Dec. 19, 1939. E. GOODMAN 2,183,611

TOKEN OR COIN HANDLING APPARATUS

Filed Nov. 8, 1935 3 Sheets-Sheet 1

Fig. 1

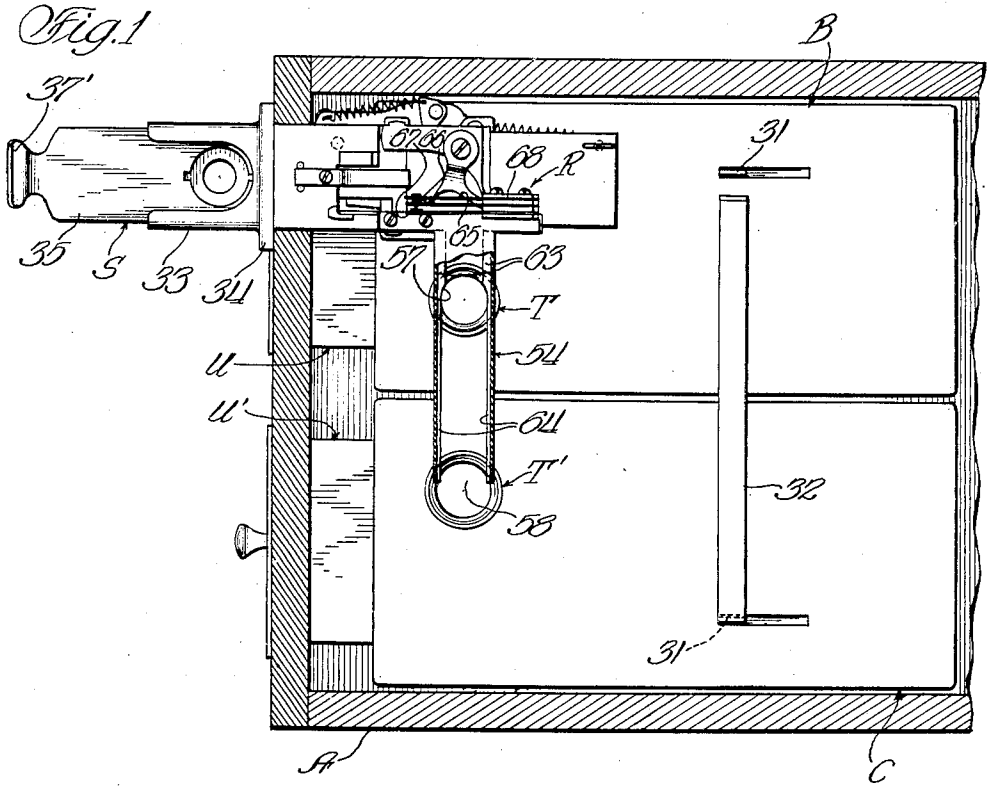
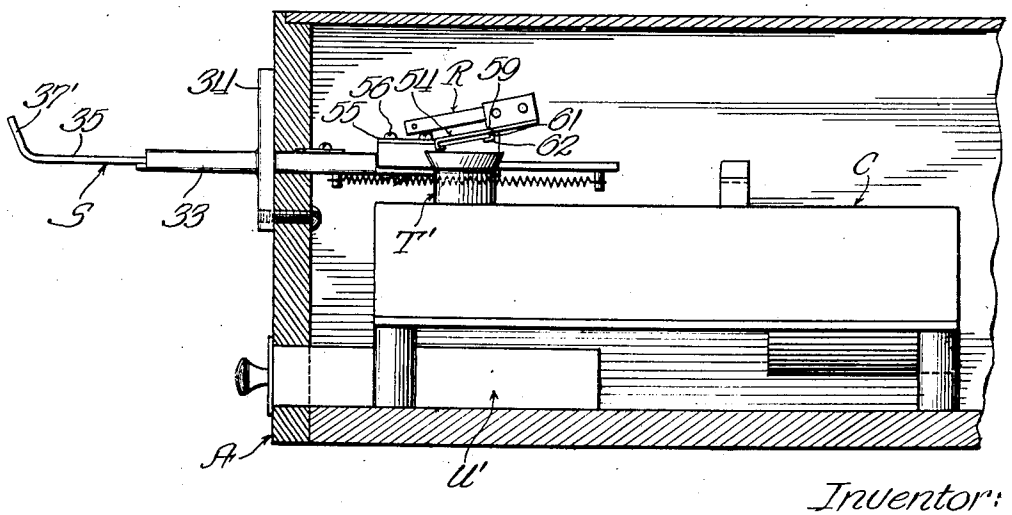


Fig. 2



Inventor:
Emil Goodman

By Williams, Bradbury, McCaleb & Hinkle

Attys.

Dec. 19, 1939. E. GOODMAN 2,183,611

TOKEN OR COIN HANDLING APPARATUS

Filed Nov. 8, 1935 3 Sheets-Sheet 2

Fig. 3

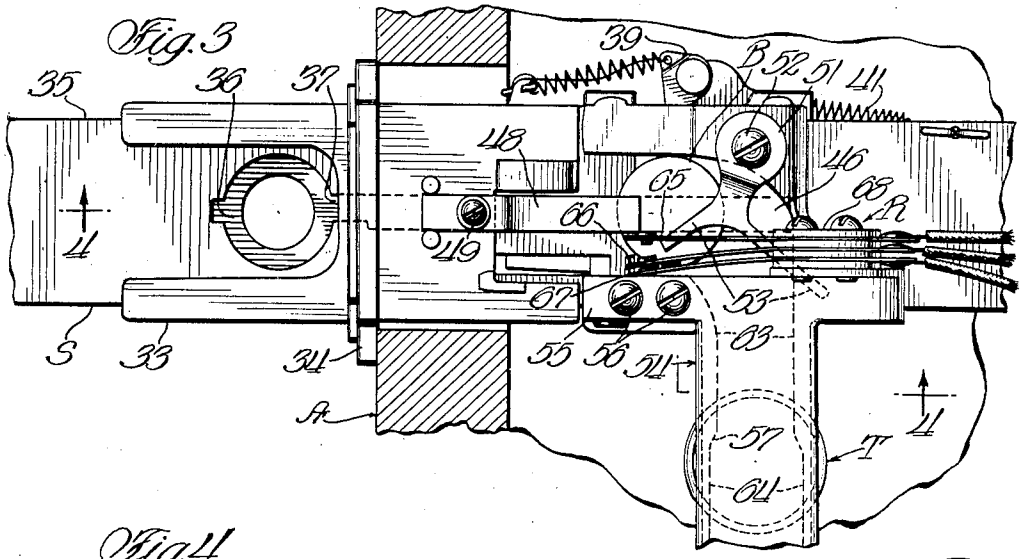


Fig. 4

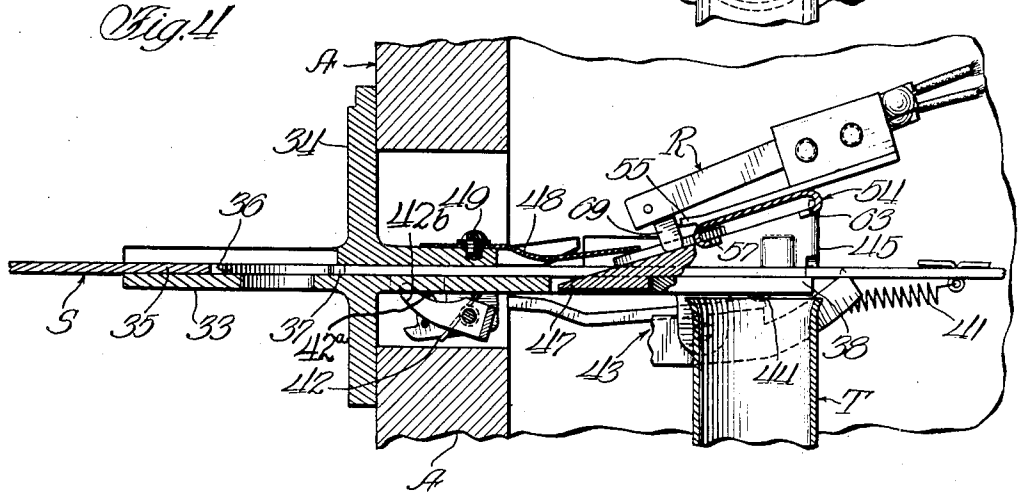
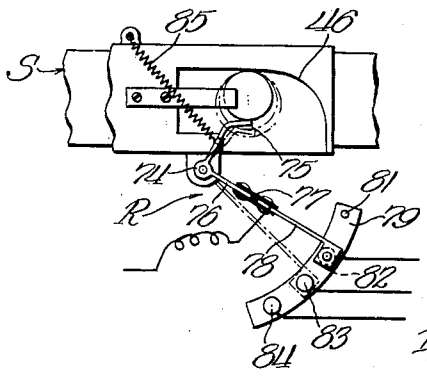


Fig. 5



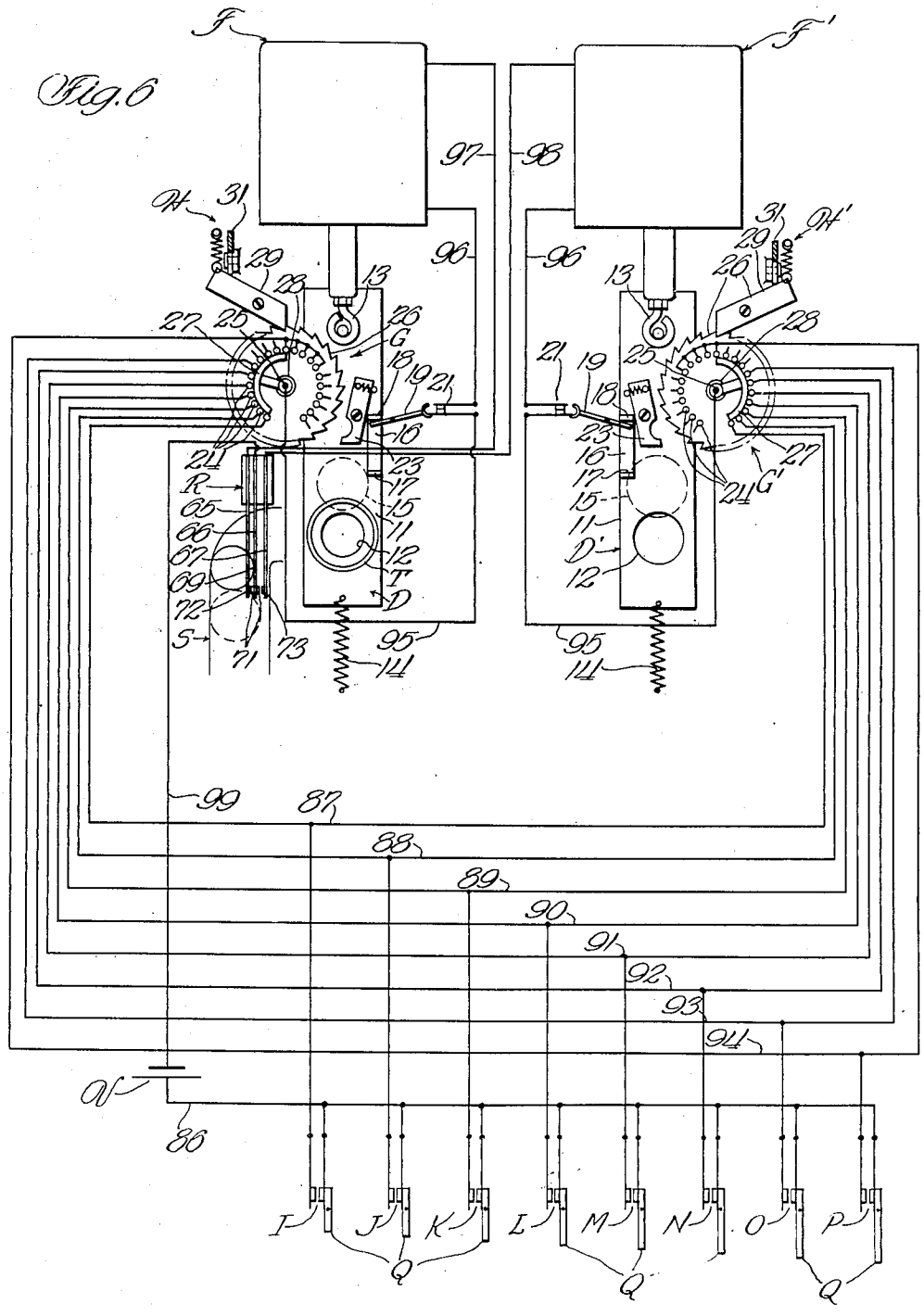
Inventor:
Emil Goodman
By Williams, Bradbury,
McCaleb & Hinkle.
Attys.

Dec. 19, 1939. E. GOODMAN 2,183,611

TOKEN OR COIN HANDLING APPARATUS

Filed Nov. 8, 1935 3 Sheets-Sheet 3

Fig. 6



Inventor:
Emil Goodman
By Williams, Bradbury, McCalb & Hinkle. Attys.

Patented Dec. 19, 1939

2,183,611

UNITED STATES PATENT OFFICE

2,183,611

TOKEN OR COIN HANDLING APPARATUS

Emil Goodman, Chicago, Ill., assignor, by mesne assignments, to James E. Johnson, Chicago, Ill.

Application November 8, 1935, Serial No. 48,807

6 Claims. (Cl. 194—10)

This invention relates to token or coin handling apparatus and has for an object the provision of an improved apparatus for receiving tokens or coins of various sizes or denominations and ejecting or delivering a number of tokens or coins of a predetermined size or denomination.

Another object of the invention is the provision of such apparatus in which the size or denomination of the tokens or coins to be delivered is determined by the size or denomination of the token or coin received.

A further object of the invention is the provision of such novel token or coin handling apparatus which separates the received tokens or coins of the same size or denomination from those of different sizes or denominations.

The invention has for another object the provision of such apparatus which collects and stores the received tokens or coins of each size or denomination in a different magazine.

In a broader aspect the invention has as an object the provision of apparatus of the token or coin controlled class for selectively operating a plurality of operable devices, the devices to be operated being determined by the size or denomination of the deposited token or coin.

Other objects of the invention include the provision of such token or coin handling apparatus which is of simple construction, which is reliable in operation, and which is inexpensive to manufacture, and the novel combinations and arrangements of elements hereinafter disclosed and claimed, as shown in the accompanying drawings wherein like reference characters relate to corresponding parts throughout the several views, and wherein:

Figure 1 is a fragmentary horizontal cross section of a token or coin handling apparatus embodying some of the features of the invention;

Figure 2 is a fragmentary vertical cross section of the apparatus shown in Figure 1;

Figure 3 is a cross section of a portion of the apparatus shown in Figure 1 but on a larger scale to bring out certain details of construction;

Figure 4 is a cross section taken substantially along the lines 4—4 of Figure 3;

Figure 5 is a diagrammatic view of a slightly different form of selector from that shown in the preceding figures; and

Figure 6 is a schematic wiring diagram of the novel token or coin handling apparatus.

Illustrative of the invention, the drawings show a suitable casing A carrying therein a plurality of units B and C, each including, as shown in Figure 6, an operable device D, D', operating means F, F' for operating the operable device, control means G, G' for controlling the number of operations of the operable device, and reset means H, H' for resetting the control means. The units B and C may, as seen in Figure 6, be operably associated with control devices I, J, K, etc., inclusive, manually or automatically operable by means diagrammatically shown at Q for selecting the number of operations of the operable device.

In order to select the operable device to be operated the number of times predetermined by the operation of one of the control devices, I provide a token or coin operable selector R which is associated with a token or coin receiver S carried in a wall of the casing A. That coin receiver is adapted to receive outside of the casing tokens or coins one at a time of various sizes or denominations and to move each of them to a position to cause it to operate the selector R and thereby to select the operable device to be operated by the operating means. In thus moving the tokens or coins to operate the selector the coin receiver S operates the reset means H, H' to reset the control means G, G' after the selected operable device has been operated the predetermined number of times.

The tokens or coins inserted in the receiver S may be delivered to one or more token or coin stacking tubes or magazines T, T' by any suitable means, but preferably the tokens or coins are separated so that those of different sizes or denominations will be delivered to different stacking tubes, respectively.

Thus, briefly, tokens or coins, regardless of size or denomination, may be inserted one at a time in the receiver S which, upon operation, actuates the reset means H, H' to reset the control means G, G'. In operating the receiver S, the inserted token or coin operates the selector R according to the size or denomination of the token or coin to select the operable device and its operating means. If one of the control devices I to P, inclusive, is operated before or after the selector R is operated, the selected operable device will be operated a number of times, depending upon which of the control devices is selected for operation.

Although broadly in accordance with the invention the devices D, D' may be any operable devices, as will be understood by those skilled in the art, an object of the invention is the provision of token or coin handling apparatus for delivering a predetermined number of tokens or coins of a selected size or denomination. To that

end the units B and C are provided in the form of token or coin delivery apparatuses, each for delivering a predetermined number of tokens or coins of a size or denomination different from those delivered by the other token or coin delivery apparatus. Many such token or coin delivery apparatuses are known in this art and may be embodied in the token or coin handling apparatus of the invention. I prefer, however, and have shown in the drawings, a plurality of token or coin delivery apparatuses of the kind disclosed in the United States Letters Patent application of Harry Kozel, Claude Hutchinson and George Baca, Patent No. 2,147,954 granted February 21, 1939. The illustrated token or coin delivery apparatuses being substantially identical, only one of them is described.

In each such token or coin delivery apparatus the operable device D, D' includes a reciprocable slide 11 having a token or coin receiving aperture 12 therein normally registering with the open lower end of one of the tubes T, T' so that one of the tokens or coins stacked therein is in the aperture 12. One end of each slide 11 is coupled as at 13 to the operating means, or, in accordance with the above mentioned application, solenoids F, F', and the other end of the slide is connected to a spring 14. The solenoids and springs constitute driving means for reciprocating the slides 11 to deliver the token or coin in each aperture 12 to a passage or chute 15 communicating with accessible reciprocable means U, U' and to return the slides to the positions at which each aperture 12 receives another token or coin from the associated tube T, T'.

Each of the slides 11 carries thereon a substantially U-shaped strip 16 having spaced arms 17 and 18 for operating a pivoted switch lever 19 to open and close a solenoid switch 21 in the energizing circuit of the solenoid. Each slide 11 also has thereon a spring urged pawl 23 for operating the control means G, G' which, it will be remembered, control the number of operations of the respective slides or operable devices.

In accordance with the above mentioned application of Kozel et al., the control means G, G' may take the form of a multi-point switch comprising a plurality of contact members 24, arcuately arranged about a shaft 25. That shaft carries, as shown in Figure 6, a ratchet 26 fixed to the shaft, a contacting element 27 rotatable with the shaft and adapted to contact a plurality of the contact members 24 at the same time, and a torsion spring 28. During each return of the slide 11 from its delivery position to its normal position by the spring 14 the ratchet 26 is rotated in one direction a distance equal to the pitch of the ratchet teeth by the pawl 23, thus causing the contacting element 27 to rotate the distance between the successive contact members 24. Such rotation of the ratchet 26 is yieldably resisted by the torsion spring 28 which is adapted to return the contacting element 27 to its normal position when the token or coin receiver S operates the reset means H, H'.

Each of the reset means H, H' comprises a spring urged pawl 29 releasably engaging the ratchet 26 and a pivoted lever 31 for operating the pawl 29 to release the ratchet 26 whereby to enable the torsion spring 28 to return the contacting element 27 to its normal position. The token or coin delivery apparatuses B and C are preferably arranged in the casing A so that the lever 31 of one of them is engageable by the token or coin receiver S, and the other lever is provided with an arm 32 which is engageable by the token or coin receiver S for operating the reset means H, H' to operate the pawls 29.

The token or coin receiver S comprises a slide casing 33 having an escutcheon plate 34 intermediate its ends to facilitate securing the slide casing in a wall of the casing A with, as shown in Figures 1 and 2, a portion of the slide casing outside and a portion inside of the casing A. The slide casing is adapted to receive a slide member 35 slidable in the casing 33 and having a token or coin receiving aperture 36 therein and a slot 37 which communicates at one end with the aperture 36 and which extends therefrom longitudinally of the slide member. Normally the slide member 35 is arranged in the slide casing 33 with its operating portion 37' projecting therefrom at the outside of the casing A and with the receiving aperture 36 in the portion of the slide member outside of the casing A.

The slide casing 33 has a lower wall which, as shown at 38 in Figure 4, extends beyond the upper wall in the casing A and which carries a usual spring urged pawl 39 for preventing a spring 41 from returning the slide member to its normal position upon only a partial operation of the slide member. If desired, the receiver S may be provided with means 42 on the slide casing for preventing the operation of the slide member until a token or coin of a particular size or denomination is inserted in the aperture 36 but which means are shown held out of operative relation by a pin 42a in Fig. 4, and also with means 43 on the casing for preventing the operation of the slide member when a counterfeit token or coin is inserted in the aperture 36. A member 42b preferably is provided which prevents a full operating stroke of the slide 35 except when a token or coin of one of two or more predetermined sizes or denominations has been placed in the recess 36.

Suitably mounted, as at 44, on the casing extension 38 is a plate 45 which has in its upper face a curved token or coin passage 46 that is inclined upwardly from the forward end of the plate 45 and that extends therefrom longitudinally of the slide casing 33 and then curves through about ninety degrees, as shown in Figure 3.

At the forward end of the passage 46 the plate 45 is provided with an inclined token or coin guide finger 47 which extends forwardly and downwardly from the plate into the slot 37 in the slide member 35. The purpose of that finger 47 is to guide and to elevate a token or coin from the aperture 36 into the passage 46 as the slide member 35 is moved inwardly of the casing A.

In that manner a token or coin is removed from the aperture 36 in the slide member 35 before the spring 41 returns the slide member to its normal position. Other tokens or coins, when subsequently moved inwardly by the slide member, engage the next preceding token or coin in the passage 46 and progressively move all of them along the curved passage 46. In order to hold the tokens or coins in the passage during their entry and movement, as just described, a spring 48 is secured, as at 49, to the casing 33 and extends to a position for engaging the upper faces of the tokens or coins as they enter the passage 46 and a substantially Y-shaped spring 51 is secured, as at 52, on the plate 45 and has its arms 53 extending over the passage 46 to engage

the upper faces of the tokens or coins as they are moved therein.

If desired, the tokens or coins received in the passage 46 from the receiver S and progressively moved along the passage may, as described above, be guided into a token or coin separator 54 for receiving tokens or coins of a plurality of sizes or denominations and for separating the tokens or coins of different sizes or denominations before they are delivered to suitable magazine means. As illustrated, the separator 54 may conveniently take the form of a flat tube attached as by a mounting bracket 55 and screws 56 to the plate 45 and communicating at the attached end with the rear or inner end of the passage 46.

That separator or tube 54 is adapted to receive tokens or coins of a plurality of sizes or denominations and is provided with a series of outlets 57, 58 through each of which tokens or coins of a predetermined size or denomination may pass, whereby they are separated from those of different sizes or denominations. The tubes T, T' exemplify suitable magazine means for receiving tokens or coins from the outlets 57, 58, respectively. Accordingly, the separator is arranged to extend over the open upper ends of the tubes T, T' and is arranged with each outlet 57, 58 aligned with the upper end of one of the tubes T, T'.

Such a flat tube or separator 54 may be made from a flat strip of metal having the portions preceding each portion to be formed as an outlet wider than those succeeding each such portion to be formed as an outlet. That flat strip is folded or bent through an angle of about ninety degrees along longitudinal fold lines 59 spaced apart a distance slightly greater than the diameter of the largest token or coin to be received in the separator to provide side walls 61 depending from that portion of the strip 54 between the fold lines 59. Each of those side walls 61, at a distance from the fold line 59 slightly greater than the thickness of the thickest token or coin to be received in the separator, is bent or folded along a longitudinal line 62 through an angle of about ninety degrees toward the other side wall 61 to provide a series of token or coin supporting ledges 63, 64.

Due to the variation in width of the original strip as described above, the ledges 63 will be wider than the succeeding ledges 64 and will therefore support tokens or coins of a predetermined size or denomination and also tokens or coins larger than that size or denomination. When the tokens or coins are moved in the separator 54 those of that predetermined size or denomination will, as they are progressed therealong, fall through the outlet 57 into the tube T, while those of larger sizes or denominations will pass over the outlet 57, the ledges 64 supporting such larger tokens or coins as they continue on toward the outlet 58 which is aligned with the open upper end of the tube T'.

The selector comprises a multi-point switch adapted to be actuated by the tokens or coins preferably as they are received from the aperture 36 in the passage 46 whereby selectively, in accordance with the size of the actuating tokens or coins, to connect and disconnect the solenoids F, F' to and from one terminal of a suitable source of electrical energy V. The selector or switch R, shown in Figures 1 to 4 and 6, comprises a jack type switch having a plurality of electrical contact carrying resilient strips 65, 66 and 67 which are spaced apart by suitable insulation at their inner ends and are mounted as at 68 on the bracket 55 so that they extend, as shown in Figs. 1 and 3, to a position over the forward end of the passage 46 in the plate 45. The intermediate strip 66 has a depending operating finger 69 extending into the passage 46 for engagement by tokens or coins delivered thereto from the aperture 36 in the slide member 35, and is provided on opposite sides of its outer free end with electrical contacts 71 for selective cooperation with contacts 72 and 73 on the free end portions of the strips 65 and 67, respectively.

If desired, shown in Fig. 1, the contacts 71 and 72 may normally be in engagement completing the circuit from one side of the source of electrical energy V through conductors 99 and 97 to the solenoid F. In such a case the operating finger 69 is so arranged that a token or coin of a predetermined small size may pass through the outlet 57 and pass by the operating finger 69 in the passage 46 without operating the selector or switch arm to open the normally closed circuit from one side of the energy source V to the solenoid F. When a token or coin of predetermined larger size is moved into the passage 46 however, the said larger coin will engage the operating finger 69 and move the strip 66, whereby to disengage the contacts 71 and 72 and to cause the contact 71 to engage the contact 73. In this latter position of the strips 66 and 67 of the jack type switch as shown in Fig. 3, the circuit is now completed from the said one side of the source of electrical energy V to the solenoid F' through conductors 99 and 98 (Fig. 6). When such a larger coin is moved beyond engagement with the operating finger 69 by the delivery of a further coin into the passage 46 upon complete inward movement of the slide S, the resiliency of the strip 66 of the jack type switch R tends to return it to its normal position as above described.

Another form of the selector R is shown in Figure 5 as comprising a bellcrank lever 74 pivoted on the plate 45 and having an arm 75 extending into the forward end of the passage 46 for engagement by a token or coin therein, and another arm 76 insulated, as at 77, from and carrying a contact arm 78. A contact carrying strip 79 is provided with a stop pin 81 and a plurality of spaced contacts 82, 83 and 84 for cooperating with the contact arm 78. A spring 85 normally holds the bellcrank lever 74 in such a position that the contact arm 78 is against the stop pin 81. Small tokens or coins entering the passage 46 operate the arm 75 to move the contact arm 78 to engagement with the contact 82. Larger tokens or coins move it to engagement with the contact 83, and so on.

As shown best in Figure 6, one terminal of the source V of electrical energy is electrically connected by a conductor 86 to one terminal of every control device or switch I, J, K, etc., the other terminals of those control devices being electrically connected to conductors 87, 88, 89, etc., respectively, which connect corresponding contact members 24 of the control means or multi-point switches G and G'. The contacting elements 27 of those multi-point switches G and G' are respectively connected by conductors 95 to one terminal of the switches 21, the other terminals of which are connected by conductors 96 to one side of the operating means or solenoids F and F', respectively. From the solenoid F a

wire 97 leads to the contact carrying strip 65 or the contact 82 and a wire 98 connects the solenoid F' to the contact carrying strip 67 or the contact 83. The circuit is completed by a conductor 99 connecting the contact strip 66 or the contact arm 78 and the source V of energy.

In operation, tokens or coins of various predetermined sizes may be inserted one at a time in the aperture 36. After each proper token or coin is inserted in the aperture 36 the slide member 35 may be operated to its innermost position to reset the operating member G, G' and to deliver the last inserted token or coin into the passage 46 where that token or coin engages the next preceding token or coin in the passage 46 and moves it and the others in the passage 46 and the separator 54 toward the separator outlets. Each proper token or coin delivered by the slide member 35 into the passage 46 operates or bypasses the selector R in a manner depending upon the type of switch employed to connect one or the other of the solenoids F, F' to one side of the source V of energy, the solenoid selected depending upon the predetermined size of the token or coin as above explained.

If one of the switches I to P, inclusive, is now, or has previously been closed, the selected solenoid will be energized and will cause the operation of its slide 11 to deliver a number of tokens or coins from the corresponding tube T, T' to the accessible receptacle member U, U' from which the tokens or coins may be readily removed. The number of operations of the selected slide 11, and hence the number of tokens or coins delivered to the receptacle means, will depend upon which of the switches I to P is operated. For example as shown in Figure 6, if the switch I is closed when the spring 14 returns the slide 11 to its normal position after the delivery of one token or coin, the pawl 23 will rotate the ratchet 26 to cause the contacting element 27 to disengage the contact member 24 connected with the switch I and the solenoid circuit will be opened so that no further tokens or coins will be delivered from the tube T, T'. The switch J upon operation will cause two operations of the selected coin slide 11 to deliver two tokens or coins to the receptacle means. The switch K will cause three tokens or coins to be delivered, and so on. In other words, the selected slide 11 will be operated one time to deliver one token or coin for each contact member 24 from the contact member engaged by the lower end of the contacting element 27, in Figure 6, to and including the contact member 24 connected to the operated control device or switch I to P, or until the lower end of the contacting element 27, as seen in Figure 6, clears the contact member 24 connected to the operated control device or switch.

As each succeeding token or coin is moved into the passage 46 it engages the next preceding token or coin which previously operated the selector R and moves it and those preceding it along the passage 46 and the separator 54, the separator separating the tokens or coins in accordance with their size or denomination and delivering the tokens or coins of different sizes or denominations to the different magazines.

Thus, if desired, the tokens or coins delivered to the receptacle means during each operation of the apparatus may be the same size and denomination as the token or coin operating the selector. The separator provides means for replenishing, from the tokens or coins used for selection, the supply of tokens or coins to be delivered to the accessible receptacle means.

It will be seen that the novel token or coin handling apparatus may be employed as a unit in any kind of token or coin control machines for selecting one of a plurality of operable devices in accordance with the size or denomination of the deposited token or coin and for operating the selected device a predetermined number of times. In the preferred embodiment, as described above, the apparatus is capable of delivering a predetermined number of tokens or coins of a size or denomination determined by the size or denomination of the deposited token or coin.

While I have illustrated and described a preferred embodiment of my invention, it is not limited to any particular embodiment, but, as will be readily understood by those skilled in the art, the invention may be embodied in various forms and is susceptible to divers modifications and changes within the scope of the claims to follow.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. In a token or coin handling apparatus, a plurality of operable devices, driving means for each of said operable devices, operable means for receiving and moving one at a time tokens or coins of various sizes, a token or coin operated control means selectively controlling all of said driving means and having a displaceable device responsive to the token or coin in said operable means for operating one of said driving means depending upon the size of the operating token or coin, and control means for controlling any selected driving means to control the number of operations of the driven operable device.

2. In a token or coin handling apparatus, a plurality of operable devices, a plurality of driving means, each being operatively associated with a said operable device, selector means selectively controlling all of said driving means and responsive to tokens or coins of different sizes to control a different one of said driving means for each different size of operating token or coin, token or coin receiving means cooperating with said selector means for receiving selector controlling tokens or coins and causing each of them to control said selector means, operable control means controlling said driving means to control the number of operations of the operable device operated by any selected driving means, and means for operating said control means to predetermine the number of operations of any said operable device.

3. In a token or coin handling apparatus, magazine means for tokens or coins of various sizes, token or coin removing means for removing the tokens or coins of the various sizes from said magazine means, means for predetermining the number of tokens or coins removed from said magazine means, and token or coin operable selector means responsive to the size of the operating token or coin for predetermining the size of the tokens or coins removed from said magazine means.

4. In a token or coin handling apparatus, magazine means for tokens or coins of various sizes, token or coin removing means for removing the tokens or coins of the various sizes from said magazine means, means for predetermining the number of tokens or coins removed from said magazine means, and token or coin operable selector means responsive to the size of the operat-

ing token or coin for causing said removing means to remove from said magazine means only tokens or coins of the same size as that of the token or coin operating the selector means.

5. A token or coin handling apparatus for receiving and delivering tokens and coins of different denominations, comprising a plurality of token or coin delivery devices for handling tokens or coins of various denominations, each said device being adapted to handle tokens or coins of a denomination different from the denomination of tokens or coins handled by another of said devices, means for operating one or another of said devices for effecting the delivery of one or more tokens or coins, a selector operable by a received token or coin for selectively controlling the operation of the delivery device handling tokens or coins of the denomination of the received token or coin, and token or coin separating means for separating received tokens or coins of one denomination from received tokens or coins of another denomination and supplying the separated tokens or coins to the respective delivery devices handling them.

6. In a token or coin handling apparatus, a plurality of coin magazines for receiving tokens or coins of predetermined sizes, a token or coin receiving slide for receiving tokens or coins of said predetermined sizes, coin separating means cooperating with said slide and magazines for transferring from the former to each of the latter the tokens or coins of corresponding size inserted in said slide, electrically operable coin dispensing means for selectively dispensing coins from said magazines, a selective controlling circuit for said dispensing means, a multiple contact switch in said circuit associated with said slide and controlled by a token or coin of a predetermined size and inserted in said slide for selecting the circuit to said dispensing means to effect discharge of tokens or coins from a predetermined magazine, variable means associated with said dispensing means also in said controlling circuit, and a plurality of switches in said circuit each of which when closed is adapted to set said variable means to a predetermined position to effect the operation of said dispensing means a predetermined number of times to discharge a corresponding number of tokens or coins from the selected magazine.

EMIL GOODMAN.