Aug. 13, 1929. E. J. BROWN 1,724,638

COIN FREED MACHINE FOR VENDING PACKAGED GOODS

Filed Sept. 23, 1926 4 Sheets-Sheet 1

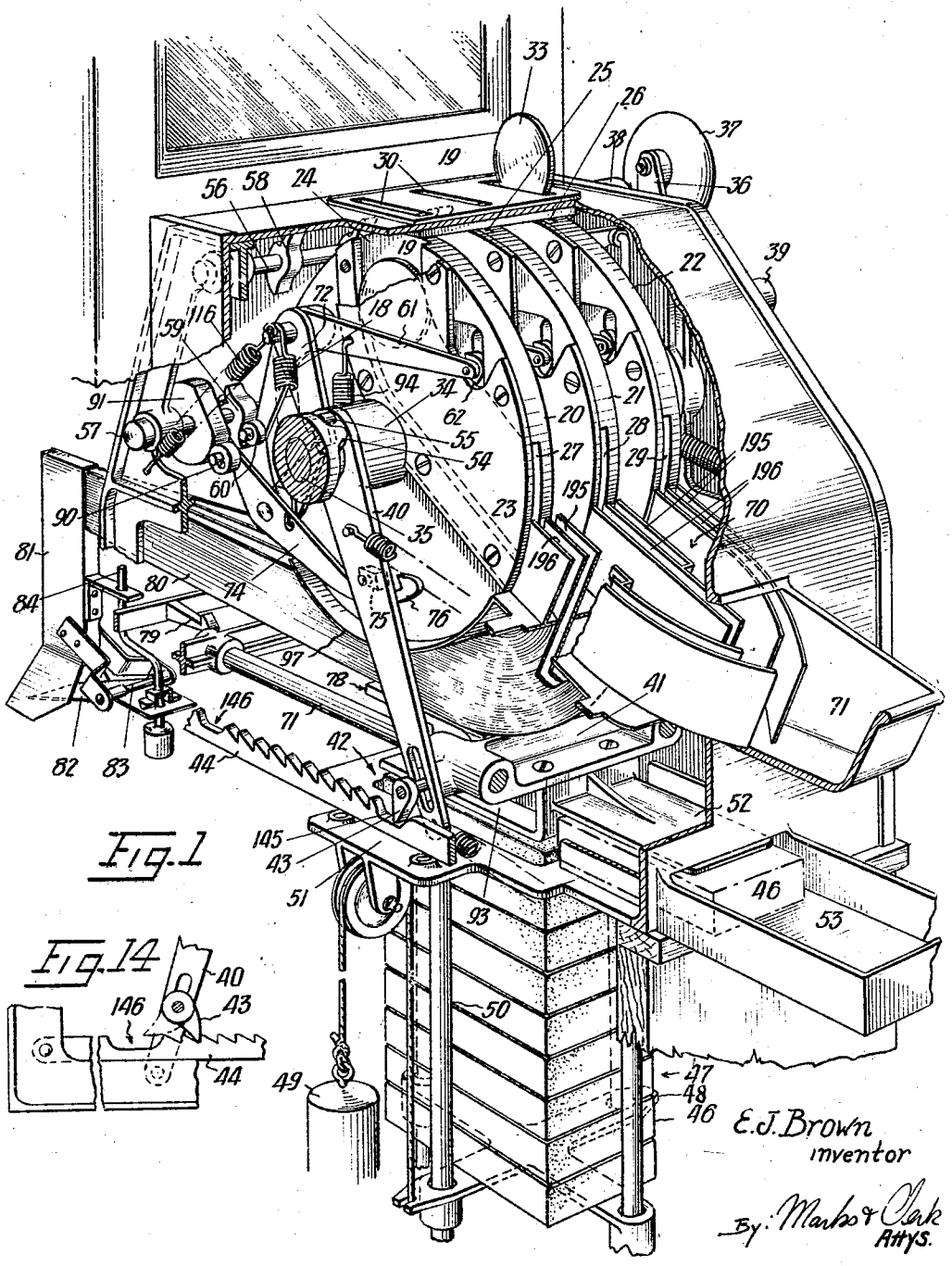


Fig. 1

Fig. 1A

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Fig. 13

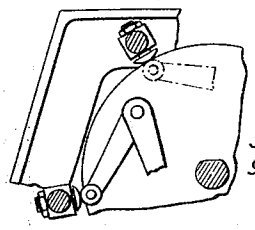


Fig. 2

Fig. 12

E. J. Brown
INVENTOR

By: Marks & Clark
Attys

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Fig. 3

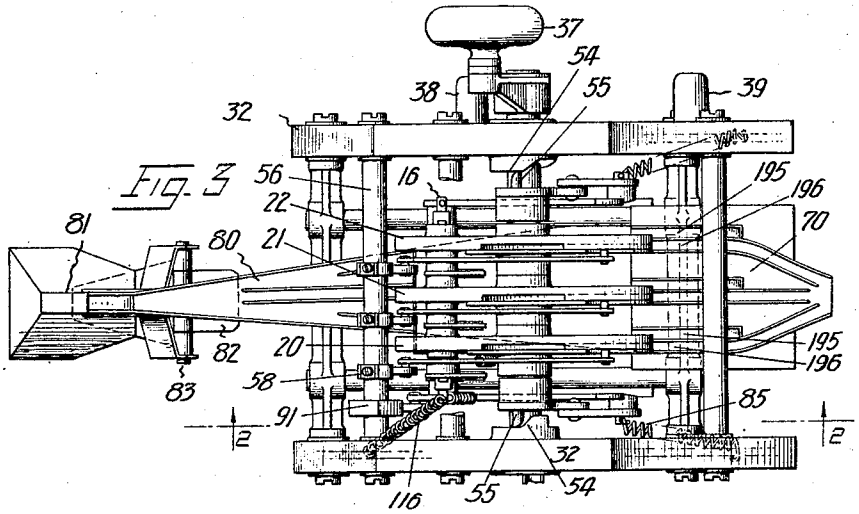


Fig. 4

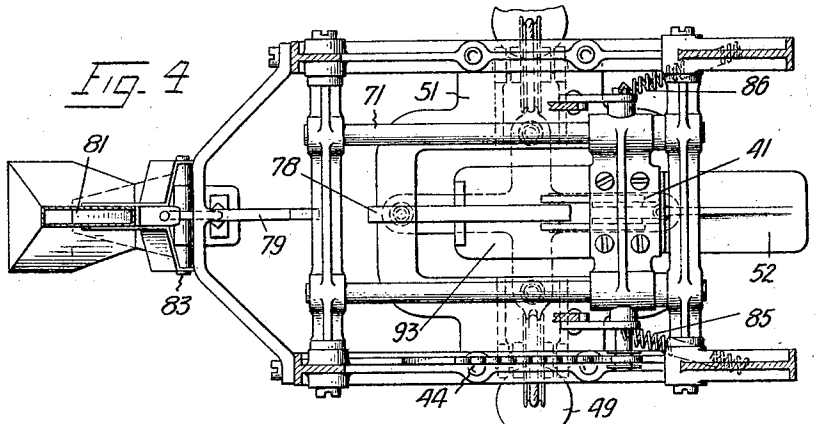
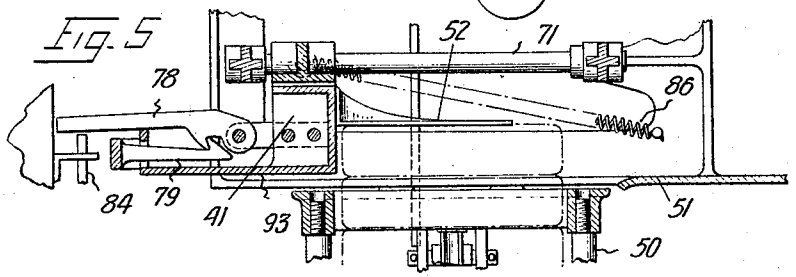


Fig. 5



E. J. Brown
INVENTOR

By: Marks & Clerk
Attys

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Fig. 6

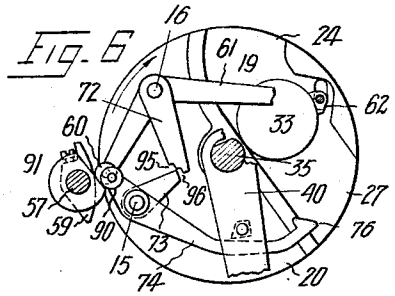


Fig. 7

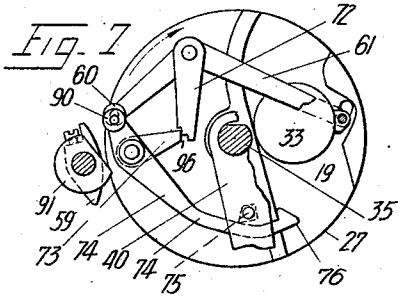


Fig. 9

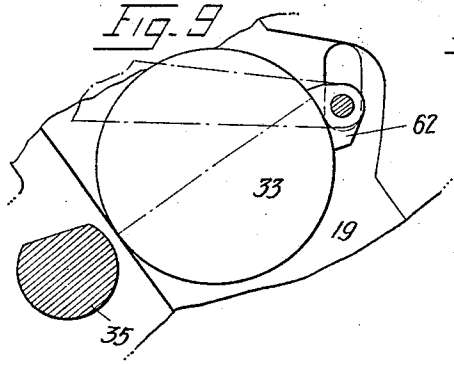


Fig. 8

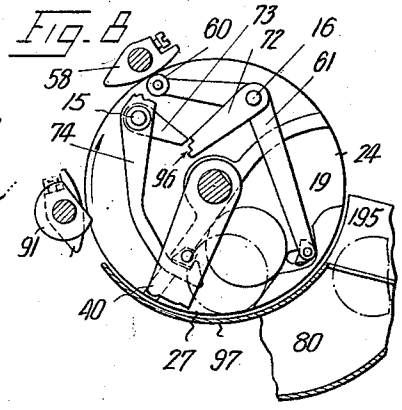


Fig. 10

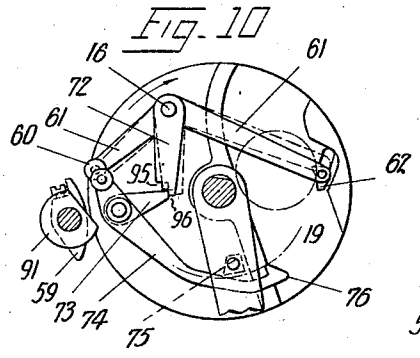
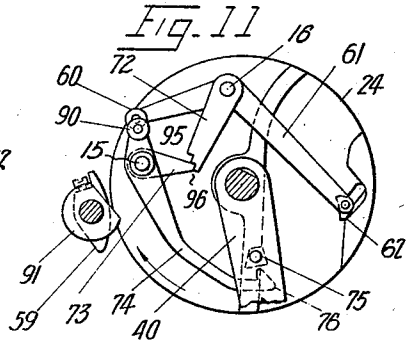


Fig. 11



E. J. Brown
INVENTOR

By: Marks & Clerk
Attys

Patented Aug. 13, 1929. 1,724,638

UNITED STATES PATENT OFFICE.

EDWIN JOHN BROWN, OF DARLINGHURST, NEAR SYDNEY, NEW SOUTH WALES, AUSTRALIA.

COIN-FREED MACHINE FOR VENDING PACKAGED GOODS.

Application filed September 23, 1926, Serial No. 137,312, and in Australia April 12, 1926.

This invention relates to coin freed mechanism for effecting and controlling the delivery of packeted goods. It has been devised primarily for the delivery of small packets which are successively brought to delivery position by a feeder after each operation of the coin freed mechanism. In an arrangement in which the stock of goods is carried on an elevator or rising platform the goods are removed by operation of the machine from the top of the tier on the elevator or platform one by one by a push slide, which moves them into a receptacle from which they may be taken by the purchaser. The invention includes means for making the mechanism inoperative for further deliveries after each delivery of a packet of goods has been effected until the coin freed mechanism has been again operated, and means for rejecting coins or tokens not those for which the machine is set, and also means for preventing illicit operation of the machine. The mechanism consists of one or more units, and when two or more units are used they may be respectively arranged for control by like coins or different coins and all of them may be arranged for coaction so that unless the correct coins have been inserted in the several pay slots, any movement of the hand control will result only in the rejection and ejection of the coins which have been inserted. Only when all the coins are of the proper denomination and have been all inserted before the operating device is moved will it be practicable to obtain delivery of a packet of the goods. Thus, the machine may be arranged for the sale of goods at any prices which may be represented by two, three, or maybe four coins, which may be of the same or different denominations.

In the accompanying drawings a three coin machine is illustrated:—

Fig. 1 is a perspective view of the machine with certain portions torn away to expose the parts within;

Fig. 2 is a vertical sectional elevation within the casing showing the trip mechanism on the side of the nearest coin pocket;

Fig. 3 is a top plan of the machine without the casing;

Fig. 4 is a horizontal sectional plan on the plane 4—4 Fig. 2;

Fig. 5 is a fragmentary vertical section showing the position of certain of the parts at the moment preceding delivery of the top packet from the tier of packets of goods on the elevator;

Figs. 6 to 8 represent the mechanical actions of the trip gear on each coin pocket in the operation of the machine;

Fig. 9 is an enlarged detail of one of the elements;

Figs. 10 and 11 represent the mechanical actions of the trip gear when a wrong coin, or the wrong number of coins has been inserted in the coin slots;

Fig. 12 is a fragmentary sectional view showing a shutter for closing the coin slots automatically when the supply of packets on the elevator has been exhausted;

Fig. 13 is a fragmentary elevational view explanatory of an alternative method of constructing the fixed strikers which are engaged by tappet rollers on certain moving elements; and

Fig. 14 is a fragmentary view explanatory of a check pawl arrangement associated with the feed slide for ensuring full throw of the slide, thus to ensure that at each throw it will be brought to operative position in relation to the top packet of goods on the elevator in order to ensure delivery of that packet in its next forward movement.

20, 21 and 22 are discs each recessed on one side and fitted with cover plates 23 which close the recesses laterally, forming coin pockets 19. These recesses extend through the edges of the discs to form coin receiving slots 24, 25, 26, at one end of the recesses, and the coin ejector slots 27, 28 and 29, at the other ends. In the idle position of the machine, the slots 24, 25, 26 register with the coin slots 30 in the top of the casing 32. 33 represents a coin being inserted into the slot 26.

Each of the discs 20, 21, 22 carries on one side of it a trip lever assembly; this assembly is illustrated in its various positions during operation in Figs. 6 to 11 of the drawings. All three discs 20, 21, 22 are fixed on a hub 34 which is rotatably fixed on a shaft 35 but is slidable endwise on it; the ends of this shaft are mounted for rotation in the frame 32, and the assembly is rotatable through an angle of about 90° by means of a crank 36, which is fixed on one end of the shaft 35, 37 being the hand piece on said

crank. The crank 36 is movable between limit stops 38 and 39; to operate the machine it is moved from its idle position contacting with the stop 38 until it meets the stop 39; being then released, it is automatically returned by the mechanism to its idle position against the stop 38.

54 are face cams one of which is fixed on each side of the frame. These cams coact with cams 55 on arms 40 which are freely mounted on the shaft 35, and they are so disposed as to impart endwise to and fro movement to the hub 34 and to the disc assembly it carries when the shaft 35 is rotated, provided that the correct coins have been inserted in the coin pockets 19. The rocking movement applied to the shaft 35 by the crank 36 and transmitted through it to the hub 34 and the discs 20, 21, 22 is applied by the drag levers 74 through the slide arms 40 to the ejector slide 41 to which said arms are connected through the pin and slot arrangement 42. The end of one of the pins carries a pendent pawl 43, and in the to and fro movement of the ejector slide 41 this pawl 43 trails over a rack 44. At one end of the rack 44 is a gap 145, and at its other end a gap 146; these gaps offer clearance room for the pawl 43 to swing in either direction and reverse its trailing position. In the back movement of the slide 41, the pawl 43 trails back over the rack 44, and the engagement of the pawl in the rack prevents reversal of the backward motion until the slide 41 has made a full throw and has thereby brought the pawl 43 into the back gap 146; then forward motion may again take place (see Fig. 14). In this forward motion a packet of goods 46 is pushed by the slide 41 off the top of the tier 47 of packets which is carried on the elevator 48.

The machine is charged by lowering the elevator and stacking the goods upon it in a vertical tier. 49 are the counterweights which function to raise the elevator, and 50 are frame rods which form guides to maintain the packets 46 in alignment on the elevator. The table plate 51 is apertured in register with the top of the tier of packets 46 to allow the top packet to emerge upwardly when the slide 41 is retired over it to the full back position (Fig. 5). When the slide is so retired, the top packet of goods rises through the table 51, until its upward movement is checked by its contact with the fore plate 52 which projects forwardly from the slide 41 above the table plate 51. There is vertical room for only one packet in the space between the table plate 51 and the fore plate 52.

When the push slide 41 is moved from the full back position forwardly, the top packet of goods 46 is pushed off the stack on the elevator, over the table 51, into the open top delivery box 53, whence it may be lifted out by the purchaser. The aperture in the table 51 is closed by the bottom plate 93 of the slide as the slide moves forwardly, so that further upward movement of the elevator cannot occur until another payment has been made and the crank operated to again move the slide to the back position.

56 and 57 are cross bars which are fixed transversely between the side frame members; these bars each carry an assembly of tappet strikers for each of the discs, 58 being one of these strikers on the bar 56, and 59 one of these strikers on the bar 57; a striker 91 is also fixed on the bar 57. The strikers 58 and 59 are respectively engaged by the tappet rollers 60 on the back ends of the bell crank levers 61, and the striker 91 is engaged by a tappet roller 90 on the back end of one of the drag levers 74. Each disc (20, 21, 22) carries a bell crank lever 61 freely mounted on a spindle 16. At their forward ends the levers 61 are armed with offset rocking fingers 62 which project laterally through slots in the cover plates 23 into the coin pockets 19 in the respective discs. When a coin is inserted in one of the coin pockets 19 it falls by gravity therein until its downward rolling movement in the pocket is checked, which happens when it comes in contact with the finger 62 (Fig. 2) This finger is positioned to throttle the pocket just sufficiently to intercept a coin of the proper denomination. Coins which are undersized will pass the rocking fingers. When the appropriate coins have been inserted in the respective pockets according to the setting of the machine, and the crank 36 is reciprocated, all three bell cranks 61 are tripped upward when the strikers 59 are engaged by the tappet rollers 60. This tripping movement of the bell cranks 61 lifts the rocking fingers 62 very slightly, not enough to liberate the coins from their grip, but just sufficient to permit the coins to pass a very short distance further down into the coin pockets. As soon as the rollers 60 have cleared the strikers 59, the springs 94 exercise a downward pull on the bell cranks 61 causing the rocking fingers 62 to clamp the coins (see Fig. 9). The coins thus block the bell cranks and prevent their restoration to original position and consequently hold the catch levers 72 at the advance position which is seen in Figs. 6 and 7, so that their bottom notches 96 come out of the range of the pawls 73 which are fixed on the spindle 15 of the drag levers 74. As the discs continue their rotation, the tappet roller 90 on the end of the drag lever 74 clears the cam 91 by which previously the levers 74 were tipped downward and the drag levers are thus permitted to be moved upwardly by their springs 18 and come into operative relation with the lug pins 75 on the sides of the slide arms 40. The rotational movement of the discs continuing, the lugs 75 are engaged by the hooks 76 on the ends

of the drag levers 74 and the arms 40 are moved backward (Fig. 8) thereby drawing back the slide 41 on its guide runners 71 until the lock hook 78 on the back end of it engages the staple hook 79 which is fixed on the frame. The engagement of the hook 78 with the hook 79 locks the slide and the arms 40 at the full retired position, as seen in Fig. 5. During this backward movement the cams 55 coact with the cams 54 to move the disc assembly along the shaft 35. Just before completion of the movement, the rollers 60 on the back ends of the bell cranks 61 touch the fixed strikers 58 and the bell cranks are thus tipped sufficiently to release the grip of the rocking fingers 62 on the coins in the pockets 19 and the coins thereupon fall by gravity to the bottoms of the pockets and rest on the sector guard plate 97 (see Fig. 8). After the completion of the backward movement the discs are returned to their original position by the springs 116. During this return forward movement of the discs, the coins on the guard plate 97 are swept up over it and pass out by gravity into the inner races 195 in the chute 70 and through these races are directed backward into the coin races 80, whence they fall through the vertical race 81 into which the races 80 merge, and on falling through the race 81 strike the pallet 82. This pallet is carried on a light rocking spindle 83 and it is counterbalanced; it is rocked by the impact of the falling coins; after moving it, the coins fall into a receiver box below (not shown). A finger 84 projecting upward from the counterbalanced end of the pallet 82 is disposed in operative relation to the lock hook 78. Accordingly, when the pallet 82 is depressed by a coin or coins striking upon it, the lock hook 78 is lifted and the slider 41 is thus released from the staple hook 79. The springs 85, 86, and 14 then operate to pull the slider 41 and the arms 40 forward to effect delivery of a package 46 into the receptacle 53.

The trip mechanism is set only when the correct coins are inserted in each of the coin apertures. If less than three coins (in the case of a three-coin machine), or if one or more coins of wrong dimension be inserted and the crank 36 then reciprocated, a partial rotation will be applied to the discs 20, 21, 22. In this rotation the bell crank levers 61 will be tipped by the strikers 59 but the absence of one or more correct coins in the pockets permits the bell crank controlling the empty pocket, or the pocket which contains an undersized coin, to be returned by its spring 94 as shown in Figs. 10 and 11, with the result that the first notch 96 in its associated lever 72 again engages the pawl 73 and thereby prevents rising movement of the drag levers 74, and consequently the offset pins 75 of the slide arms 40 cannot be engaged by the hooks 76 of the drag levers 74. The roller 90 on the back end of the drag lever 74 is held up by contact with the striker 91 for a short time after the rollers 60 on the back ends of the bell cranks 61 have passed the strikers 59 and there is consequently time for the re-engagement of the pawl 73 in the bottom notch 96 of the catch lever 72 before the springs 18 can pull up the drag levers 74 to bring the hooks 76 into operative relation to the offset pins 75 on the slide arms 40. As the slide arms are in these circumstances not moved, there is no endwise movement applied to the disc assembly. When, however, correct coins have been used, the slide arms are engaged by the drag levers and endwise movement is applied to the disc assembly. When the disc assembly is moved endwise, the coins are passed, as before described, into the receiver box. When it is not moved endwise, the delivery slide 41 is not moved and a packet of goods is therefore not delivered, but in that case, in the return rotation of the disc assembly the coins are swept up the sector guard plate 97 and therefrom pass by gravity out through the races 196 in the chute 70 and are delivered to the return box 71, whence they may be taken back by the person who inserted them in the machine.

If a coin of smaller dimensions than the machine is arranged for is put into one of the pockets, such coin runs past the finger 62 through the coin race 196 in the chute 70, whence it falls into the return box 71, from which it may be recovered by the person who inserted it. In the event of odd coins being inserted, then all the coins will be returned, the smaller coins at once, and the correct coin or coins when the crank is operated. The machine operates to deliver goods only when correct coins have been inserted in each of the respective coin slots before the crank 36 is operated.

It will consequently be understood that it is quite possible to arrange this machine so that each coin pocket may take a coin of a different denomination. Thus one disc may be operatable by means of a penny, another by means of a shilling, and the third by means of a sixpence, and so on, the necessary adjustment of the rocking fingers 62 and appropriate modification in the dimensions of the coin slots and coin pockets also made in each particular case.

The hand crank may be reciprocated whilst the machine is in the idle position, without inserting coins in it, but the movement imparted by the hand crank will be then inoperative for moving the delivery slide.

It is to be understood that the manual crank 36 may be omitted and reciprocating movement applied to the shaft 35 by an

electro-magnetic device which is responsive to the operation of a press button or like manual control device.

In Fig. 2 an alternative arrangement is shown for connecting the slide arms 40 to the ejector slide 41 by a link 99.

The control mechanism may be utilized for purposes other than the delivery of packaged goods. For instance, it may be used to operate mechanism for selling stamps or the like, by feeding a ribbon forwardly one or more steps at each movement, so that a purchaser may detach the outfed portion from the end of the ribbon.

What I claim as my invention and desire to secure by Letters Patent is:—

1. A coin freed goods delivery operating mechanism, including a rotatable member containing a coin pocket slot extending through it, a drive shaft, said member being movable endwise on but rotatable by said shaft, cams for moving said member endwise on said shaft, a delivery device, an operating arm therefor movably mounted on said drive shaft, a spring arranged to pull said arm to full throw position in one direction, a drag lever fulcrumed on said rotatable member and movable on its fulcrum to engage with or to miss said arm, mechanism adapted to be set by contact therewith of a coin of certain size in the coin pocket slot and tappets adapted to cause engagement of said drag lever with said arm, thereby to actuate said delivery device when the shaft is rocked and simultaneously to effect endwise movement of the rotatable member and release of the coin into a coin race.

2. A coin freed goods delivery operating mechanism containing a plurality of rotatable members each of which has a coin pocket slot extending through it, a drive shaft carrying said members side by side, said members being movable together endwise on said shaft, a fixed segmental coin guard plate below said members, coin races registering with the outlet ends of the coin pocket slots when the members are in one endwise position on the shaft, and other races registering therewith when the members are in the other endwise position on said shaft, a receiver and a return receptacle associated with said races respectively, means for applying partial rotation to the shaft, and mechanism dependent for its operation upon the presence of a correct coin in each of said slots and adapted to cause lateral movement of all said members when the shaft is rotated to bring the slots therein to register with either one or other of said races, thereby to deliver correct coins into said receiver and incorrect coins into said return receptacle respectively.

3. A coin freed goods delivery operating mechanism including a plurality of coin receiving and transferring members having coin slots threrein, means for applying partial rotational movement to said members, delivery mechanism associated with said members, means dependent upon difference in size of coins placed in said members for procuring the engagement of said delivery mechanism with said members and also for moving said members laterally when they are partially rotated, and coin races registering with the coin slots in said members in either of the said lateral positions, said races directed respectively to a coin receiver receptacle and a coin return receptacle.

4. A coin freed goods delivery operating mechanism including a coin receiving and transferring member, means for applying partial rotational movement to said member, delivery mechanism associated with said member, means dependent upon difference in size of coins placed in said member adapted for procuring the engagement or maintaining disengagement of said delivery mechanism with said member and also for moving said member laterally when it is partially rotated, and coin races registering with a coin slot in said member in either of its said lateral positions, said races directed respectively to a coin receiver receptacle and a coin return receptacle.

5. A coin freed goods delivery operating mechanism according to claim 1, including a bell crank fulcrumed on said member, a rocking finger on one end of said bell crank adapted to bear on a coin in the coin pocket slot, a tappet on the other end of said bell crank, a fixed striker adapted to be engaged by said tappet in the rocking movement of said rotatable member, a notched catch lever on said bell crank, and a catch pawl on the drag lever, said pawl being adapted to engage said notched catch lever and hold the drag lever out of engagement with the operating arm of the delivery device when a wrong coin or no coin has been placed in the coin slot, thereby to permit the rotatable member to be rocked without lateral movement and without operating the delivery mechanism and to eject a wrong coin into a return receptacle.

6. Mechanism for the purposes set forth comprising a drive shaft, arms freely mounted on said shaft, a plurality of rotatable discs, coin return races, a coin pocket slot in each of said discs, means for bringing said discs to receiving position with the top ends of said slots disposed in register with slots in a coin plate and their lower ends in register with said coin return races, a bell crank fulcrumed on the side of each said disc with an offset rocking finger projecting into each coin pocket slot and adapted to intercept the movement of coins of predetermined size and to permit under-

sized coins to run directly through into the return races, delivery mechanism, means controlled by said rocking fingers adapted to actuate said delivery mechanism only when a correct coin is held in each slot, a tappet on each bell crank, a fixed striker adapted to be engaged by said tappet and rock the bell crank, coin collector races, and a device adapted to move said discs transversely to bring the pocket slots therein to register with said coin collector races, thus to direct coins into a receiver when they are liberated from said pocket slots by the rocking of said bell cranks during the rotary movement of said discs.

7. Mechanism for the purposes set forth, comprising a drive shaft, an arm freely mounted on said shaft, a rotatable disc with a coin pocket slot extending through it, a coin return race, means for bringing said disc to receiving position with the top end of said slot disposed in register with said coin return race, a bell crank fulcrumed on the side of said disc with an offset rocking finger projecting into said coin pocket slot and adapted to intercept the movement of coins of predetermined size, and to permit undersize coins to run directly through into the return race, delivery mechanism, means controlled by said rocking finger adapted to actuate said delivery mechanism only when a correct coin is held in the slot, a tappet on each bell crank, a fixed striker adapted to be engaged by said tappet and rock the bell crank, a coin collector race, and a device adapted to move said disc transversely to bring the pocket slot therein to register with said coin collector race thus to direct the coin into a receiver when it is liberated from said pocket slot by the rocking of said bell crank during the rotary movement of said disc.

In testimony whereof I affix my signature.

EDWIN JOHN BROWN.