

May 29, 1945.

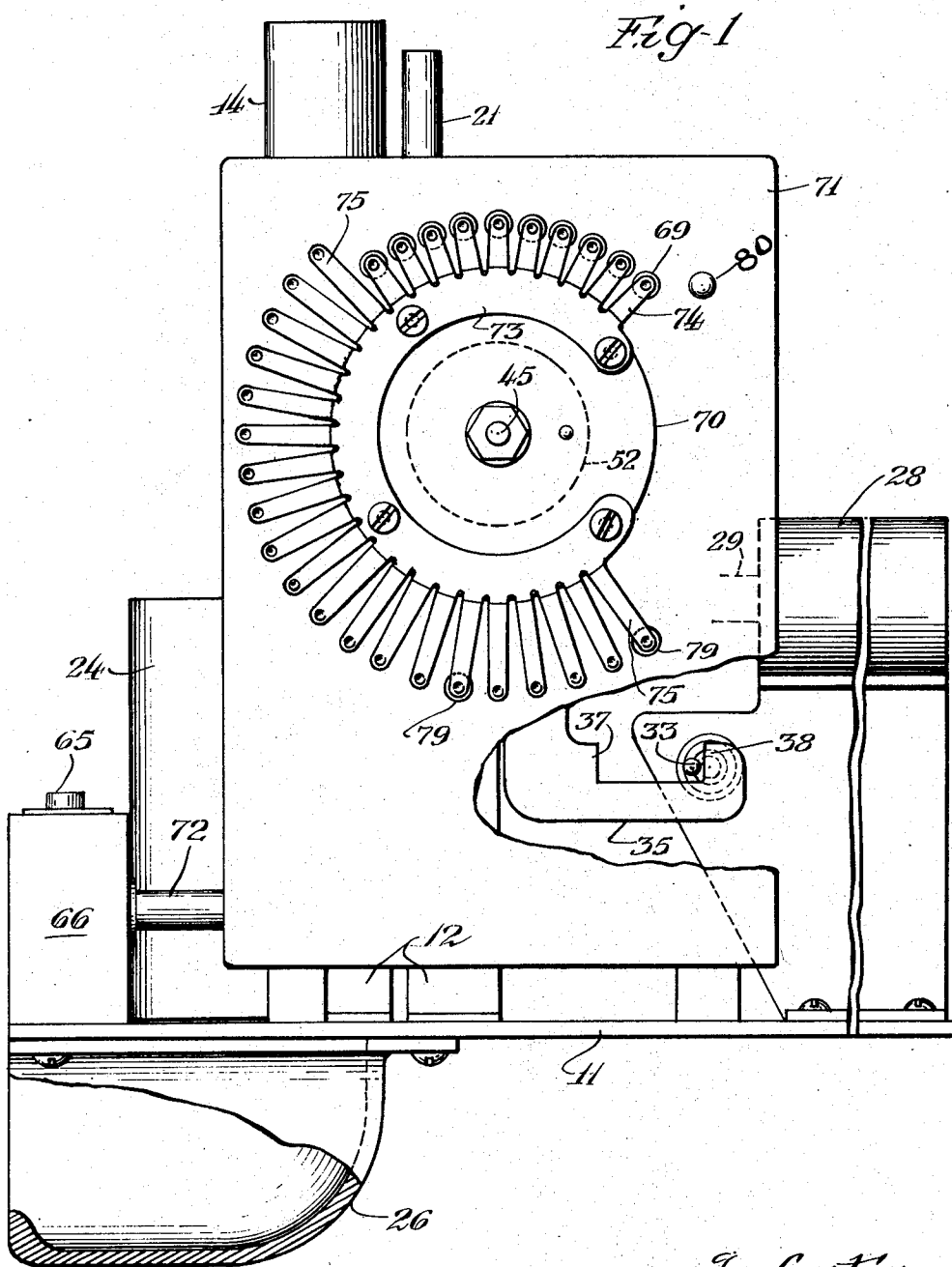
B. E. MILLS

2,376,880

COIN DISPENSING DEVICE

Filed Aug. 3, 1940

4 Sheets-Sheet 1



Inventor
Bert E. Mills
By: Carl S. Lloyd
Atty.

May 29, 1945.

B. E. MILLS

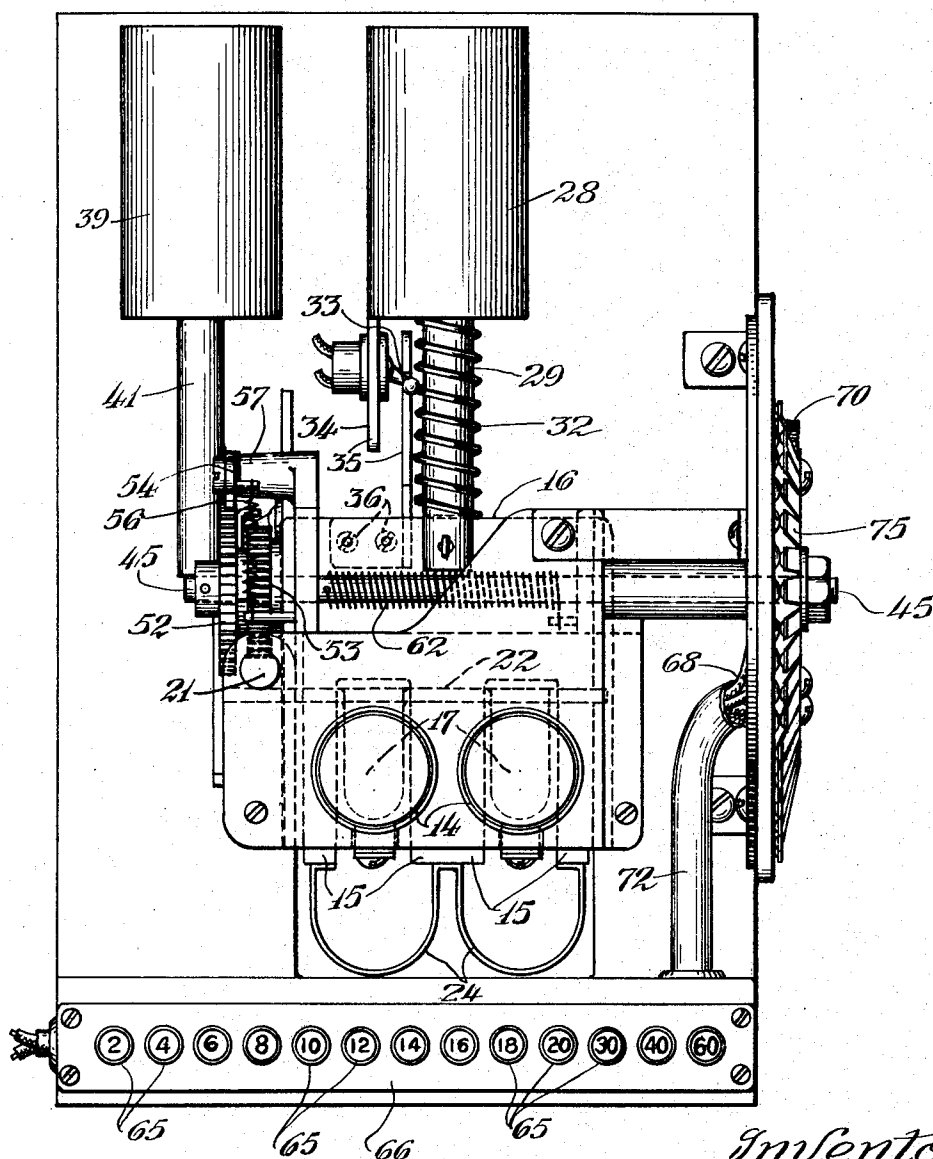
2,376,880

COIN DISPENSING DEVICE

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4 Sheets-Sheet 2

Fig-2



Inventor.
Bert E. Mills
By: Carl S. Lapp
Atty.

May 29, 1945.

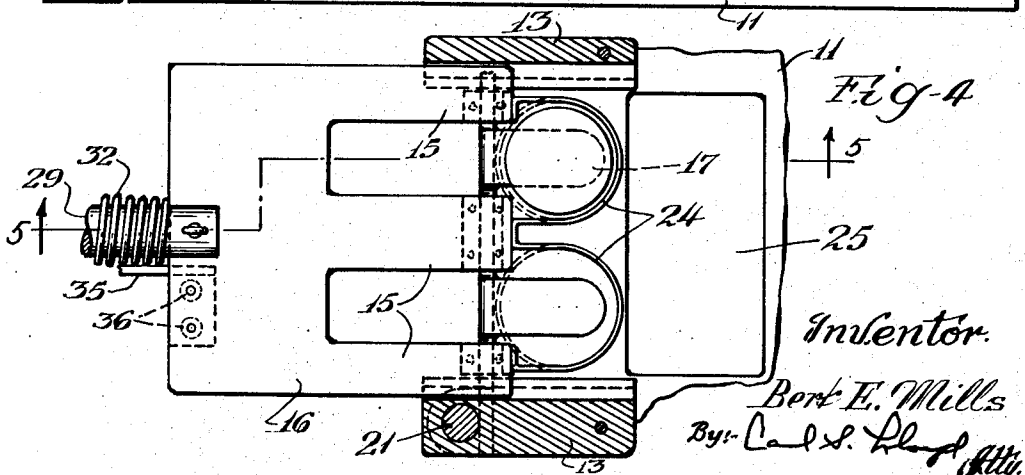
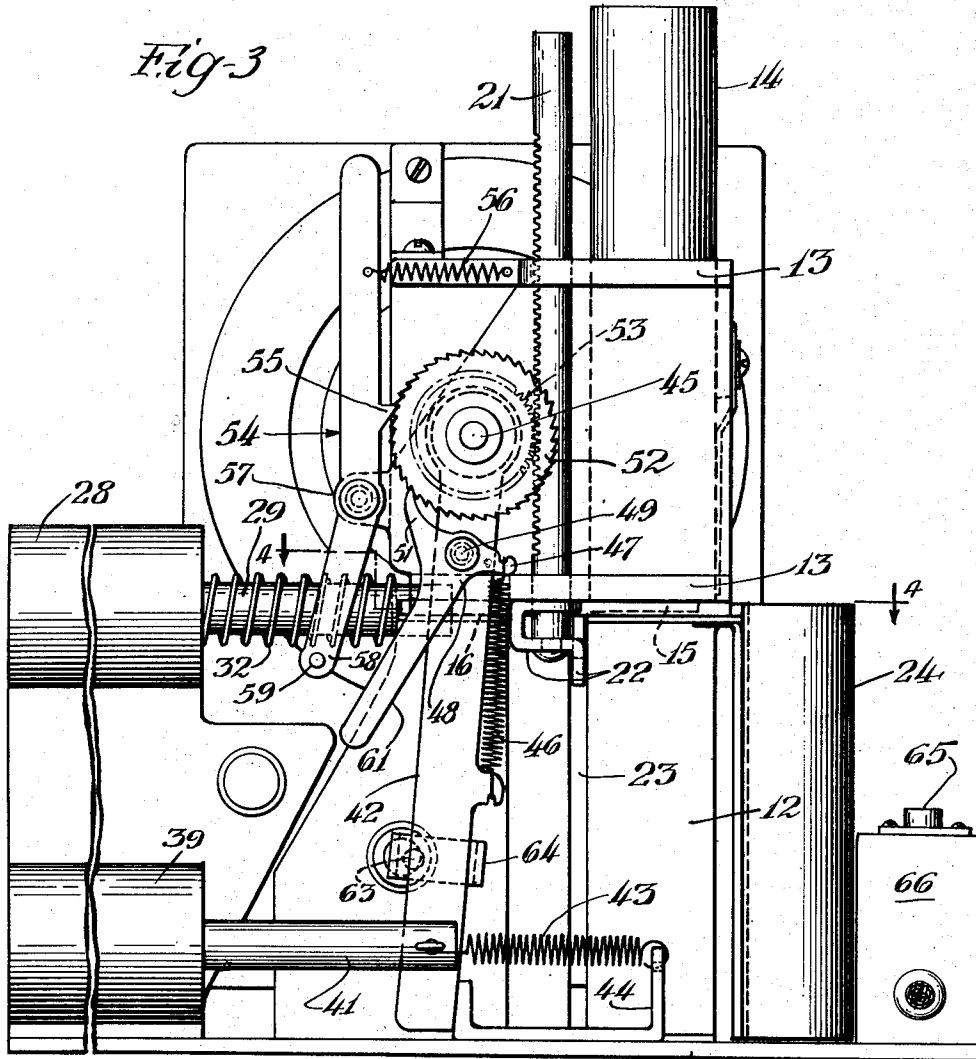
B. E. MILLS

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4 Sheets-Sheet 3



Inventor.

Bert E. Mills

By: Carl S. Lloyd *Atty.*

May 29, 1945.

B. E. MILLS

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Fig-7

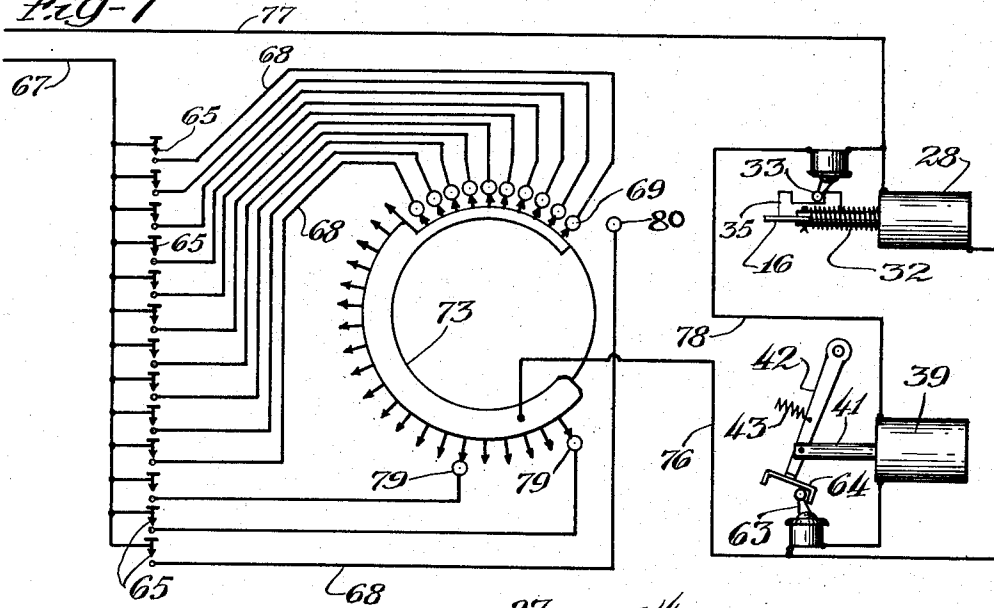


Fig-5

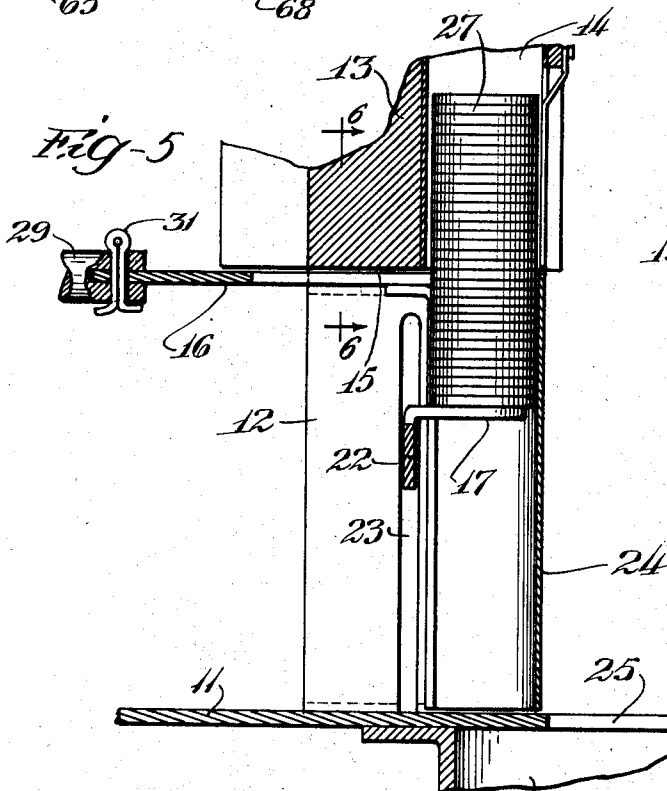
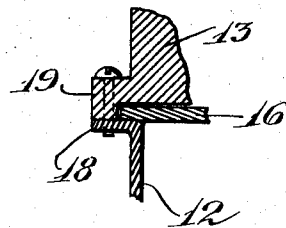


Fig-6



Inventor.
Bert E. Mills
By: Carl S. Lloyd
att.

UNITED STATES PATENT OFFICE

2,376,880

COIN DISPENSING DEVICE

Bert E. Mills, Oak Park, Ill., assignor to Mills Industries, Incorporated, a corporation of Illinois

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9 Claims. (Cl. 133—5)

The device of the present invention is for the purpose of separating variable numbers of coins or checks from one or more stacks or chutes and dispensing them in accordance with the operation of electrical control mechanism, and has for its primary object an improvement in the means for selecting and handling the coins.

The device may have various specific uses, one, for example, being as a change-maker suitable for quickly selecting and delivering a number of small coins, such as nickels.

In the drawings, showing an illustrative embodiment of the invention:

Fig. 1 is a side elevation of the device showing, among other things, the commutator or contact fan forming part of the control means for determining the number of coins to be dispensed on a given operation, certain parts being broken away for convenience in illustration;

Fig. 2 is a top plan view of said device;

Fig. 3 is a side elevation taken from the side opposite that shown in Fig. 1;

Fig. 4 is a sectional and plan view taken on the line 4—4 in Fig. 3;

Fig. 5 is a detail sectional view taken along the line 5—5 in Fig. 4, showing the relationship of the coin magazine, the coin carrier, the elevator, and the ejector device;

Fig. 6 is a sectional detail on the line 6—6 in Fig. 5; and

Fig. 7 is a schematic view and wiring diagram of the electrical control devices.

As thus illustrated, the device includes a base plate 11 having frame members 12 extending upwardly therefrom, said members supporting a casting 13 in which there are mounted in the present instance two coin-holding tubes or magazines 14. Said tubes are adapted to be filled by suitable means (not shown) and in practice they will always contain an adequate supply of coins or checks to be dispensed when the device is operated.

The coins in said tubes are normally supported on forward strip portions or lips 15 on an ejector slide 16 (see Figs. 2 and 4), and by elevator members 17 disposed between said lips 15 of the slide. The slide is supported for horizontal reciprocal motion between horizontal flanges 18 on the frame uprights 12 and the casting 13 which has flanges 19 bolted to said flanges 18 on the frame uprights (see Figs. 5 and 6). The elevator members 17 are supported for vertical movement by a rack 21, to the lower end of which said elevators are attached by means of a bracket 22, portions 55

of which ride up and down in slots 23 in the uprights 12. Said rack extends through flanges in the casting 13, as shown in Fig. 3, and is operated by mechanism which will be later described.

Attached to the forward end of the slide 16 are two coin receiving and carrier tubes 24, which are normally disposed in the position shown in Figs. 2 and 3 in which they are out of alignment with the tubes 14, the lower ends thereof being disposed above a discharge opening 25 in the base 11 beneath which there is a coin delivery tray 26. Said carrier members 24 are adapted to be moved forward during the preliminary part of a dispensing operation to the position shown in Figs. 4 and 5 in which they are in alignment with the magazine tubes 14 where the number of coins to be dispensed on the operation can be lowered into said carrier tubes by downward movement of the elevators, the latter extending into said tubes, the inner sides of which are open, as shown in Figs. 2, 4 and 5. It will be noted that when said carrier members are in their forward position the lips 15 on the slide 16 will be withdrawn from coin-supporting position so that the coins will rest only on the elevator members 17 and the stacks may therefore be lowered by downward movement of said elevators, as shown in Fig. 5 in which the coins are indicated by the numeral 27.

The slide 16 and the carrier or transfer members 24 are moved to the position shown in Figs. 4 and 5 by means of an electromagnet 28 which is energized in the initial stage of the dispensing operation, as will presently appear. The plunger of said electromagnet is indicated by the reference numeral 29, the outer end thereof being attached to the slide 16 by means of a cotter pin 31 (see Fig. 5). A compression spring 32 is positioned on said plunger 29 and serves to move the slide 16 and carriers 24 back to their normal position (shown in Figs. 2 and 3) when said magnet 28 is deenergized.

A toggle switch 33 is mounted beneath the magnet 28 on a frame part 34 and is arranged to be actuated, upon each movement of the plunger 29, by means of a switch-operating member 35 secured at 36 to the slide 16 (see Fig. 2), said member 35 having shoulders 37 and 38 thereon adapted to operate said switch in opposite directions upon the retracting and return strokes of the plunger 29, respectively. The purpose of this switch will be hereinafter explained.

A second electromagnet, identified by the numeral 39, is provided and is for the purpose of operating the elevator 22, 17. The core member

or plunger of said electromagnet, indicated by the number 41, is connected to the lower end of an operating lever 42, and a spring 43 connects the outer end of said plunger with a bracket 44 on the base 11 (see Fig. 3).

The lever 42 is pivotally mounted on a cross shaft 45 and is connected by means of a spring 46 with an arm 47 of a feed pawl 48 pivoted at 49 on the side of said lever 42, said pawl having a tooth 51 in driving engagement with a ratchet wheel 52 secured to the shaft 45. Said shaft also carries a pinion 53 which meshes with the elevator rack 21 previously mentioned.

A stop pawl 54 is mounted at one side of the ratchet wheel 52 and has a tooth 55 engaging a tooth of said wheel to prevent reverse movement of the wheel so long as said pawl is held in operative relation to the wheel, which is done by means of a spring 56 connected at one end to the upper part of said pawl and at the other end to the frame, said pawl being pivoted to a stud 57 on one of the frame uprights. The pawl lever 54 has a downwardly extending part 58 which carries a stud 59 arranged to engage a tail part 61 on the pawl 48 when said pawl 54 is moved manually or by suitable mechanism (not shown) in counterclockwise direction (viewing Fig. 3) upon the dispensing operation. Both pawls being thus disengaged from the ratchet wheel, the latter and the shaft 45 will be returned to starting position by a torsion spring 62 mounted on said shaft 45, one end thereof being secured to the shaft and the other end to the frame, as shown in Fig. 2. This also permits the rack 21 to rise to its uppermost position, carrying the elevator members 17 to their top position immediately beneath the magazine tubes 14.

Before describing the control means by which the magnets 28 and 39 are energized and deenergized to cause operation of the device, attention is called to the fact that there is a second toggle switch, identified in Figs. 3 and 7 by the reference numeral 63, this switch being arranged to be operated by a double-shouldered bracket 64 carried by the operating lever 42. The function of this switch will become apparent from the description of the wiring diagram of Fig. 7 hereinafter contained.

For the purpose of initiating the operation of the device I have shown, by way of illustration, a series of push buttons 65 mounted in a housing 66 at one end of the base plate 11, said buttons being shown in Fig. 2 and diagrammatically in Fig. 7. The buttons are each connected to a feed wire 67 and each has a separate lead 68 to one of a number of contact buttons which are positioned on a panel 71 on one side of the device (see Fig. 1). As shown, said buttons comprise a series of ten identified by the numeral 69, two marked 79 and one marked 80. The leads 68 are shown in Fig. 2 as extending through a conduit or trunk 72.

Mounted on the panel 71 is a commutator ring 73 of conductive material and said ring carries a series of short contact brushes 74 and a series of longer brushes 75 arranged in fan shape. Pressing one of the buttons 65 sends current to its associated contact button 69, 79 or 80 on the commutator panel, the circuit being completed through the ring 73 and a lead 76 from said ring to the electromagnet 28 which is also connected to the other side 77 of the supply line.

Energizing of the magnet 28 retracts its plunger 29, moving the slide 16 and carrier tubes 24 to the forward position shown in Figs. 4 and 5. This

movement of the plunger 29 also causes operation of the toggle switch 33, closing a circuit 78 through the feed magnet 39 and the switch 63, which is normally in closed position, to the wire 5 16. This causes the core member 41 of said magnet 39 to be retracted, operating the lever 42 and pawl 48 and moving the ratchet wheel 52 one step. Such movement of the ratchet wheel turns the shaft 45 correspondingly and lowers the ele- 10 vator members 17 by one step, thereby bringing the two stacks of nickels down sufficiently to cause one nickel to enter each of the two carrier members 24.

The turning of the shaft 45 also turns the commutator fan one step since the ring and brush members thereof are mounted on a disk 70 which is secured to said shaft.

If the button which has been pressed is the one marked "2," which is the one at the top in the diagrammatic view, Fig. 7, the first of the contact buttons 69 (starting at the upper right hand portion of the figure) will be the one that is energized, and as soon as the disk 70 has moved one step the brush 74 which is in the extreme right hand position will move off said first contact 69, thus breaking the circuit. The electro- 25 magnet 28 will thereupon be deenergized and the spring 31 will return the slide 16 and carriers 24 to the position shown in Figs. 2 and 3. The two coins, one in each carrier, will be pushed off the elevator members 17 by said slide 16 and carriers 24 and, when the carriers reach their discharge position, will drop through the discharge opening 25 into the delivery tray 26. The edges of the lips 15 on the slide 16 will have entered beneath the coil stacks to support them, and the elevators 17 will be returned to their uppermost position by action of the torsion spring 62, the ratchet wheel 52 having been disengaged from the pawls 48 30 and 54.

If one of the other buttons 65, say the one numbered "10," is pressed instead of the one numbered "2," the action will be the same except that the magnet 28 will not be deenergized to cause the dispensing operation until the rightmost brush 74 has passed by the fifth contact button from the right, this being the one connected with the push button numbered 10. Meantime the ratchet 50 wheel 52 will have been moved five steps, stepping the elevators 17 down so that five coins will be disposed in each of the carriers 24. These steps are effected by the feed magnet 39, which is initially energized by the closing of the switch 33 associated with the magnet 28 and will be successively deenergized and energized by back and forth movement of the bracket 64 on the lever 42. When said magnet 39 is first energized, the plunger 41 will be retracted, moving the bracket 64 in direction to open the switch 63. The magnet 39 60 will thereupon be deenergized and the spring 43 will pull the lever 42 and bracket 64 in the opposite direction to close said switch 63 and again energize the magnet 39. This make-and-break action will step the ratchet wheel 52 and associated parts ahead until the circuit through the magnet 28 is broken by passage of the rightmost brush 74 beyond the "live" button 69, which, as above stated, is, in this case, the fifth from the right. Thereupon the ten coins in the carriers 70 24, which, as shown in Fig. 4, are formed to hold the coins against lateral displacement, will be ejected as previously described.

Similarly any other one of the push buttons may be pressed and a number of coins double the 75 number marked thereon will be ejected.

The contacts 79 associated with the push buttons marked "30" and "40" and the contact 80 associated with the push button marked "60" are engaged by the longer brushes 75 and said contacts are suitably spaced to obtain the results indicated.

It will thus be seen that the number of coins to be dispensed on a given operation are all lowered into the carrier tubes 24 before any of said coins are separated from the stacks. When the indicated number have been fed into said tubes, the ejector slide 16 and the tubes, which are attached thereto, are moved to separate said coins from the stacks and to discharge them into the tray 26, the lips 15 on the slide 16 at the same time moving into position beneath said stacks to support them, and the elevators being returned to their uppermost position to support the coins when the slide 16 is retracted at the beginning of the next operation. This means of handling the coins is a marked improvement over prior devices and has been found to be very efficient in operation.

The foregoing description has been given for clearness of understanding only, and no unnecessary limitations should be understood therefrom, but the appended claims should be construed as broadly as permissible in view of the prior art.

I claim:

1. A coin dispensing device comprising a magazine for holding a stack of the coins to be dispensed, an elevator positioned beneath said stack of coins, ejecting mechanism including a coin carrier normally out of register with the magazine and movable in the initial stage of each operating cycle of the device into alignment with said stack of coins beneath said magazine, means for operating said elevator with a step movement to lower a selected number of coins into said carrier with the stack supported on the elevator, and means controlled by said last-mentioned means to cause automatic operation of said ejecting mechanism after said selected number of coins have been lowered into the carrier to separate such coins from the stack and move them to a discharging position.

2. A coin dispensing device comprising a magazine for holding a stack of the coins to be dispensed, an elevator positioned beneath said stack of coins, ejecting mechanism including a coin carrier movable into alignment with said stack of coins beneath said magazine, means for operating said elevator to lower a selected number of coins into said carrier with the stack supported on the elevator, means controlled by said last mentioned means to cause automatic operation of said ejecting mechanism after said selected number of coins have been lowered into the carrier to separate such coins from the stack and move them to a discharging position, and means operable after the coins being dispensed have been removed from said elevator to return the elevator to supporting position beneath the stack of coins in the magazine above the plane of movement of the ejecting mechanism.

3. A coin dispensing device comprising a magazine for holding a stack of the coins to be dispensed, an elevator positioned beneath said stack of coins, ejecting mechanism including a coin carrier normally out of register with the magazine and movable in the initial stage of each operating cycle of the device into alignment with said stack of coins beneath said magazine, means for operating said elevator with a step movement to lower a selected number of coins into said carrier with

the stack supported on the elevator, and means controlled by said last mentioned means to cause automatic operation of said ejecting mechanism after said selected number of coins have been lowered into the carrier to separate such coins from the stack and move them to a discharging position, said carrier having an opening in one side thereof to permit vertical movement of said elevator therethrough.

4. A coin dispensing device comprising a coin magazine for holding a stack of the coins to be dispensed, a coin carrier arrangeable under said magazine in alignment with the stack of coins therein, an elevator beneath said stack of coins adapted to support the same and to move downwardly to dispose a portion of the stack within said carrier, means for controlling the downward movement of said elevator to determine the number of coins to be admitted to said carrier on a particular operation, and means controlled by said last-mentioned means and automatically operable after the entire number of coins to be dispensed have entered the carrier to push said coins off said elevator and to move said carrier with such coins therein, to a discharging position, said carrier being formed to provide clearance for said elevator permitting the relative movements of said parts aforesaid.

5. A coin dispensing device comprising a coin magazine for holding a stack of the coins to be dispensed, a coin carrier arrangeable under said magazine in alignment with the stack of coins therein, an elevator beneath said stack of coins adapted to support the same and to move downwardly to dispose a portion of the stack within said carrier, means for controlling the downward movement of said elevator to determine the number of coins to be admitted to said carrier on a particular operation, means controlled by said last-mentioned means and automatically operable after the entire number of coins to be dispensed have entered the carrier to push said coins off said elevator and to move said carrier with such coins therein, to a discharging position, and means for thereupon returning said elevator to its uppermost position to support the coins in said magazine at the beginning of the next dispensing operation and to lower into the carrier when the latter has been replaced beneath the magazine the number of coins selected by said controlling means for delivery on said next operation, said carrier being formed to provide clearance for said elevator permitting the relative movements of said parts aforesaid.

6. A coin dispensing device comprising a magazine for holding a supply of the coins to be dispensed, ejector mechanism positioned below said magazine and including a coin-receiving and discharging member normally in a discharge position out of alignment with said magazine, operating means connected with said member and initially operable to move the same into coin-receiving position beneath said magazine, an elevator positioned beneath said coin magazine, means for operating said elevator to lower a selected number of coins from the magazine into said receiving and discharging member, and means controlled by said last-mentioned means for thereupon automatically causing reverse movement of said operating means to return said member to its original position to thereby dispense the coins which have been placed therein by operation of said elevator, said carrier being formed to provide clearance for said elevator permitting the relative movements of said parts aforesaid.

7. A coin dispensing device comprising a magazine for holding a supply of the coins to be dispensed, ejector mechanism positioned below said magazine and including a coin-receiving and discharging member normally in a discharge position out of alignment with said magazine, operating means connected with said member and initially operable to move the same into coin-receiving position beneath said magazine, an elevator positioned beneath said coin magazine, means for operating said elevator to lower a selected number of coins from the magazine into said receiving and discharging member, means controlled by said last-mentioned means for thereupon automatically causing reverse movement of said operating means to return said member to its original position to thereby dispense the coins which have been placed therein by operation of said elevator, means movable into position beneath said magazine upon said discharging operation to support the coins therein while said elevator is out of coin-supporting position, and means for returning the elevator to position to support said coins during the next dispensing operation, said carrier being formed to provide clearance for said elevator permitting the relative movements of said parts aforesaid.

8. A coin dispensing device comprising a magazine for holding a supply of the coins to be dispensed, an ejector mechanism including a carrier arrangeable beneath said magazine to receive the number of coins to be dispensed on a given operation and movable to a discharging position after such coins have been received, an elevator device for lowering such coins from the magazine into the carrier, said carrier being formed to provide clearance for said elevator in said movement means including an electromagnet for controlling the movements of said ejecting mechanism, means also including an electromagnet for controlling the operation of said elevator, and

means including a commutator device for controlling the energization of said electromagnets to cause the ejector magnet to first move said carrier into receiving position beneath said magazine and to then cause said elevator magnet to actuate the elevator a number of times corresponding to the number of coins to be dispensed to lower a selected number of coins into said carrier, said magnets being thereupon deenergized by action of said commutator, and means operable upon deenergization of said ejector magnet to move said carrier to its discharging position.

9. A coin dispensing device comprising a magazine for holding a supply of the coins to be dispensed, an ejector mechanism including a carrier arrangeable beneath said magazine to receive the number of coins to be dispensed on a given operation and movable to a discharging position after such coins have been received, a device for causing removal of such coins from said magazine into said carrier, said carrier being formed to provide clearance for said device in said movement means including an electromagnet for controlling the movements of said ejecting mechanism, means also including an electromagnet for controlling the operation of said coin-removing means, and means including a commutator device for controlling the energization of said magnets to cause the ejector magnet to first move said carrier into receiving position beneath said magazine and to then cause the other magnet to actuate said coin-removing means a number of times corresponding to the number of coins to be dispensed to transfer a selected number of coins from said magazine to said carrier, said magnets being thereupon deenergized by action of said commutator, and means operable upon deenergization of said ejector magnet to move said carrier to its discharging position.

BERT E. MILLS.