Sept. 11, 1951 C. B. WINKLER 2,567,900

COIN CHANGER MECHANISM

Filed Oct. 11, 1946 4 Sheets-Sheet 1

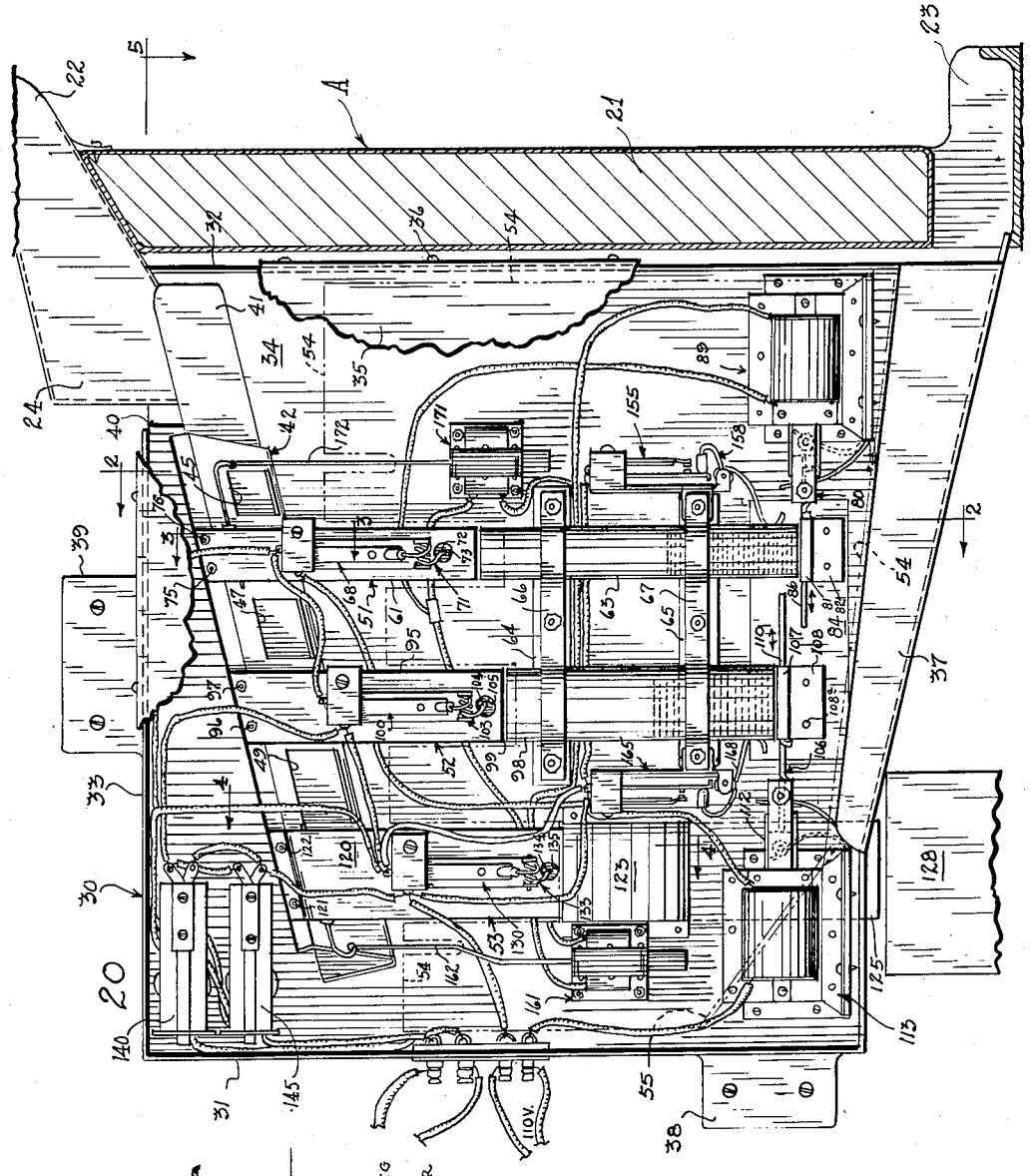



Fig. 1.

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COIN CHANGER MECHANISM

Filed Oct. 11, 1946 4 Sheets-Sheet 2

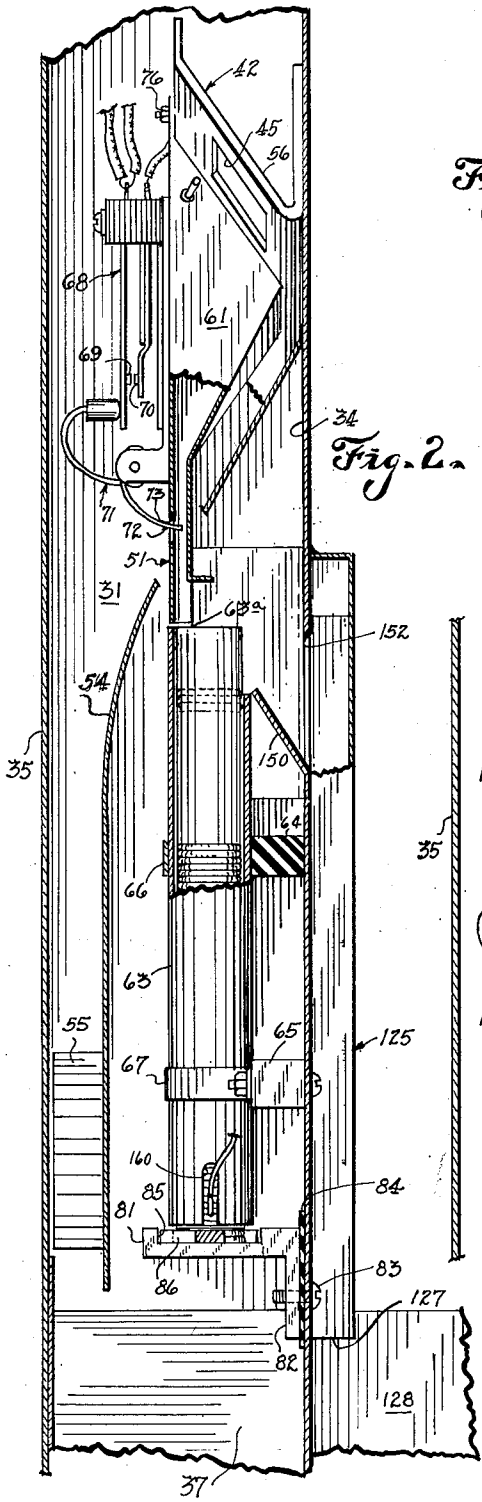



Fig. 2.

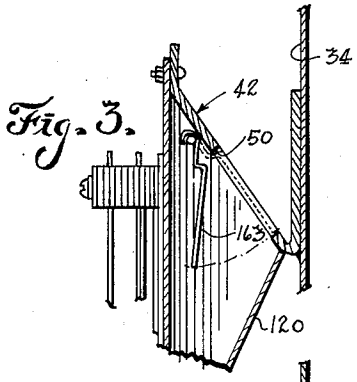



Fig. 3.

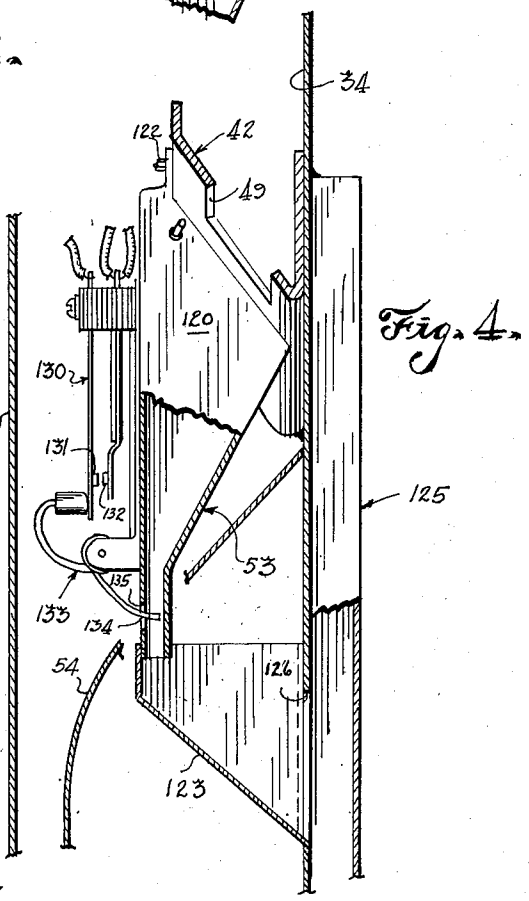



Fig. 4.

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COIN CHANGER MECHANISM

Filed Oct. 11, 1946 4 Sheets-Sheet 3

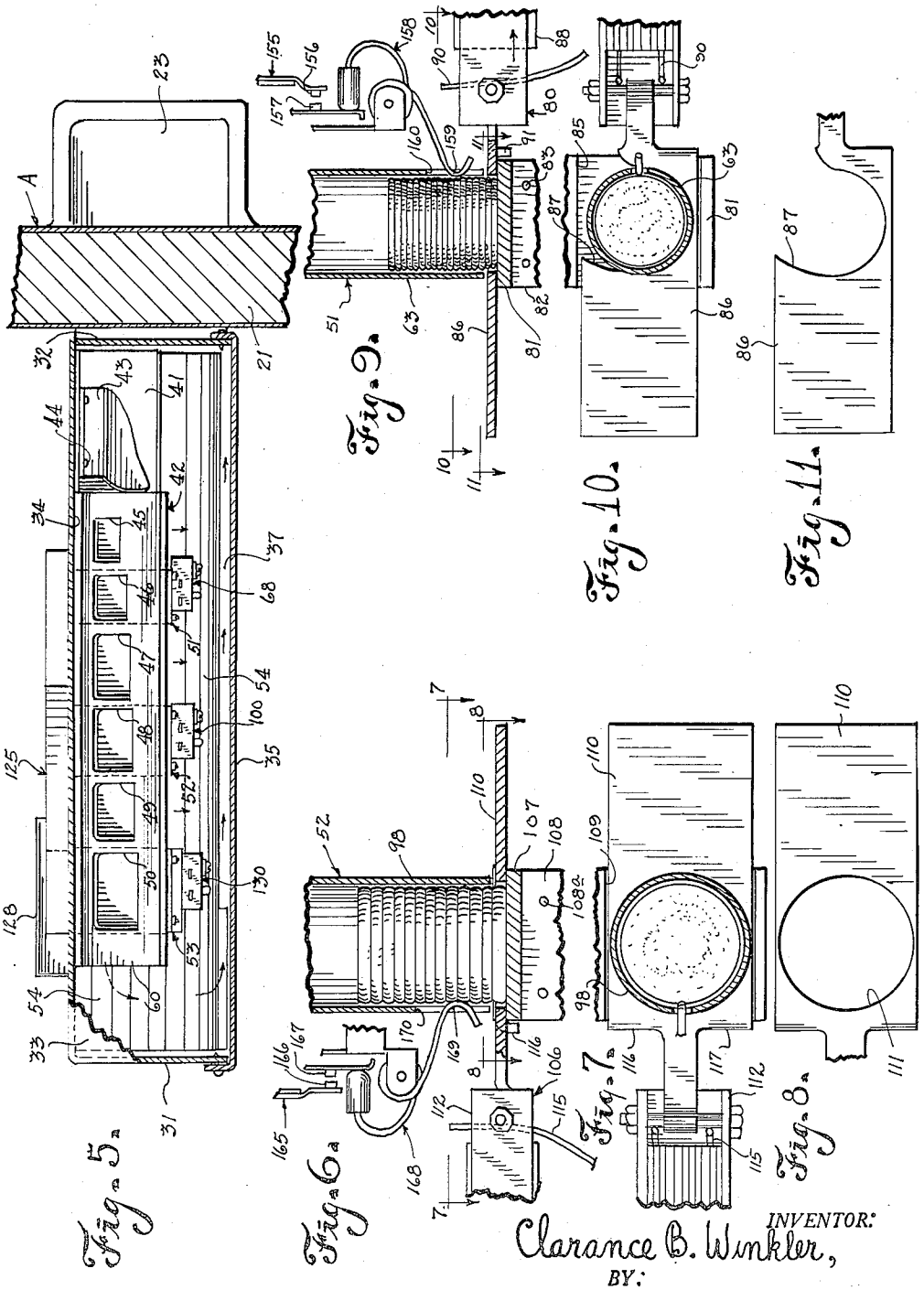


Fig. 5a

Fig. 6a

Fig. 7a

Fig. 8a

Fig. 9.

Fig. 10.

Fig. 11.

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COIN CHANGER MECHANISM

Filed Oct. 11, 1946 4 Sheets-Sheet 4

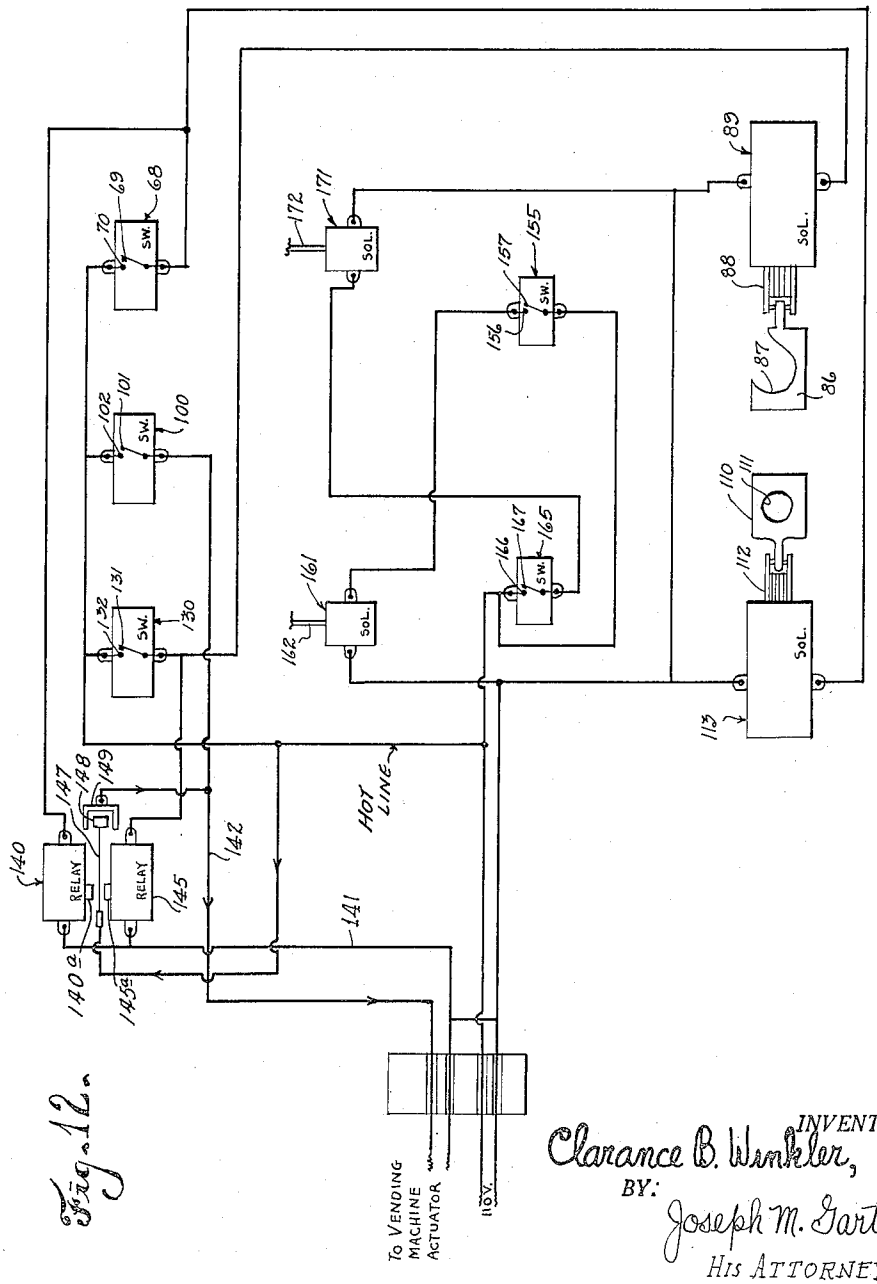



Fig. 12.

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# UNITED STATES PATENT OFFICE

2,567,900

## COIN-CHANGER MECHANISM

Clarance B. Winkler, Chicago, Ill.

Application October 11, 1946, Serial No. 702,763

3 Claims. (Cl. 194—10)

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This invention relates to coin changers in general and is particularly concerned with coin-controlled mechanisms adapted to operate vending machines and the like.

An object and accomplishment of the invention is to provide a coin-controlled mechanism adapted to be operatively connected to any type of vending apparatus and designed for the insertion of a coin of value equal to or in excess of the price of the vended commodity, which mechanism, upon the insertion of a coin, actuates a vending device to deliver the commodity, and if the value of the inserted coin is greater than the price of the commodity, releases the exact change.

The invention also comprehends the provision of a coin-controlled mechanism embodying the principles of the subject invention, but characterized by the absence of vendor device actuation, and adaptable to release change in the exact aggregate value of the inserted coin.

Yet another and essential object of the coin-changer mechanism as contemplated herein is the provision therein of means whereby only bona fide coins are allowed to pass through the machine, anything having semblance of a mutilated coin, slug or otherwise, after insertion, being immediately directed into a discharge chute and returned.

Another object is to construct a coin-changer mechanism which shall cooperate by means of electric energy.

A further object of the subject mechanism is to provide change return mechanism which will return the correct change substantially concurrently with energization of the vending release-circuit subsequent to insertion of a proper value coin of greater value than the commodity which is delivered.

A still further object of the subject mechanism is to provide means whereby the machine cannot be made to operate except by the insertion of a proper coin into same, and whereby a proper coin inserted into the machine is returned under certain conditions as, for example, when a specific or related coin-change magazine should become empty.

A feature of the mechanism as contemplated herein is the provision of means whereby inserted proper coins are received into respective coin magazines and these inserted coins may subsequently be used to make change for future inserted proper coins.

The invention seeks, as a still further object to provide a coin-changer mechanism such as contemplated herein and characterized by a combination of parts arranged to more satisfactorily perform the various functions required of them and adapted to provide a compact assembly which will successfully combine the factors of structural simplicity, efficiency and durability, and yet be economical to manufacture.

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Additional objects, features and advantages of the invention disclosed herein will be apparent to persons skilled in the art after the construction and operation are understood from the within description.

It is preferred to accomplish the various objects of this invention and to practice the same in substantially the manner hereinafter fully described and as more particularly pointed out in the appended claims, reference being had to the accompanying drawings which form a part of this specification, wherein:

Fig. 1 is a side elevational view of a coin-changer mechanism embodying the invention with related portions of a conventional vending machine illustrated to show the manner of installation.

Fig. 2 is a sectional elevational view of the coin-changer mechanism depicted in Fig. 1 and taken substantially on the plane of the line 2—2 in Fig. 1 to illustrate a typical coin magazine;

Fig. 3 is a fragmentary sectional view of upper portions of the coin magazine depicted in Fig. 2 and taken substantially on the plane of the line 2—2 in Fig. 1;

Fig. 4 is a sectional elevational view of the coin-changer mechanism depicted in Fig. 1 and taken substantially on the plane of the line 4—4 in Fig. 1 to illustrate the coin magazine adapted to receive the largest denomination of coins;

Fig. 5 is a top plan view of the coin-changer mechanism depicted in Fig. 1 and taken substantially on the plane of the line 5—5 in Fig. 1 and having portions of the casing shown cut away to better illustrate the construction of the device;

Fig. 6 is a fragmentary sectional view of lower portions of a coin magazine preferably adapted to receive nickels;

Fig. 7 is a sectional plan view of the coin magazine depicted in Fig. 6 and taken substantially on the plane of the line 7—7 in Fig. 6;

Fig. 8 is a top plan view of the nickel pay-off slide depicted in Figs. 6 and 7 and taken substantially on the plane of the line 8—8 in Fig. 6;

Fig. 9 is a fragmentary sectional view of lower portions of a coin magazine preferably adapted to receive dimes;

Fig. 10 is a sectional plan view of the coin mag-

azine depicted in Fig. 9 and taken substantially on the plane of the line 10—10 in Fig. 9;

Fig. 11 is a top plan view of the dime pay-off slide depicted in Figs. 9 and 10 and taken substantially on the plane of the line 11—11 in Fig. 9; and

Fig. 12 is a diagrammatic outline of the electrical circuits as contemplated herein.

The drawings are to be understood as being more or less of a schematic character for the purpose of illustrating and disclosing a typical and preferred form of the improvements contemplated herein, and in the drawings like reference characters identify the same parts in the several views.

Referring to the drawings, specifically Figs. 1 and 5, I have illustrated the coin-changer mechanism with which the present invention is particularly concerned and designated in its entirety by the numeral 20, as being employed in an adjunctive capacity with a vending machine, designated in its entirety by the letter A, the vending machine being of any of the usual conventional types such as, for example, those which dispense certain articles and commodities, or of a type which include games, pin-ball machines, juke-boxes, etc. Said vending machines usually effect release of the commodity or permit operation thereof by energization of an electric current and since the vending machines in and of themselves have no particular part in the present invention, complete illustration thereof is omitted.

For purposes of illustration, it is deemed sufficient to only show portions of the vending machine directly related to the coin-changer mechanism such as, for example, the front wall 21 thereof, the general construction of said conventional vending machines being well known to those persons skilled in the art. The front wall 21 is provided with a coin slot 22 adapted, in this instance, to receive pennies, nickels, dimes and quarters. A change pocket 23 is provided to facilitate accumulation of change deposited in the pocket by the coin-changer mechanism 20, the pocket being located below the coin slot 22 and projecting outwardly of the front wall within easy reach of the purchaser so that he may conveniently remove the change to which he may be entitled.

Vending machines of this type ordinarily have a coin detector, of which several types may be purchased in the open market, through which the coin must pass, these devices separating out and rejecting spurious coins, slugs, etc., and passing genuine coins for operation in the machine. One type of these detectors is illustrated as at 24, but the detail of its design and action not being a part of this invention, is not herein set forth. However, the present invention contemplates the provision of additional means, as a double precaution, to reject such spurious coins, or coins of not the correct denomination. Such means will hereinafter be described in detail. In most cases, however, I have found that the coin detector means employed as a part of my invention is adequate and the usual coin detector 24 may be dispensed with. In such cases only a coin slot as at 22 will be provided.

Suffice it to say, since the invention is not particularly concerned with the precise details of construction of vending machines generally, they will not be further described in detail. It is to be understood that details of construction of the vending machine as disclosed herein may be modified to suit particular conditions, and I do not wish to be limited to the details of construction as set forth.

Having thus described the general environment surrounding the coin-changer mechanism with which the present invention is particularly concerned, the specific construction and cooperating function of parts of said coin-changer mechanism will now be described in detail.

In the exemplary embodiment of the invention depicted in the drawings the mechanism 20 is desirably enclosed in a case 30 comprising end walls 31 and 32, a top wall 33, a back wall 34 and a side wall 35 removably secured to the other walls by means of suitable screws as at 36. The bottom of the case is provided with a U-shaped coin chute 37 in open communication with the coin pocket 23 and adapted to receive coins discharged from the various coin magazines to be hereinafter described, and deposit the coins into the coin pocket 23 to within easy reach of the purchaser. The casing 30 is provided with suitable depending brackets 38 and 39 which may be secured to any convenient part of the vending machine for holding the casing in position. An opening 40 in the top wall 33 is provided to receive end portions of the discharge end of the coin chute 22.

Disposed adjacent to and in open communication with the coin chute 22 is a V-shaped extension chute 41 suitably secured to the back wall 34 and bridging the space between the end of the coin chute 22 and the beginning of a coin track designated in its entirety by the numeral 42. The chute 41 is provided with a deflector plate 43 (Fig, 5) to properly position the coins as they are discharged from the chute 22 into the extension chute 41, said deflector plate preferably being adjustably secured to the chute 41 by means of screws such as at 44.

Referring to Fig. 1, the mechanism proper comprises, in general, the coin track 42 which is preferably V-shaped, suitably secured to the back wall 34, sufficiently inclined to cause a coin to move therein by force of gravity and provided with a plurality of apertures 45, 46, 47, 48, 49 and 50; a dime magazine designated in its entirety by the numeral 51; a nickel magazine designated in its entirety by the numeral 52; and a quarter magazine designated in its entirety by the numeral 53.

Disposed within the casing 30 I have provided a coin deflector shield 54 whose outline is defined by dotted lines in Fig. 1 and is clearly shown in full lines in Figs. 2 and 4, said deflector shield comprising a metal plate suitably bent and extending from the back wall 34 just below the coin track 42 forwardly and downwardly to terminate at the top of the coin chute 37, thereby to shield portions of the lower parts of the coin magazines. The deflector shield is provided with an inclined depending flange as at 55.

As shown in the drawings, the machine is adapted to cause the actuation of a vending machine and more important, to make change for a five cent article dispensed by said vending machine, the purchaser having the choice of inserting into the coin slot 22 either one nickel, one dime or one quarter and receiving therefor either the article, the article and a nickel in change or the article and two dimes in change depending, of course, on what coin he had inserted.

As has been hereinbefore stated, the vending machines usually are provided with coin detectors which detect improper coins as slugs, etc.;

however, I have also provided means in my device to reject mutilated coins, slugs, etc., which means will now be described.

It is obvious that if the coin chute 22 will receive a coin as large as a quarter, it surely will receive a slug smaller than a dime. If the purchaser should inadvertently insert such a slug, the slug will begin its downward journey in the coin track 42 after having been properly positioned to lie against the forward wall 56 (Fig. 2) of the coin track 42 by the deflector 43, and it will have to pass the aperture 45, the aperture 45 being of a size to allow a dime to pass without falling through but not a slug smaller than a dime or other coin of like size or smaller. Therefore, the slug will fall out of the coil track 42, through the aperture 45 and fall upon the inclined surface of the deflector 54 (Fig. 2) to be guided in its fall down to the coin chute 37 and thereafter out to the coin pocket 23 (Fig. 1). Moreover, the other apertures, specifically apertures 47 and 49, perform a like function as the aperture 45 with respect to larger coins and will be described more in detail as the description proceeds.

Referring to Fig. 5, assuming a dime is inserted into the slot 22, it being a proper coin will permit it to pass through the coin detector 24. The dime will then begin its downward journey in the coin track 42 after having been properly positioned to lie against the forward wall 56 (Fig. 2) of the coin track 42 by the deflector 43 and thereafter will pass the aperture 45 because the dime is of proper size, and will continue to the aperture 46 where it will be received into said aperture to fall into the dime magazine 51. Now, in the event, for some unforeseen reason, the dime should not fall into proper dime aperture 46, it will surely fall out of the coin track 42 through the next aperture 47 to be carried for return to the purchaser via the deflector 54 and the coin chute 37 to the coin pocket 23.

If the purchaser should inadvertently insert a penny into the coin slot 22, it being a proper coin will permit it to pass through the detector 24 if one is employed; however, as the penny begins its downward journey in the coin track 42 after having been properly positioned to lie against the forward wall 56 (Fig. 2) of the coin track 42 by the deflector 43, it will have to pass the apertures 45 and 46, the penny being larger in size than the apertures 45 and 46 will continue to move downwardly past these apertures to the aperture 47 where it will surely fall out of the coin track 42 to be carried for return to the purchaser via the deflector 54 and the coin chute 37 to the coin pocket 23.

Assuming a nickel is inserted into the slot 22, it being a proper coin will permit it to pass through the coin detector 24. The nickel then will begin its downward journey in the coin slot as described with respect to the dime, but since the nickel is of larger size than any of the apertures 45, 46 and 47, the nickel will continue to move downwardly past these apertures to be received into aperture 48 to fall into the nickel magazine 52. Further, in the event the nickel, for some unforeseen reason, should not fall into the proper nickel aperture 48, it surely will fall out of the coin track 42 through the next aperture 49 to be carried for return to the purchaser via the deflector 54 and the coin chute 37 to the coin pocket 23.

In like manner a quarter will pass along the coin track 42 to the quarter aperture 50 where it will be received into said aperture to fall into the quarter magazine 53. It is notable that the coin track is provided with an open end 60 through which a quarter will pass in the direction of the arrows in Fig. 5 in the event it should fail to enter the aperture 50. The quarter will then be returned to the purchaser via the deflector 54 (Figs. 4 and 5) and the coin chute 37 to the coin pocket 23 (Figs. 1 and 2).



Having thus described the operation of the coin track 42 whose construction and the cooperative function thereof with the coin magazines is an important feature of my invention, the coin magazines will now be described in detail.

Referring to Figs. 1 and 2, the dime magazine in general comprises a funnel shaped section 61 adapted to be fixedly secured to the coin track 42 below the dime aperture 46 by means of suitable screws as at 75 and 76, a coin receptacle 63 of suitable size to receive dimes, the said receptacle being fixedly secured to the back wall and suitably spaced therefrom by the insulation blocks 64 and 65 and the brackets 66 and 67. It is notable that the section 61 is spaced from the receptacle 63 as at 63a.

Carried by the front wall of the funnel shaped section 61, is an electrical switch 68 having suitable normally open contacts 69 and 70 which are caused to be closed by action of a lever arrangement 71 carried by the lower portions of the switch. The lever arrangement 71 may be made of wire stock of suitable tension and thickness to define an end portion 72 adapted to be received into an aperture 73 in the funnel shaped section 61 thereby to project into said section. The specific function of this switch will be hereinafter described in detail.

Disposed below the coin receptacle 63 is a dime ejector mechanism designated in its entirety by the numeral 80, and comprising a bracket 81 having a depending flange 82 suitably secured to the back wall 34 by means of suitable screws as at 83 and having between said flange and said back wall, a suitable insulation spacer 84, said bracket having a recess 85 adapted to receive for sliding movement therein, a coin ejector bar 86.

As shown in Figs. 9, 10 and 11, the coin ejector bar 86 is provided with a cut-out 87 adapted to receive two dimes when in its position below the coin receptacle 63, said bar also being connected at one end thereof to thruster arm 88 of a conventional solenoid 89 which, when properly energized, as will be hereinafter described, will pull the ejector bar 86 from its normal position, thereby causing two dimes to be pulled from the stack in the coin receptacle 63.

When the ejector bar 86 is pulled to the right sufficiently so that the coins in the cut-out 87 are no longer supported by the bracket 81, they will fall out of the cut-out and into the coin chute 37 (Fig. 1) to be carried to the coin pocket 23 within easy reach of the purchaser.

It is obvious that the number of coins drawn from the bottom of the stack is dependent upon the thickness of the ejector bar 86. In this instance, with the arrangement being described, the ejector bar 86 is of such thickness so as to draw off two dimes.

In order to cause the ejector bar 86 to return to its normal position to receive two more dimes into its cut-out 87, I have provided a spring means 90 formed of spring wire of suitable tension and thickness to urge the thruster arm 88 to the left as shown in Figs. 1 and 9 to its normal position. To prevent the spring means 90 from urging the

ejector bar 86 too far to the left and so that the cut-out will be properly positioned below the stack of coins in the receptacle, I have provided the ejector bar 86 with an integral downwardly projecting flange 91 adapted to engage the bracket 81, thereby to stop movement of the ejector bar toward the left.

The nickel magazine 52 is of similar construction as that of the hereinbefore described dime magazine 51 and, in general, comprises a funnel shaped section 95 adapted to be fixedly secured to the coin track 42 below the nickel aperture 48 by means of suitable screws as at 96 and 97 (Fig. 1), and a coin receptacle 98 of suitable size to receive nickels, the said receptacle being fixedly secured to the back wall 34 and suitably spaced therefrom by the insulation blocks 64 and 65 and the brackets 66 and 67. It is notable that the section 95 is spaced from the receptacle 98 as at 99.

Carried by the front wall of the funnel shaped section 95 is an electrical switch 100 having suitable normally open contacts 101 and 102 (Fig. 12) which are caused to be closed by action of a lever arrangement 103 (Fig. 1) carried by lower portions of the switch. The lever arrangement 103 may be made of wire stock of suitable tension and thickness to define an end portion 104 adapted to be received into an aperture 105 in the funnel shaped section 95, thereby to project into said section. The specific function of this switch will be hereinafter described in detail.

Adverting to Figs. 1, 6, 7 and 8, disposed below the nickel coin receptacle 98 is a nickel ejector mechanism designated in its entirety by the numeral 106, and comprising a bracket 107 having a depending flange 108 suitably secured to the back wall 34 by means of suitable screws as at 108a and having between said flange and said back wall the insulation spacer 84, said bracket having a recess 109 adapted to receive for sliding movement therein, a coin ejector bar 110.

The coin ejector bar 110 is provided with an aperture 111 adapted to receive one nickel when in its normal position below the coin receptacle 98, said bar also being connected at one end thereof to a thruster arm 112 of a conventional solenoid 113 which, when properly energized, as will be hereinafter described, will pull the ejector bar 110 from its normal position, thereby causing a nickel to be pulled from the stack in the coin receptacle 98.

When the nickel coin ejector bar 110 is pulled to the left sufficiently so that the coin in the aperture 111 is no longer supported by the bracket 107, the coin will fall out of the aperture and into the coin chute 37 (Fig. 1) to be carried to the coin pocket 23 within easy reach of the purchaser.

It can be seen that the number of coins drawn off from the bottom of the stack is dependent upon the thickness of the ejector bar 110. In this instance, with the arrangement being described, the ejector bar 110 is of such thickness so as to draw off only one nickel.

In order to cause the ejector bar 110 to return to its normal position to receive one more nickel into its aperture 111, I have provided a spring means 115 formed of spring wire of suitable tension and thickness to urge the thruster arm to the right as shown in Figs. 1 and 6 to its normal position.

To prevent the spring means 115 from urging the ejector bar 110 too far to the right and so that the aperture will be properly positioned below the stack of coins in the receptacle, I have provided the ejector bar 110 with integral downwardly projecting flanges 116 and 117 adapted to engage the bracket 107, thereby to stop movement of the ejector bar to the right.

Referring to Figs. 1 and 4, the quarter coin magazine 53 in general comprises a funnel shaped section 120 adapted to be fixedly secured to the coin track 42 below the quarter aperture 50 by means of suitable screws 121 and 122, and a coin chute 123 suitably secured to the back wall 34.

Disposed on the exterior face of the back wall 34, I have provided a closed coin chute 125. The coin chute 123 is in open communication with the coin chute 125 because of the opening 126 (Fig. 4) in the back wall 34. The coin chute 125 is provided with an open end 127 opening into a removable coin receptacle 128 (Fig. 2) adapted to receive the quarter. Since the quarters are never employed for making change, they are retained in the receptacle 128 until removed by the owner.

Carried by the front wall of the funnel shaped section 120 is an electrical switch 130 having suitable normally open contact points 131 and 132 which are caused to be closed by action of a lever arrangement 133 carried by the lower portions of the switch. The lever arrangement 133 may be made of wire stock of suitable tension and thickness to define an end portion 134 adapted to be received into an aperture 135 in the funnel shaped section 120, thereby to project into said section. The specific function of this switch will be hereinafter described in detail.

The electrical instrumentalities and circuits therefor by means of which the functions of the machine are performed are shown, in part structurally and in part diagrammatically, in Fig. 12, which represents a coin-changer mechanism, as contemplated herein, employed in an adjunctive capacity in a vending machine for a five cent article of merchandise. It is notable that the machine is adapted to cause the actuation of a vending machine and simultaneously therewith, make change for a five cent article dispensed by said vending machine in the event a coin of greater value than a nickel is inserted.

In the present arrangement the purchaser has the choice of inserting into the coin slot 22 either one nickel, one dime or one quarter and receiving therefor either the article, the article and a nickel in change or the article and two dimes in change depending, of course, on what coin he had inserted.

Having thus described the general construction of the coin-changer mechanism contemplated herein, the cooperative function and operation of parts will now be described.

When a dime is inserted into the slot 22 and is received into the dime aperture 46 as hereinbefore described, it will fall into the funnel shaped section 61 (Figs. 1 and 2) and thereafter continue downwardly to strike the end portion 72 of the lever arrangement 71 of the switch 68, thereby causing the contacts 69 and 70 to close momentarily, thereby energizing simultaneously a conventional relay 140 (Figs. 1 and 12) disposed within the casing 30 and the solenoid 113.

The energization of the relay 140 will cause a magnetic field to pass through contact 140a to attract a switch lever 147, thereby to close contacts 148 and 149 which will close a circuit to send an electrical impulse to the vending machine actuator (not shown) via the line 142, thereby starting the vending cycle to operate to deliver the article in the usual conventional manner. It

can be seen (Fig. 12) that the circuit through the switch lever 147 passes from the hot line through the switch 147 to the line 142. The line 141 is a neutral or ground line completing the circuit for the relays.

The energization of the solenoid 113 will cause the solenoid to operate as hereinbefore described, thereby causing a nickel in change to be delivered to the purchaser via the coin chute 37 and the coin pocket 23 (Fig. 1).

After the inserted dime has proceeded past the lever arrangement 71 it will fall into the dime receptacle 63 to be stacked and retained therein for the purpose of making change for inserted quarters. This is a very important feature of my invention because, with the present construction and arrangement of parts, I have eliminated the necessity of employing a plurality of large change-making magazines as found in prior art structures.

When a nickel is inserted into the slot 22 and is received into the nickel aperture 48 of the coin track 42 as hereinbefore described, the nickel will fall into the funnel shaped section 95 (Fig. 1) and thereafter continue downwardly to strike the end portion 104 of the lever arrangement 103 of the switch 100, thereby causing the contacts 101 and 102 (Fig. 12) to close momentarily, whereby an electrical impulse will be sent to the vending machine actuator (not shown) directly via the line 142, thereby causing the vending machine to deliver the article in the usual and conventional manner. Since the vended article is a five cent article no further action takes place except that after the nickel has proceeded past the lever arrangement 103, it will fall into the nickel receptacle 98 to be stacked and retained therein for the purpose of making change for inserted dimes as hereinbefore described.

When a quarter is inserted into the coin slot 22 and is received into the quarter aperture 50 of the coin track 42 as hereinbefore described, it will fall into the funnel shaped section 120 (Figs. 1 and 4) and thereafter continue downwardly to strike the end portion 134 of the lever arrangement of the switch 130, thereby causing the contacts 131 and 132 to close momentarily, thereby energizing simultaneously a conventional relay 145 (Figs. 1 and 12) disposed within the casing 30 and the solenoid 89.

The energization of the relay 145 will cause a magnetic field to pass through contact 145a to attract the switch lever 147, thereby to close contacts 148 and 149 which will close a circuit to send an electrical impulse to the vending machine actuator (not shown) via the line 142, thereby starting the vending cycle to operate to deliver the article in the usual conventional manner.

The energization of the solenoid 89 will cause the solenoid to operate as hereinbefore described, thereby causing two dimes to be delivered to the purchaser via the coin chute 37 and the coin pocket 23 (Fig. 1).

After the quarter has proceeded past the lever arrangement 133, it will fall into the coin chute 123 and thereafter be conveyed by gravity through the opening 126 (Fig. 4) in the back wall 34 and into the closed coin chute 125 downwardly to the coin receptacle 128 (Figs. 1 and 2). Since the quarters are never employed for the purpose of making change they are retained in said receptacle 128 until removed at the convenience of the owner.

It is notable that only one coin slot 22 is provided to receive all sizes of coins. This leads to economy of manufacture and ready adaptability of the coin-changer, as contemplated herein, to be advantageously installed into conventional vending machines without extensive alterations. Moreover, the compact structure of the case and the arrangement of parts therein successfully combine the factors of structural simplicity, efficiency and durability, and yet the coin-changer is economical to manufacture. Because of the combination of the aforementioned factors, the coin-changer is economical to maintain, requires very little care and will operate for long periods of time without adjustment or repair.

The coin receptacles may be made of any size to accommodate any number of coins by merely increasing their length, the particular size depending, of course, on particular conditions.

Accordingly, another feature of my invention is the provision of means whereby excess coins in the nickel and dime magazines will be diverted from their respective receptacles in the event the receptacles should become full. This is advantageously accomplished in my invention by the provision of a chute 150 (Fig. 2) integrally formed of the back wall 34 of the casing and being arranged in close contact with the upper portions of the magazine 63. A similar chute is provided for the nickel receptacle 98; however, since the construction is the same, it is not shown.

As a dime passes through the lower portions of the funnel section 61, it will normally fall directly into the magazine 63 and assume the position shown by the stacked coins. When the receptacle 63 becomes full of dimes to the level indicated by the dotted lines, the coins falling through the funnel section 61 will strike the stacked coins and thereby be deflected to the chute 150 to be diverted downwardly of the incline surface of the chute 150, through an aperture 152 in the back wall 34 and into the closed coin chute 125 to be conveyed by gravity to the coin receptacle 128 to be retained therein until removed therefrom at the convenience of the owner. It is notable that the chute similar to 150 in the nickel magazine functions exactly the same and, therefore, will not be further described.

In addition to and to cooperate with the hereinbefore described features of my invention I have provided means whereby an inserted quarter will be returned to the purchaser in the event the dime magazine should become empty. Similar means are provided to return an inserted dime in the event the nickel magazine should become empty.

The return of the inserted quarter, in the event the dime magazine should become empty, is advantageously accomplished by the provision of an electrical switch 155 (Figs. 1, 9 and 12), which switch is carried by the bracket 67 and has suitable normally open contacts 156 and 157 which are caused to be closed by action of a lever arrangement 158 carried by the lower portions of the switch. The lever arrangement 158 may be made of wire stock of suitable tension and thickness to define an end portion 159 adapted to be received into a slot 160 in the dime coin receptacle 63 and into engagement with the peripheral edges of the dimes in said receptacle as shown in Fig. 9.

Now, as long as there are a sufficient number of dimes in the dime receptacle 63, the action of the lever arrangement 158 will cause the contacts 156 and 157 to be held open. If the dime supply should reach a point below where they will not be contacted by the end portion 159, the end por-

tion will pivot inwardly and upwardly in the slot 160, thereby causing the lever arrangement to close the contacts 156 and 157, whereupon the circuit will be closed to cause the operation of a conventional solenoid 161 (Figs. 1 and 12) suitably mounted on the back wall 34, whereby, through suitable linkage as at 162, a gate 163 swingably mounted within the funnel-shaped section 120 (Fig. 3) and adapted to close the quarter aperture 50, will be actuated to close said quarter aperture.

When such aperture is closed, an inserted quarter will travel in the coin track 42 beyond the aperture 50 and fall out of the coin track 42 through the open end 60 and fall upon the inclined surface of the deflector 54 to be guided to the coin chute 37 and then to the coin pocket 23 where it can be removed by the purchaser.

The return of an inserted dime in the event the nickel magazine should become empty is advantageously accomplished by the provision of an electrical switch 165 (Figs. 1, 6 and 12), which switch is carried by the bracket 67 and has suitable normally open contacts 166 and 167 which are caused to be closed by a lever arrangement 168 carried by the lower portions of the switch. The lever arrangement 163 may be made of wire stock of suitable tension and thickness to define an end portion 169 adapted to be received into a slot 160 in the nickel coin receptacle 98 and into engagement with the peripheral edges of the nickels stacked in said receptacle as shown in Fig. 6.

Accordingly, as long as there are a sufficient number of nickels in the nickel receptacle 98, the action of the lever arrangement 168 will cause the contacts 166 and 167 to be held open. If the nickel supply should reach a point below where they will not be contacted by the end portion 169, the end portion will pivot inwardly and upwardly in the slot 170, thereby causing the lever arrangement 168 to close the contacts 166 and 167, whereupon the circuit will be closed to cause the operation of a conventional solenoid 171 (Figs. 1 and 12) suitably mounted on the back wall 37, whereby, through suitable linkage as at 172, a gate swingably mounted within the funnel shaped section 61 and similarly constructed as that shown in Fig. 3, will be actuated to close the dime aperture 46.

When such aperture is closed, an inserted dime will travel in the coin track 42 beyond the aperture 46 and fall out of the coin track through the next aperture 47 and fall upon the inclined surface of the deflector 54 (Fig. 2) to be guided to the coin chute 37 and to the coin pocket 23 where it can be removed by the purchaser.

Furthermore, with respect to the aforementioned feature of my invention, it is most important to understand that the elements just described perform their functions substantially automatically and generally require no personal attention or readjustment to bring the machine back into full working condition. Moreover, it is important to understand that in the event the dime magazine should be empty, the machine will reject inserted quarters, but will receive dimes and nickels as hereinbefore described and continue to function. After a few dimes are inserted by purchasers the end portion 159 (Fig. 9) will be forced outwardly to its normal position, thereby opening the contacts 156 and 157 which will open the circuit and cause the gate 163 in the quarter magazine to open by gravity and thereafter, inserted quarters will be received into the aperture 50 as hereinbefore described.

The same procedure is followed in the event the nickel magazine should become empty. The machine will reject inserted dimes, but will receive inserted nickels and quarters as hereinbefore described and continue to function. After a few nickels are inserted by purchasers, the nickel supply will be replenished and the end portion 169 (Fig. 6) will be forced outwardly to its normal position, thereby opening the contacts 166 and 167 which will open the circuit and cause the gate in the dime magazine to open by gravity and thereafter, inserted dimes will be received into the aperture 46 as hereinbefore described.

Thus, the specific construction and the cooperative function of parts have been described with respect to a coin-changer mechanism of quarter capacity and as employed in an adjunctive capacity with a conventional vending machine for vending a five cent item.

However, the invention also comprehends the provision of a coin-changer mechanism embodying the principles as hereinbefore described, but characterized by the absence of the vendor device actuation, and adaptable to release change in the exact aggregate value of the inserted coin.

While I have illustrated a preferred embodiment of my invention, many modifications may be made without departing from the spirit of the invention, and I do not wish to be limited to the precise details of construction set forth, but wish to avail myself of all changes within the scope of the appended claims.

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

1. A coin-changer mechanism comprising a single coin track having a first series of coins receiving apertures successively arranged and sized each to receive a different denomination of proper coins, said coin track having a second series of apertures alternately arranged with said first series of apertures and sized to receive improper coins and slugs and the like, a plurality of coin magazines each arranged in open communication with one of said apertures of said first mentioned series and adapted to receive inserted coins falling through their respective aperture, at least one of said coin magazines being provided with solenoid operated coin ejector means, and at least one other of said coin magazines being provided with means in circuit with said solenoid and adaptable to close said circuit responsive to an inserted coin whereby said solenoid will be caused to operate, guide means associated with said second series of apertures to guide said slugs and the like in a predetermined path for ejecting the same from the coin-changer mechanism, a coin chute extending below said last mentioned means and said coin magazines and adapted to receive said slugs and the like and ejected coins thereafter to be conveyed by gravity outwardly of said mechanism to within easy reach of the operator, and swingable gate means carried by said coin track adjacent at least one of said coin magazines and becoming operative when stacked coins in said magazine or magazines are below a certain predetermined level, thereby to cause an inserted coin to be rejected, and becoming inoperative when said level is raised above said predetermined level, thereby permitting an inserted coin to be received into said magazine, said coin-changer mechanism having level detecting means responsive to the drop in the level of the coins

in the coin magazines and means actuated by said responsive means to set the gate means in position to bridge the apertures leading to the respective magazines corresponding to the denomination of a coin for which change is to be delivered.

2. In a coin-changer mechanism comprising a plurality of coin magazines each being fitted with coin ejector means and the lower portions of each of said coin magazines being provided with a slot arranged to receive an oscillatable lever having a portion biased to extend through said slot when the coin magazine is empty, each of said oscillatable levers having a switch on the opposite side of that end of said levers opposite to the portion which extends within said slots in said coin magazines, and said switches being in circuit with solenoids and an electric source, those improvements which comprise a single coin slot arranged to receive several different denominations of coins, a single coin track in communication with said coin slot and disposed above the coin magazines and having a series of coin receiving apertures successively arranged and each sized to receive a different denomination of proper coins, said coin track having a second series of apertures alternately arranged with said first series of apertures and sized to receive improper coins and slugs and the like, said coin-track being provided with guide means associated with said second series of apertures to guide said slugs and the like from the coin-changer mechanism, and said coin track being provided with individual swingable gate means at each of said first series of coin receiving apertures respectively to close the aperture when coins in one of the coin magazines are depleted, and to reopen said aperture when the coins in said coin magazine are replenished, said individual swingable gate means each being connected to one of said solenoids which is operable to close the gate means upon closing of the said switch in circuit with said solenoid and operable by gravity to open the gate means upon the opening of said switch.

3. In a coin-changer mechanism having a coin discharge chute within reach of the operator and a single coin slot arranged to receive several different denominations of coins, those improvements which comprise a single coin track in communication with said coin slot and having a first series of coin receiving apertures successively arranged and each sized to receive a different denomination of proper coins, said coin track having a second series of apertures alternately arranged with said first series of apertures and sized to receive improper coins and slugs and the like, guide means associated with said second series of apertures to guide said slugs and the like to the coin discharge chute, a plurality of coin magazines each arranged in open communication with one of said apertures of said first mentioned series and adapted to receive inserted coins falling through their respective aperture, swingable gate means adjacent at least one of said first series of coin receiving apertures, level detecting means responsive to the drop in the level of the coins in the coin magazines, and means actuated by said responsive means to set the gate means in position to bridge the aperture leading to the respective magazines corresponding to the denomination of a coin for which change is to be delivered.



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