc-like member 36 correspond to or represent the second, third, fourth, fifth and sixth multiples of the number of ejecting operations represented by or corresponding to the outermost contact portions of the respective disc-like members 36. For example, the following table shows the number of predetermined automatic ejecting operations resulting in the illustrated embodiment of the invention from the operation of each button 12 before the button 14 is operated and after each operation of the button 14:

Button numbered	Buttons 12 only	First pressing button 14 once	First pressing button 14 twice	First pressing button 14 three times	First pressing button 14 four times	First pressing button 14 five times
1	1	2	3	4	5	6
2	2	4	6	8	10	12
3	3	6	9	12	15	18
4	4	8	12	16	20	24
5	5	10	15	20	25	30
6	6	12	18	24	30	36
7	7	14	21	28	35	42
8	8	16	24	32	40	48

When the switch means K is operated by, for

example, depressing the button 14, the shoulder or cam portion 64c on the shank engages the plate 66' and cams it against the action of the spring in a direction to cause the plate to disengage and release any button 12 which may have previously been depressed whereupon the spring 67 returns that button 12 to its initial position. The lower end of the shank of the button 14 during such depressing movement closes the switch means K, thereby closing the circuit including the solenoid coil 96. Upon such energization of the solenoid coil 96, plunger 97 is operated to swing the detent pawl 89 in a direction about its pivot 91 against the action of the spring 88 to cause the detent arm 92 to disengage the ratchet 48 and to move the pawl 53 out of engagement with the ratchet 48 whereupon the spring 51 returns the ratchet 48, the shaft 38, and the contact carrying disc-like members 36 to their initial positions. Such movement of the detent pawl 89 at the same time moves the detent arm 93 out of engagement with the ratchet-like member 68 to permit the spring 71 to return that ratchet-like member, the shaft 47, and the contact strips 45 to their initial positions if they have been moved therefrom by operation of the switch means H. The spring about the shank of the button 14 then returns the button to its normal position whereupon the spring 60 returns the plate 66' to its initial position. In other words, the button 14 and the switch means K constitute means for restoring the apparatus to initial position and in addition for cancelling the setting of the contact strips 45 if it is desired to change such setting before the operation of any button 12.

If desired, as shown in Figs. 1, 2 and 4, ticket dispensing means are associated with the ejecting apparatus already described for dispensing one ticket for each ejecting operation of the machine. With that in view, the upstanding wall 26 of the cup-shaped member is provided with a peripheral row of laterally projecting lugs or teeth 106 like the teeth 35 and spaced therefrom. The teeth 106 are spaced respectively to correspond with the teeth 35 and are arranged to cooperate therewith for engaging correspondingly spaced feed apertures 107 in a strip of tickets 108 for advancing the strip of tickets a distance equal to the length of one ticket during each ejecting operation of the cup-shaped member 24. The tickets may be stored in the form of a roll 109 rotatably arranged on a stud or shaft 111 in a compartment 112 formed at one side of the casing 11 having a removable cover 113 to permit ready access thereto for inspecting and changing the tickets. The strip of tickets is then arranged about the upstanding wall 26 of the cup-shaped member in such a manner that the teeth 35 and 106 will engage in the apertures 107. The strip is guidably held in that position by a guide member 114 pivoted as at 115 at one end on the plate 15 and having at its other end a depending portion 116 engageable in an aperture 117 in the plate 15 for releasably holding the guide member in guiding relationship with the wall 26. The pivot 115, as shown in Fig. 4, comprises a screw or bolt 118 having a spring 119 arranged between the head of the bolt and the guide member 114 for releasably and yieldably holding the guide member in its latched position and providing simple means for facilitating unlatching of the guide member to permit loading the machine with tickets to be dispensed.

The tickets will thus be advanced from the roll 109 rearwardly as seen in Fig. 3 toward a suitable chute 121 which communicates with the inside of the casing and extends outside thereof. If desired, means are provided for severing the dispensed tickets from the strip and such means includes an arm or bracket 122 suitably secured as at 123 on the plate 15, a shaft 124 journaled in the upper end of the arm 122, a blade or other cutting member 125 fixed on one end of the shaft 124 to rotate therewith, and a gear 126 fixed on the other end of the shaft 124 and meshing with the teeth 34 of the cup-shaped member 24. The gear ratio between the gear 126 and the gear teeth 34 is such that the shaft 124 and hence the blade 125 are driven through a complete revolution each time the cup-shaped member 24 is rotated through the angle separating succeeding teeth 35 and 106, or in other words, each time the cup-shaped member is driven through an ejecting operation. In that manner, the strip of tickets is advanced the length of one ticket during each ejecting operation. By arranging the strip of tickets between the guide member 114 and the cup-shaped member 24 and passing the free or outer end of the strip between the bearing arm 122 and the depending portion 116 of the guide member and arranging the strip in driving relationship with the teeth 35 and 106, the strip of tickets will be advanced one ticket at a time through an aperture 127 in the casing 11 when the cup-shaped member is driven by the motor C. During each ejecting operation, one ticket will be fed through the aperture 127 and the blade 125 will sever it from the strip of tickets, whereupon the severed ticket will fall into the chute 121 which is readily accessible from outside of the casing 11. Thus, the novel ejecting apparatus may be employed as a changemaker for delivering a predetermined number of coins or for dispensing coins or tokens generally and where desired, may also dispense tickets as well as coins or tokens.

While I have shown and described a preferred embodiment of the invention, it will be apparent that various changes may be made in the form, construction, and arrangement of the parts without departing from the spirit and scope thereof.

I claim:

1. In a coin delivery apparatus, the combination of coin ejecting mechanism, means for operating said mechanism, selectively operable means for energizing the last said means for a predetermined number of cycles of operation, and means for adjusting said selectively operable means to vary the number of cycles of operation predetermined thereby.

2. In apparatus of the class described, a coin, ejecting mechanism, an electrical motor for operating said mechanism, selectively operable switch means for controlling the operation of said motor each said switch means being adjustable to cause the energization of said motor for operating said ejecting mechanism a plurality of predetermined numbers of ejecting operations, and means for adjusting said switch means to predetermine the number of ejecting operations caused by the operation of any said switch means.

3. In apparatus of the class described, rotatable coin ejecting mechanism, an electrical motor for rotating said ejecting mechanism, adjustable switch means for selectively controlling the number of ejecting operations through which said motor drives said ejecting mechanism, and means for adjusting said adjustable means to cause said switch means to control said motor for any one

of a plurality of predetermined numbers of ejecting operations.

4. In apparatus of the class described, an electrically actuated article ejecting means, a plurality of individually operable electrical switches each controlling said ejecting means for a predetermined number of ejecting operations, and means for changing the number of ejecting operations caused by each said switch.

5. In apparatus of the class described, an article magazine, a rotatable member beneath said magazine and engageable with articles therein to remove them one at a time from the magazine, an electrical motor for rotating said rotatable member, a source of electrical energy for energizing said motor, a plurality of adjustable electrical contact members each adapted to be electrically connected in series with said source, a second plurality of contact members each having contact portions of different effective lengths, said contact members corresponding in number to the number of said first contact members and respectively engageable therewith, means for moving the second mentioned contact members step by step whereby to cause a contact portion thereof to disengage the respective first mentioned contact members after a predetermined number of steps of movement, means for connecting a selected one of said second mentioned contact members in series with said source of electrical energy, and means for adjusting any one of said first contact members into circuit closing relation with any of the contact portions of the corresponding second contact members for varying the number of article removing operations.

6. In a coin delivery apparatus, the combination of a coin magazine, rotatable means for successively ejecting coins from said magazine including a rotatable member, an electrical motor for rotating said rotatable member, a source of electrical energy, an electrical circuit for supplying electrical energy from said source to said motor, adjustable switch means in said circuit having a plurality of adjustable switch contacts and respectively complementary contact members of different lengths engaging said adjustable contacts, means actuated by said rotatable member for moving said contact members step by step toward a switch open position, and means for selecting the complementary contact and contact member for controlling said motor whereby to predetermine the number of ejecting operations of said rotatable member.

7. In a coin delivery mechanism an article ejector, electrically actuable means therefor, means for supplying operating current thereto, means for stopping said ejector after a predetermined number of ejecting operations comprising an electrical switch having a member with a plurality of contact portions movable one step toward a switch open direction for each ejecting operation and an adjustable member engageable with any of said contacting portions, and electromagnetic means for adjusting said adjustable member for engagement with any one of said contact portions.

8. In a ticket dispensing apparatus, the combination of ticket dispensing mechanism, means for operating said mechanism, selectively operable means for energizing the last said means for a predetermined number of cycles of operation, and means for adjusting said selectively operable means to vary the number of cycles of operation predetermined thereby.

9. In apparatus of the class described, a ticket dispensing mechanism, an electrical motor for operating said mechanism, selectively operable switch means for controlling the operation of said motor each said switch means being adjustable to cause the energization of said motor for operating said dispensing mechanism a plurality of predetermined numbers of dispensing operations, and means for adjusting said switch means to predetermine the number of dispensing operations caused by the operation of any said switch means.

10. In apparatus of the class described, rotatable ticket dispensing mechanism, an electrical motor for rotating said dispensing mechanism, adjustable switch means for selectively controlling the number of dispensing operations through which said motor drives said dispensing mechanism, and means for adjusting said adjustable means to cause said switch means to control said motor for any one of a plurality of predetermined numbers of dispensing operations.

11. In apparatus of the class described, electrically actuated ticket dispensing means, a plurality of individually operable electrical switches each controlling said dispensing mechanism for a predetermined number of dispensing operations, and means for changing the number of dispensing operations caused by each said switch.

12. In a ticket dispensing apparatus, the combination of a ticket magazine, rotatable means for successively dispensing tickets from said magazine including a rotatable member, an electrical motor for rotating said rotatable member, a source of electrical energy, an electrical circuit for supplying electrical energy from said source to said motor, adjustable switch means in said circuit having a plurality of adjustable switch contacts and respectively complementary contact members of different lengths engaging said adjustable contacts, means actuated by said rotatable member for moving said contact members step by step toward a switch open position, and means for selecting the complementary contact and contact member for controlling said motor whereby to predetermine the number of dispensing operations of said rotatable member.

13. In an article dispensing apparatus, a magazine for the articles to be dispensed, means for removing the articles from the magazine one at a time, a motor for operating said means, means for controlling the operation of the motor for determining the number of articles to be removed from the magazine by said removing means, said controlling means comprising a rotary switch member having a plurality of contact portions of different lengths and an adjustable contact member adapted to be moved from one of said portions to another, means connecting said switch member and contact member in the motor circuit, means for closing the circuit through said switch and contact member, means for moving said switch member step by step in correlation with the removal of successive articles by said removing means to a position out of contact with said contact member to open the motor circuit, and means for adjusting said contact member from one to another of said contact portions for altering the duration of operation of the motor and effecting a predetermined variation in the number of articles removed from said magazine.

14. An apparatus of the class described comprising an article magazine, a rotary dispenser for dispensing articles therefrom, a motor for operating said dispenser, a circuit for supplying current to the motor, a rotary switch comprising

a plurality of switch plates each having a plurality of contact portions of different effective length and a corresponding plurality of adjustable contact members each engaging one of said plates and adjustable into engagement with any one of the contact portions thereof for varying the duration of operation of the motor for effecting the dispensing of a predetermined number of articles, a third plurality of switches each adapted to close the motor circuit through a selected one of said switch plates and the corresponding contact member, pawl and ratchet means operable from said motor for moving the switch plates step by step toward open position in accordance with successive article dispensing operations, and electrically actuatable means for adjusting said contact members in contact with one or another of said contact portions of the respective plates for controlling the number of dispensing operations.

15. In an article dispensing apparatus, an article magazine dispensing means for dispensing articles from the magazine, electrical means for actuating the dispensing means, control means comprising a switch having a rotary plate provided with a plurality of contact portions of different effective lengths and an adjustable contact member engageable with any one of said portions for predetermining the number of articles to be dispensed, a circuit comprising said switch for supplying current to said actuating means, mechanism for effecting the adjustment of said contact member into engagement with any one of said contact portions, and means for selectively controlling the operation of said adjusting mechanism.

16. Apparatus of the class described comprising an article magazine, means for dispensing articles therefrom, a motor for operating said dispensing means, a circuit for supplying current to the motor, a plurality of switches each adapted for inclusion in the motor circuit for selectively controlling the operation of the motor for dispensing a predeterminable number of articles, said switches comprising a plurality of movable plates each having a plurality of contact portions of different effective lengths and a corresponding number of adjustable contacts each electrically engaging one of said plates and adapted to be adjusted into engagement with any one of the contact portions of the respective plate, additional switches in the motor circuit each adapted to close the circuit through a selected one of said first switches, means for adjusting said contact members for predetermining the number of articles to be dispensed, and mechanism operable by said motor for moving said switch plates to a position wherein the plate of the selected switch opens the motor circuit upon the completion of the dispensing operations.

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