Dec. 26, 1939. W. B. EVANS ET AL 2,185,148

COIN CHANGING MACHINE

Filed July 22, 1938 4 Sheets-Sheet 1

Fig.1

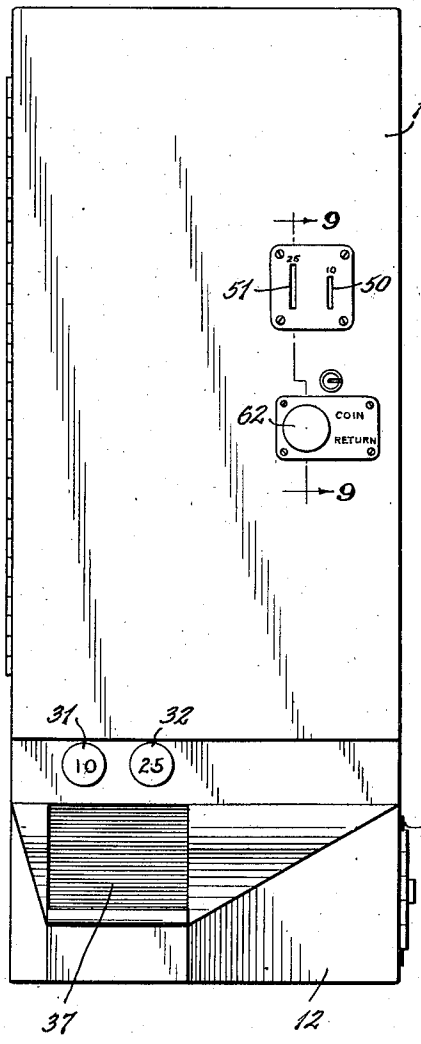
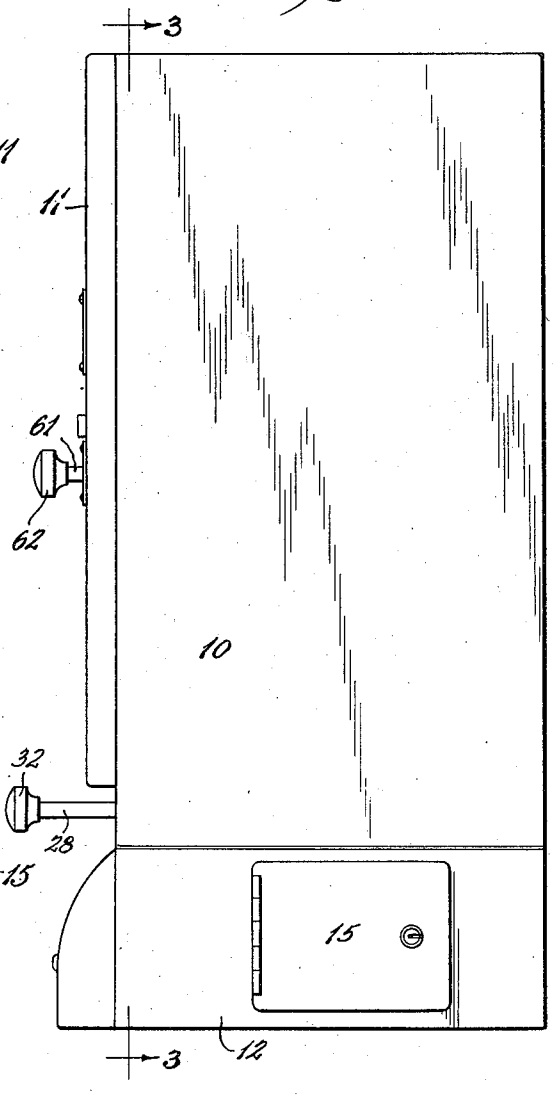


Fig.2



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Filed July 22, 1938 4 Sheets-Sheet 2

Fig. 3

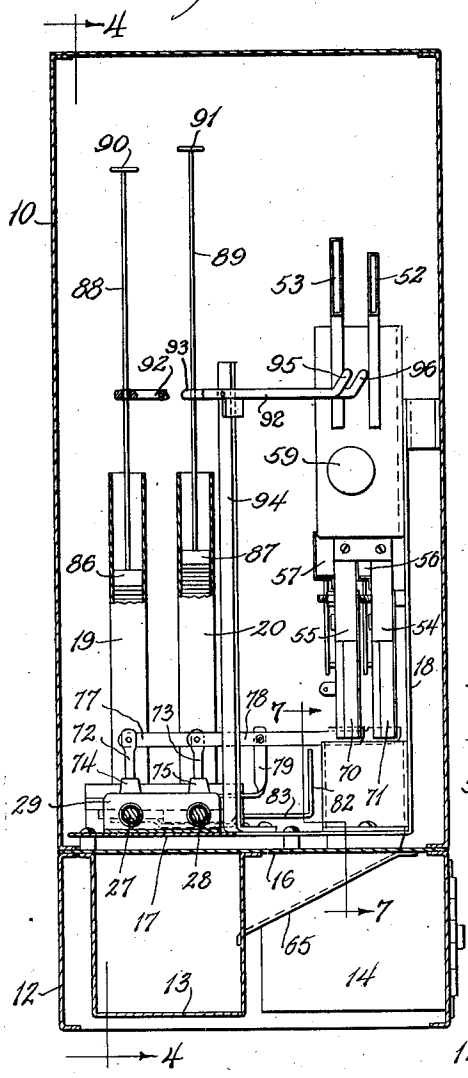
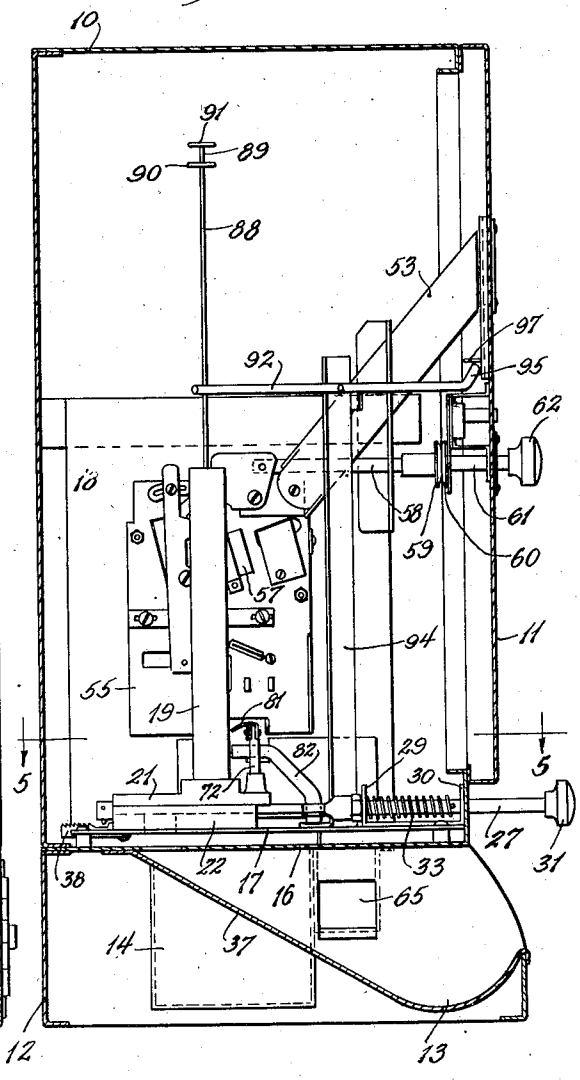


Fig. 4



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COIN CHANGING MACHINE

Filed July 22, 1938 4 Sheets-Sheet 3

Fig. 5

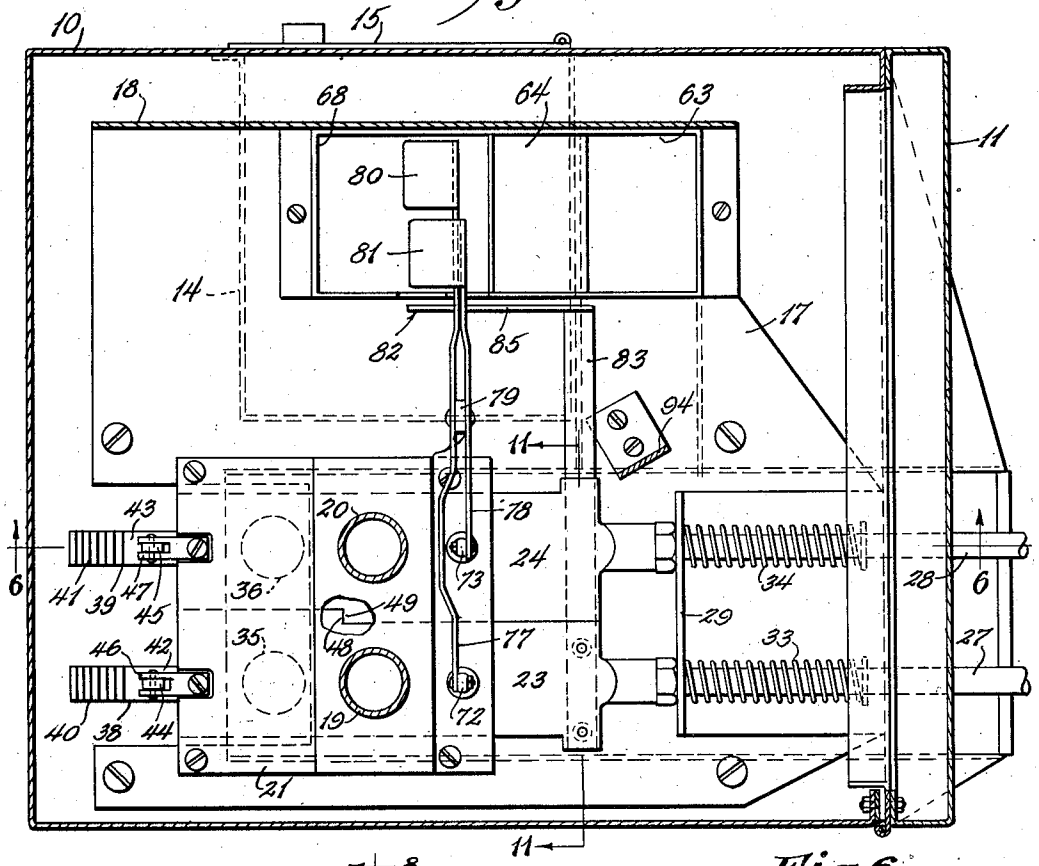
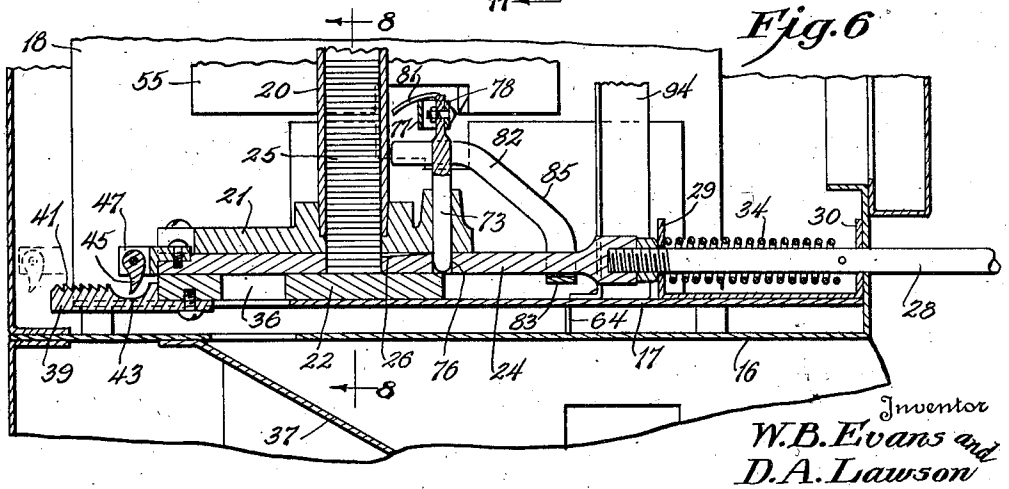


Fig. 6



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COIN CHANGING MACHINE

Filed July 22, 1938 4 Sheets-Sheet 4

Fig. 7

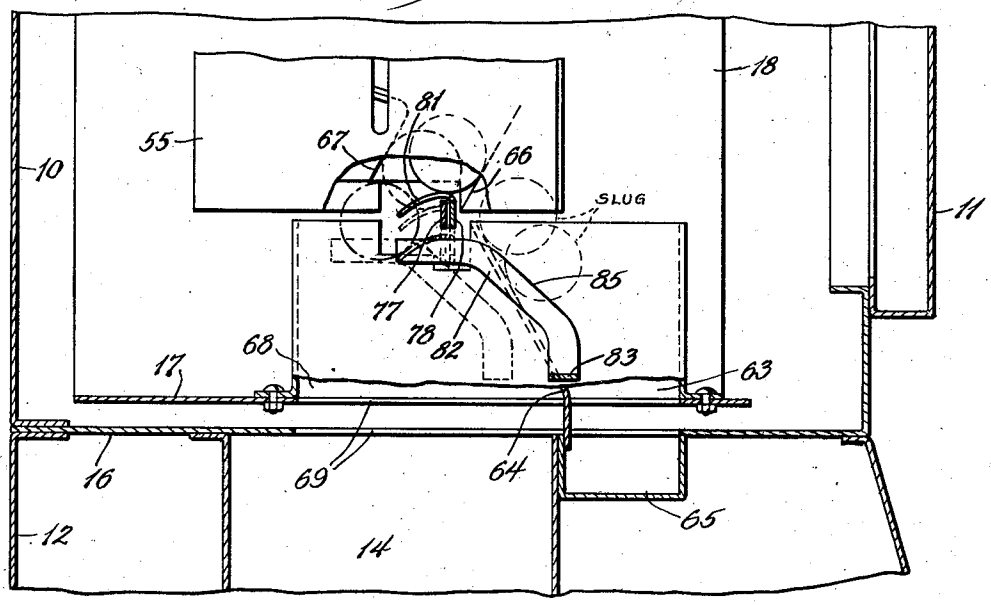


Fig. 8

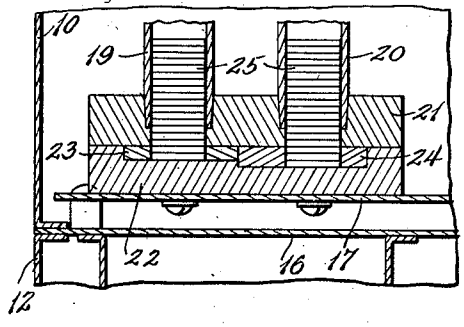


Fig. 9

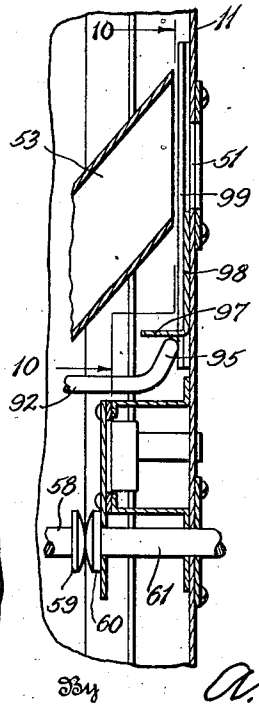


Fig. 10

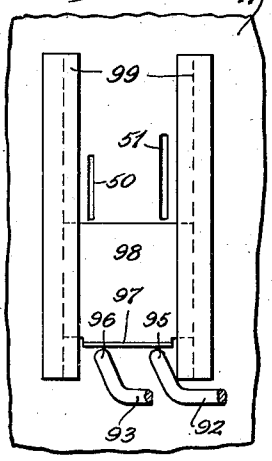
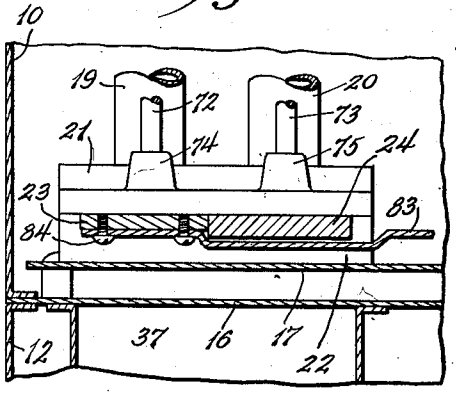


Fig. 11



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Patented Dec. 26, 1939 2,185,148

UNITED STATES PATENT OFFICE

2,185,148

COIN CHANGING MACHINE

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Application July 22, 1938, Serial No. 220,819

7 Claims. (Cl. 194—22)

This invention relates to coin changing machines and, among other objects, aims to provide a greatly improved, simplified, rugged and reliable machine having multiple magazines for holding small change and novel mechanical means for delivering the exact change for genuine coins deposited in the machine. Another object of the invention is to combine effective slug rejecting means with such coin changing mechanism, thereby making the machines practically foolproof. The idea is to provide a small dependable machine of this type for use in places of amusement, telephone booths, subway stations, restaurants and sundry business establishments to enable customers to get correct change instantly without waiting for or disturbing a cashier. For instance, there is a great need for such machines to exchange nickels for quarters or dimes.

Other aims and advantages of the invention will appear in the specification, when considered in connection with the accompanying drawings, wherein:

Fig. 1 is a front elevation of a machine embodying the invention;

Fig. 2 is a side elevation of the machine shown in Fig. 1;

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 2;

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 3;

Fig. 5 is a sectional view taken on the line 5—5 of Fig. 4;

Fig. 6 is a sectional view taken on the line 6—6 of Fig. 5;

Fig. 7 is a fragmentary sectional view taken on the line 7—7 of Fig. 3;

Fig. 8 is a fragmentary sectional view taken on the line 8—8 of Fig. 6;

Fig. 9 is a fragmentary sectional view taken on the line 9—9 of Fig. 3;

Fig. 10 is a fragmentary sectional view taken on the line 10—10 of Fig. 9;

Fig. 11 is a fragmentary sectional view taken on the line 11—11 of Fig. 5.

Referring particularly to the drawings, the simplest type of the machine selected for illustrative purposes is designed for making change of one denomination for either of two coins of larger denomination. For the purposes of this description and in view of the wide demand, the illustrated machine will be explained as a nickel changer for quarters or dimes. In this example, nickels are stored in separate magazines or tubes in the machine and are adapted to be delivered in exchange for a genuine quarter or a dime inserted through appropriate slots. However, the same type of mechanism may be used for making penny change for nickels.

In the illustrated example, all of the mechanism is mounted in a suitable metal casing or housing 10 having a hinged door 11 adapted to be locked with a key. This casing may be and preferably is made of enameled sheet metal and is secured to a base 12 having a delivery hopper 13 open at the front below the door and a coin receiving hopper 14 at the back shown as opening through one side but locked closed by a small door 15. A partition 16 or floor for the casing separates the base from the casing and provides a support for the mechanism.

All of the mechanism within the casing is shown as being assembled or mounted on a supporting plate 17 having a vertical wall 18 at one side and removably secured to the bottom 16 and one side wall of the casing so that the mechanism may be removed as a unit or manufactured as a standard unit and assembled in any suitable form of casing.

In this example, a pair of vertical tubular magazines 19 and 20 are mounted on a plate 21 secured to a guide block 22 on the supporting plate 17. A pair of adjacent reciprocating slides 23 and 24 for the magazines extend through the guide block 22 and are adapted to be manually operated to deliver the correct change from the magazines to the change hopper. As shown, the slides have coin receiving openings normally registering with the magazine tubes and the thicknesses of the slides determine the number of coins 25 which they will deliver. In Fig. 6 the slide 24 is shown as being of such thickness as to accommodate three new nickels of the normal thickness, but it has a slightly beveled upper face 26 to produce a thinner pushing edge to make allowance for three worn nickels of minimum combined permissible thickness. The slide 23 is of such thickness as to dispense two nickels and is likewise provided with a slightly thinner pushing edge to take care of two nickels of minimum combined permissible thickness.

The slides have pusher rods 27 and 28 connected to their forward ends and extending through spaced upstanding flanges 29 and 30 as well as the front wall of the casing below the door and having push knobs 31 and 32 on their outer ends. They carry compression coil springs 33 and 34 adapted to be compressed against the inner flange 29 when the slides are pushed home. When they are pushed home the nickel filled

coin openings register with dispensing openings 35 and 36 in the base block 22 and drop through them and similar openings in the supporting plate and casing bottom on a forwardly and downwardly inclined bottom wall or ramp 37 which guides the coins into the change delivery hopper 13. Both slides are normally locked and are adapted to be unlocked or released by genuine coins inserted for change, as will presently be described. When they are thus released it is important that they be pushed to their dispensing positions before they are permitted to return to their normal positions so that a customer will not be prevented from getting change even if his thumb slips off a knob before he pushes the slide home. To obviate this, the guide block carries racks 38 and 39 at its rear end having rearwardly inclined teeth 40 and 41 at their outer ends and depressions 42 and 43 at their inner ends cooperating with depending pivoted pawls 44 and 45 on forked brackets 46 and 47 connected to the rear ends of the slides (Figs. 5 and 6). As shown in Fig. 6, the pawls normally hang in the rack depressions 42 and 43 but ride on the rack teeth as the slides are pushed home and thus lock the slides in their intermediate positions. However, the full strokes of the slides will cause the pawls to ride off the rear ends of the racks to the dotted position in Fig. 6. Then, they are free to ride back over the rack teeth to their normal positions.

The mechanism is so designed that when a dime is inserted in the machine, it will release the slide 23 to be actuated and deliver two nickels and, when a quarter is inserted it will release both slides to be actuated and deliver five nickels, two from one magazine and three from the other. This mode of operation is important because it is difficult, if not impossible, to make proper allowance for the combined thickness of five worn nickels in a single slide. That is to say, a single magazine machine of this type might deliver six worn nickels in exchange for a quarter. Both slides are designed to be operated simultaneously to deliver the five nickels in exchange for a quarter. In Fig. 5, the slide 23 has a lateral shoulder 48 engaged by a complemental shoulder 49 on the slide 24, so that the slide 23 may be actuated alone, but the slide 24 will actuate the slide 23. Thus, only the knob 32 need be pushed to obtain change for a quarter from both magazines. Incidentally, the knobs may be suitably marked for that purpose. Dimes and quarters are adapted to be inserted in the machine through slots 50 and 51 in the door and are guided through chutes 52 and 53 into slug rejectors 54 and 55 of a well known type embodying the usual magnets, feeler and thickness gauges and the like. These slug rejectors are designed to divert spurious coins and return them to the operator. The slugs which contain iron are stopped or detained by magnets 56 and 57 (Fig. 3) and adapted to be released and rejected by a plunger 58 projecting toward the front of the machine and having a knob 59 coacting with a head 60 on a push rod 61 carried by and extending through the front door and having a push button 62. This knob also constitutes the door handle. Both of the slug rejectors are secured in spaced relation to the vertical wall 18 of the supporting plate 17 and they are arranged to deliver slugs and genuine coins through the bottom. The slugs are adapted to be dropped through the forward portions of the bottom into a guide box compartment 63 against a partition member 64 as indicated in dotted lines in Fig. 7. From this box, they drop on a ramp 65 in the case and slide into the change hopper 13. The genuine coins are delivered between guiding partitions or shoulder members 66 and 67 behind and to one side of the slug passage and the guide box partition 64 and are adapted to fall through a guide box 68 and openings 69 in the support and bottom plates into the genuine coin hopper 14 or a drawer therein adapted to be removed through the side door 15. In Fig. 3, the dime and quarter chutes 70 and 71 through which the coins and slugs are delivered are shown at the bottom of the slug rejectors. The genuine coins fall through the left hand sides of them; while the slugs fall through the right hand sides and in front of the paths of the genuine coins.

The genuine coins operate the slide releasing means when they reach the bottoms of their respective chutes or at the outlets of the two slug rejectors. In this example, the slide locking and releasing means comprises a pair of plungers 72 and 73 guided in bosses 74 and 75 on the top plate 21 of the slide block. These plungers cooperate with registering openings in the respective slides when they are fully retracted, one such opening 76 in the slide 24 being shown in Fig. 6. Levers 77 and 78 pivoted to the upper ends of the respective plungers are tiltably and pivotally mounted on an L-shaped bracket 79 conveniently secured to the cover plate 21 and these levers are arranged side by side having coin platforms 80 and 81 below the coin outlets of the respective slug rejectors 54 and 55. The platform 80 is adapted to be struck and depressed by a dime as it reaches the lower end of its chute 70 and the platform 81 is adapted to be struck and depressed by a quarter as it reaches the lower end of its chute 71. The weight of these coins is sufficient to raise the plungers and hold them in slide releasing position. Incidentally, the plungers slightly overbalance the tilting platform levers so that they will lock the slides automatically when the slides are returned to their normal positions. Also, the platform 81 for the quarters overlaps the lever 77 so that a quarter will tilt both of the levers and release both of the plungers from the slides. A dime falling on the platform 80 will release the plunger 72 only.

Referring again to Fig. 7, the genuine coins are restrained on the platforms at their outlets from the slug rejector until the slides have been started on their coin delivering or dispensing movement by pushing one or the other of the push knobs 31 and 32. Both of the levers are restrained in their tilting movement to hold the coins on their respective platforms by means of a cam shaped arm 82 conveniently formed of a bent piece of strap metal having a horizontal arm 83 below the slides and secured to the slide 23 by screws 84 as shown in Fig. 11. The arrangement is such that the cam shaped arm or horn always moves with the slide 23. This slide had to be moved, as previously explained, when a quarter is inserted for change. The cam retains both of the levers 77 and 78 in their coin holding or retaining position until a forwardly and downwardly inclined face 85 of the cam member passes the lower edge of the lever 77. Then the weight of a dime or quarter, as the case may be, will depress the lever 77 or both the levers 77 and 78 so that the platforms will be further depressed below the lower ends of the chutes and release the coin to pass on into the guide box 68 and thence into the hopper 14. Incidentally, the platforms 80 and 81 are bent rearwardly and downwardly as best shown in Fig. 7.

to release the coins as they are depressed below their retaining positions.

The machine is also designed to prevent the insertion of coins in the slots when the respective magazines are empty or require refilling. For this purpose, the magazines have coin followers or weighted blocks 86 and 87, similar to pistons, to which are connected vertical rods 88 and 89 having heads 90 and 91 at their upper ends. The stems or rods 88 and 89 are slidably mounted in openings at the rear ends of a pair of baffle operating levers 92 and 93 which are pivoted intermediate their ends to an upstanding strap metal arm 94 secured at its lower end to the supporting plate 17. The forward ends of these levers have upwardly bent fingers 95 and 96 each of which is adapted to engage a rearwardly extending flange 97 on an angle baffle plate 98 which is slidably mounted between suitable guide strips 99 secured to the inner wall of the door. The arrangement of the levers is such that they are normally overbalanced by the followers and the forward end or fingers lie below the coin baffle when the coins in the magazines support the followers above the bottom of the magazines. However, either follower, when it reaches the bottom of its magazine, will operate its lever as the coins are dispensed and the finger on that lever will raise the coin baffle to cover or partially cover the coin slots. The baffle then serves not only to indicate that the change coins or nickels are almost exhausted from either or both magazines, but also to prevent the insertion of a dime or quarter for change.

In the operation, the magazines are filled with change coins and both of the doors are locked closed. A customer may then insert either a dime or a quarter into the appropriate slot for change and push the proper knob or slide pusher to receive the correct change in the change hopper. When a dime is inserted the left hand knob 31 may be pushed home to deliver two nickels into the change hopper. When a quarter is inserted the right hand knob may be pushed to operate both slides and deliver five nickels—two from one magazine and three from the other, as hereinbefore explained. If either of the knobs is accidentally released before it is pushed all the way to its coin dispensing position, the toothed racks and the locking pawls at the rear of the slides will prevent the return of the slide or slides to the normal locked position and give the customer an opportunity to push the slide or slides all the way home before they are released to be returned by the compression springs. The slides are automatically returned by the compression springs and again locked in their normal positions by the locking plungers 72 and 73 so that they can again be operated upon the insertion of another coin. The action of the slug rejectors being well known and having been generally described herein, need not be repeated. The slugs are returned from the machine to the coin delivering hopper so that they may be removed by the operator or left in it. When the genuine coin compartment is filled, or partially filled, the coins may be removed therefrom and credited to the machine. Then the change in the magazines may be replenished accordingly.

What is claimed is:

1. A money changing machine of the character described comprising, in combination, a casing; two adjacent tubular magazines for holding coins or the like of the same denomination; a receiving chute for a coin of a different denomination to be changed; separate interconnected change delivering slides cooperating with said magazines each arranged below a magazine and adapted to receive and deliver a predetermined number of change coins, the combined thickness of which will not vary sufficiently to permit more than said predetermined number to be delivered; releasable locking devices connected to each of said slides; and means associated with the chute and connected to said locking devices to be operated by a genuine coin of said different denomination passing through the chute to release both of said locking devices simultaneously whereby both slides may be actuated to deliver the corresponding change in coins of the same denomination from both slides.

2. In a slot machine for dispensing change coins, a pair of magazines for holding coins or the like of the same denomination, two chutes respectively receiving different coins of predetermined larger denominations to be changed; two manually operable dispensing devices cooperating with the respective magazines; interconnecting locking means associated with the chutes and adapted to be operated by inserted coins to be changed, said locking means being connected to said dispensing devices so as to release both of them to discharge change coins from both magazines upon insertion of a coin of one denomination to be changed and to release only one of them to discharge change coins from one of the magazines upon insertion of a coin of a different denomination to be changed.

3. A money changing machine of the character described comprising, in combination, a casing; a pair of adjacent tubular magazines in the casing for holding coins or the like of the same denomination; a pair of receiving chutes for separate coins of different larger denominations than those in the magazines; separate change delivering slides cooperating with the magazines each adapted to receive and deliver a predetermined number of change coins; releasable locking devices connected to each of said slides; means on said locking devices associated with the respective chutes and adapted to be operated by genuine coins passing through the chutes to release the respective locking devices; and means connecting said locking devices to be actuated simultaneously by a coin of the larger denomination inserted in its chute, whereby the predetermined number of coins in both slides may be delivered from the magazines by actuation of the slides, said connecting means being ineffective when a coin of the other denomination is inserted for change, so that only one of the slides is unlocked for manual actuation to deliver change.

4. A money changing machine for changing quarters and dimes into nickels comprising, in combination, a casing; a pair of magazines for containing nickels in the casing; a receiving and delivering slide for each of said magazines; separate chutes for quarters and dimes extending downwardly into the casing; tiltable locking levers for said slides, one extending below the quarter chute and the other below the dime chute to be released by said coins passing through the chutes, so that the slides may be actuated; and means connecting said levers, one to the other, to be actuated simultaneously by a quarter to deliver three nickels from one magazine and two nickels from the other magazine, said connecting means being ineffective when a dime is inserted for change, so that only one lever is actuated by

the dime and the change therefor is delivered from one magazine.

5. A money changing machine for changing quarters and dimes into nickels comprising, in combination, a casing; a pair of adjacent vertical magazines for containing nickels in the casing; a receiving and delivering slide for each of said magazines, one slide having a pocket to hold two nickels and the other slide having a pocket to hold three nickels; a pair of separate chutes for quarters and dimes extending downwardly into the casing; slots in one wall of the casing cooperating with said chutes; locking plungers coacting with each of the slides; pivoted levers connected to operate said plungers, each having a platform under one of said chutes on which the coins to be changed are adapted to fall; a flange on the quarter operated lever overlying the dime operated lever so that a quarter delivered through its chute will operate both of said locking plungers to release said slides for manual actuation to deliver three nickels from one magazine and two nickels from the other, said dime operated lever being free to be actuated independently when a dime passes through its chute so that the corresponding slide will be released to deliver two nickels from one magazine.

6. A coin changing machine for changing quarters and dimes into nickels comprising, in combination, a casing; a pair of adjacent tubular magazines for containing nickels in the casing; slides for each of said magazines, one having a pocket to receive two nickels and the other a pocket to receive three nickels; a pair of adjacent chutes extending downwardly into the casing, one for receiving dimes and the other for receiving quarters; releasable locking members for the slides, including a pair of slightly overbalanced levers each having a platform on which the coins fall from said chutes to operate said levers by the weight of said coins; means on the quarter operated lever connected to impart actuation to the dime operated lever so that, when a quarter is inserted for change, both slides are released for actuation to deliver three nickels from one magazine and two nickels from the other, said last named means being ineffective when a dime is inserted for change whereby the dime operated lever will be actuated alone to release the slide carrying two nickels; a cam member mounted on the slide carrying two nickels and connected to raise both levers when the slides are retracted, said cam being shaped to clear the levers when the slide carrying the two nickels is actuated to deliver change either for a dime or a part of the change for a quarter; and ratchet means associated with both slides connected to prevent them from being prematurely retracted and relocked after the cam clears the levers and the coin to be changed falls off its platform, to insure that the customer will not be defrauded.

7. A money changing machine for changing quarters and dimes into nickels comprising, in combination, a casing; a pair of magazines for containing nickels within the casing; a pair of adjacent dispensing slides for the magazines, one having a pocket for receiving and delivering two nickels and the other having a pocket for receiving and delivering three nickels; a pair of chutes extending downwardly into the casing, one for quarters and the other for dimes; releasable locking members for the slides having platforms on which the quarters and dimes are adapted to fall from their respective chutes; means connecting the quarter operated locking member to actuate the other locking member and thereby release both slides for manual actuation to deliver three nickels from one magazine and two nickels from the other, said last named means being ineffective when a dime is inserted for change; and interlocking means on said slides, so arranged that both slides may be operated simultaneously when a predetermined one of the slides is actuated, or the other slide only may be operated when it is actuated.

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