

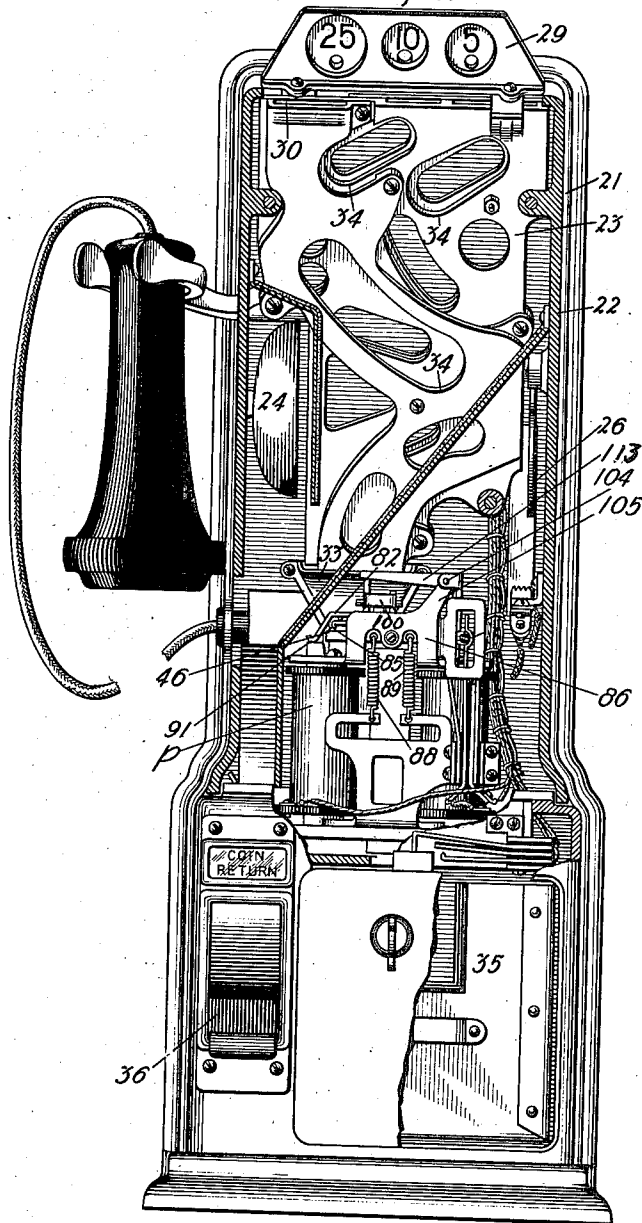
O. F. FORSBERG.
 COIN COLLECTOR.
 APPLICATION FILED MAY 19, 1911.

1,043,219.

Patented Nov. 5, 1912.

4 SHEETS—SHEET 1.

Fig. 1.



Witnesses:

O. M. Luthi.

Fraus A. Fleischman

Inventor:

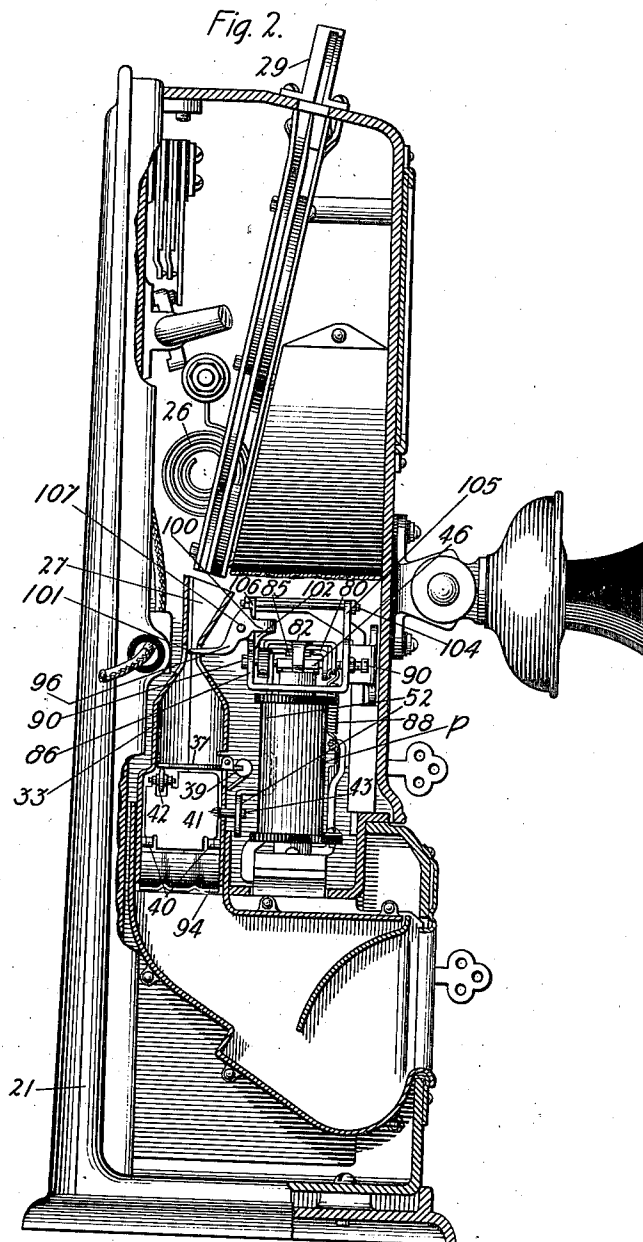
Oscar F. Forsberg.

by J. C.anner, Att'y.

1,043,219.

O. F. FORSBERG.
COIN COLLECTOR.
APPLICATION FILED MAY 19, 1911.

Patented Nov. 5, 1912.
4 SHEETS—SHEET 2.



Witnesses:
O. M. Guthe.
Francis A. Fleischman

Inventor:
Oscar F. Forsberg.
by J. C. Manner, Att'y.

1,043,219.

Patented Nov. 5, 1912.

4 SHEETS—SHEET 3.

Fig. 5.

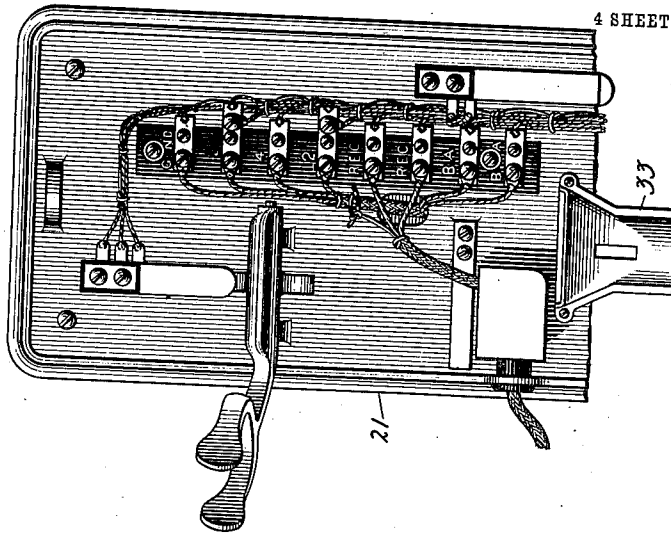


Fig. 4.

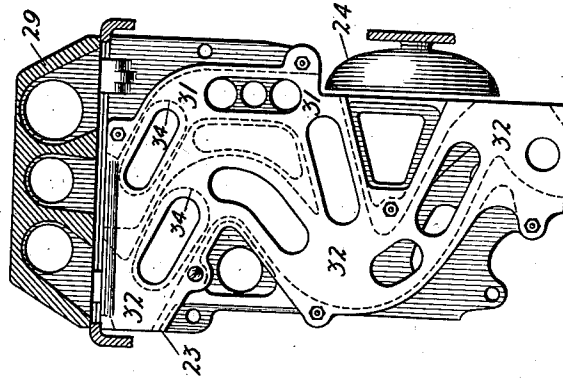
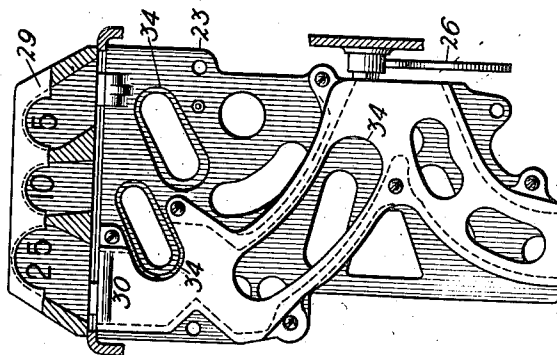


Fig. 3.



Witnesses:
 C. M. Luther.
 Frank A. Fleischman.

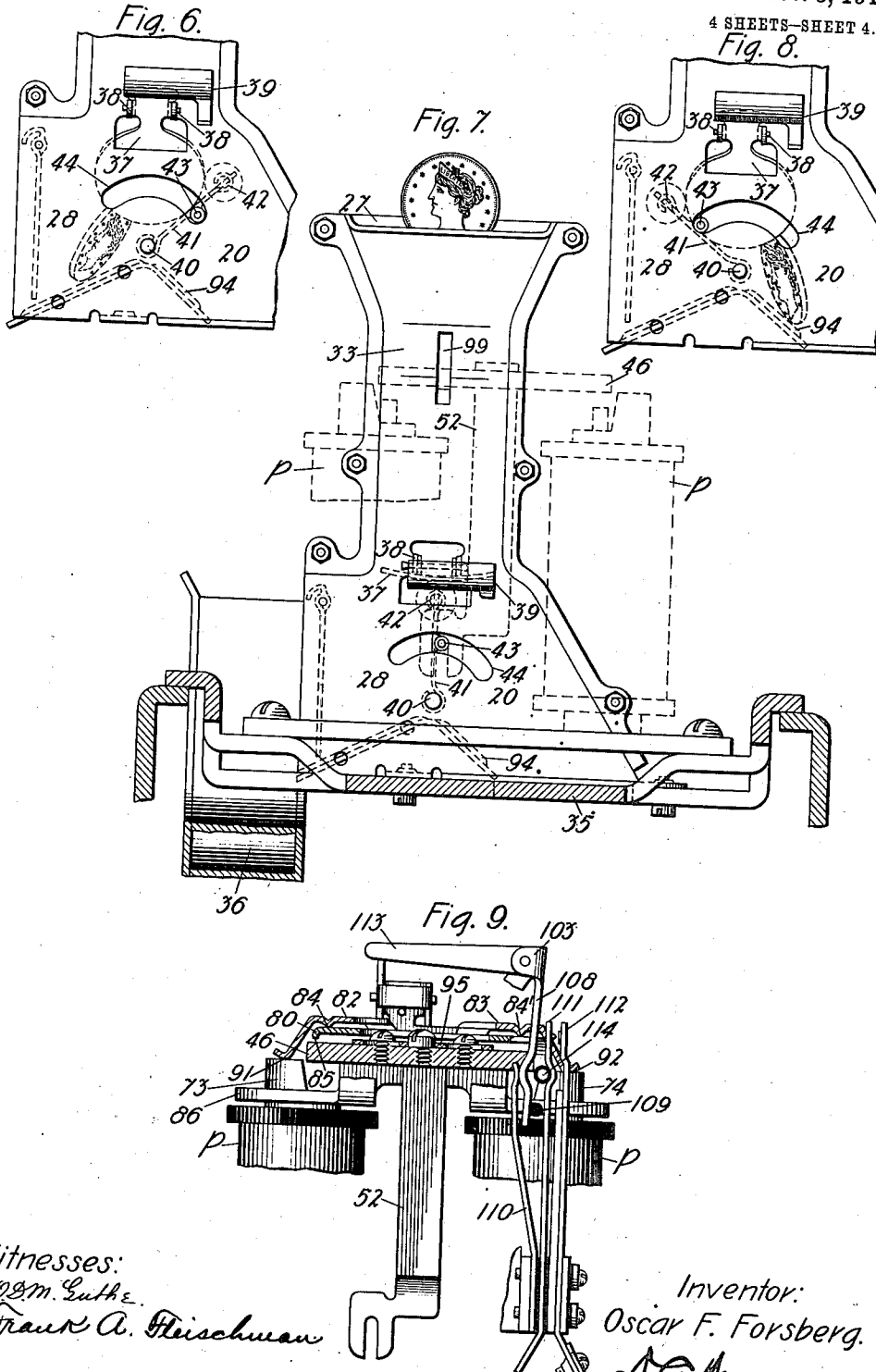
Inventor:
 Oscar F. Forsberg.
 by J. C. Manner, Att'y.

O. F. FORSBERG.
 COIN COLLECTOR.
 APPLICATION FILED MAY 19, 1911.

1,043,219.

Patented Nov. 5, 1912.

4 SHEETS—SHEET 4.



Witnesses:
 O. M. Luthé.
 Frank A. Fleischman

Inventor:
 Oscar F. Forsberg.
 J. C.anner, Att'y.

UNITED STATES PATENT OFFICE.

OSCAR F. FORSBERG, OF YONKERS, NEW YORK, ASSIGNOR TO WESTERN ELECTRIC COMPANY, OF NEW YORK, N. Y., A CORPORATION OF ILLINOIS.

COIN-COLLECTOR.

1,043,219.

Specification of Letters Patent.

Patented Nov. 5, 1912.

Application filed May 19, 1911. Serial No. 628,230.

To all whom it may concern:

Be it known that I, OSCAR F. FORSBERG, citizen of the United States, residing at Yonkers, in the county of Westchester and State of New York, have invented a certain new and useful Improvement in Coin-Collectors, of which the following is a full, clear, concise, and exact description.

This invention relates to coin collecting apparatus for use at a telephone pay station on a telephone circuit.

The present invention is particularly adapted for that type of coin collecting apparatus wherein the calling party tentatively deposits a coin or coins as indicated by the central office operator, who subsequently makes the proper distribution thereof, that is, either refunds or deposits them. The deposit of a coin by the subscriber is automatically signaled to the central office operator, each coin transmitting a signal of characteristic significance.

The objects of this invention are to provide improved apparatus at the substation under the control of the central office operator to direct a deposited coin or deposited coins into either of two separate paths so that the coins may be either returned to, or deposited beyond the reach of, the calling party; and to provide improved switch mechanism actuated by the falling coin to close the line circuit and signal the operator that a connection is desired.

The coin-distributing mechanism may consist of a trap-door located within the main coin chute above a pair of receptacles, or preferably above a pair of branch chutes each terminating in a receptacle, in combination with a coin-deflector having its lower edge pivoted at or slightly above the convergence of the inner walls of said branch chutes and adapted to close the mouth of either branch chute upon the falling of the trap-door, and so direct the released coin into the other. Preferably the convergence of the inner sides of the branch chutes is located in a vertical plane passing approximately through the middle of the trap door, and it is in this plane, slightly above the said convergence that the coin-deflector or vane lies and has its pivotal axis. The axes of both the deflector and trap-door are horizontal and their relation to each other is

preferably such that if a vertical plane be passed through either axis it would intersect the plane of the other substantially at right angles. This construction allows the trap-door when released to swing entirely clear of the branch chutes so as not to interfere with the released coin. The coin-deflector may carry an anti-friction roller adapted to maintain the trap-door in a horizontal position against the over-balancing tendency of the coin deposited thereon. The movement of the coin-deflector may be controlled by an arm attached to an electromagnet, suitable springs acting through the arm serving to hold the deflector in its normal vertical position.

The switch mechanism consists essentially of a spring-pressed lever, an electrical contact in the line circuit controlled thereby and a coin-actuated trigger. The trigger is pivoted adjacent the outer wall of the chute and its point projects through a slot therein in position to be struck by a falling coin, being preferably normally maintained horizontally across the chute. The opposite side of the pivotal point of the trigger from that which enters the chute has an over-balancing extension which acts as a latch for the lever to restrain the same from actuating the said contact, the said extension, however, being withdrawn from under the lever by the action of the falling coin striking the point of the trigger, whereupon the lever is released and closes the contact to cause a signal to be displayed before the operator indicating that a connection is desired. The novel feature of the switch mechanism consists in the arrangement whereby the lever prevents the return of the trigger to its normal position after the first of a series of falling coins has actuated it, and thus maintains the same out of the path of succeeding coins until the operator at the termination of the connection causes electromagnetic mechanism to elevate the lever to permit the trigger to automatically restore itself and latch the lever upon its release by the electromagnetic mechanism. Thus the trigger does not interfere with coins deposited after the first one, if a series are required, as in the case of a toll call, and automatically restores itself and latches the lever upon the termination of a connection.

This construction in addition to being extremely efficient in its action has two points of merit over prior types; (1) the coin will not be accidentally arrested as in those types where it is intended to roll off the side of the trigger and (2) the wear upon the operating parts is reduced.

Referring to the drawings—Figure 1 is a front elevation with the front wall of the housing removed; Fig. 2 is a side elevation with the side wall of the housing removed; Figs. 3 and 4 are views of the coin chutes and coin signaling apparatus; Fig. 5 shows the backboard of the housing and the gravity switch; Figs. 6, 7 and 8 are enlarged detail views to illustrate positions the deflector may assume; and Fig. 9 is a view of the polarized magnet.

The coin collector has a back plate 21 (see Figs. 1 and 2) upon which is also located the telephone substation set of signaling and communicating apparatus. The metallic housing is shown at 22. This housing carries the forwardly inclined coin runways or passages indicated generally at 23; the coin signaling devices are designated 24 and 26. The upper ends of the several coin runways or passages project through the top of the metallic housing and terminate in the openings 25, 10, 5, in the plate 29. The opening 25 is of a size properly to receive a quarter dollar coin and opens into the coin runway 30, by which the coin, if of the proper dimensions, will be conducted to strike the gong or signal 26 before passing through the continuation of the runway 30 terminating just above the coin directing device 27. The opening 10 is adapted to receive a dime and a *bona fide* coin having been inserted in this opening will be conducted through the runway 31 by such a course as to twice strike the bell 24 before being deposited in the directing device 27, as indicated in Fig. 4. The opening 5 is of a size to receive a five-cent piece or nickel which, when inserted therein, will be conducted through the coin runway or passage 32 to strike the bell 24 once and then deposited in the coin-directing device 27. The novel feature of these coin runways 30, 31 and 32, as shown in Figs. 1, 3 and 4 is in the formation of the openings in the sides thereof so that blanks, slugs, tokens, etc., which are not of the proper dimensions will not be permitted to strike the signal devices. To this end these openings are formed with tapering margins, the ends having the smaller diameters being nearer the points where the coins enter the runways and the openings gradually increasing in diameter as they approach the coin signal devices. It has been found in practice that difficulty occurs in coin runways of the usual type for the reason that blanks, slugs, or coins of the wrong denominations become jammed in the open-

ings heretofore provided in the sides of the coin runways, through which openings such blanks or coins were expected to fall before reaching the signal device. By means of openings formed as described and shown at 34 which increase in dimension in the direction of the moving coin, such slugs or coins cannot and do not get stuck so as to clog the runways, but are dropped through the side and are disposed of more readily.

When a coin is passed through one of the runways 30, 31 or 32, it falls into the coin-directing device 27 located immediately below the point of convergence of the three runways. The coin-directing device 27 comprises a chute 33 which has branches or passages 20, 28, extending respectively to a collect box 35 and a return tray 36. The two passages 28, 20 are formed in part by an inverted V-shaped partition 94. Extending across the bottom of the main part of the coin chute 33 is a trap-door 37 pivoted to an extension 38 of the outer wall of the chute 33 and slightly overbalanced by a forwardly extending part 39. Pivoted to the walls of the chute 33 at 40, below the trap door and lying normally in a vertical plane slightly above the convergence of the inner sides of the branch chutes 28, 20, is a coin-deflector in the form of a relatively thin vane 41, a roller 42 thereon forming an anti-friction bearing adapted to maintain the trap-door 37 in a horizontal position against the overbalancing tendency of a coin or coins lying thereon. In order to allow the trap-door when released to fall free and clear of either passage, the relation of the axes of the coin-deflector and trap-door is such that if a vertical plane be passed through either axis it would intersect the other at right angles. Hereinafter for convenience these axes will be described as being at right angles to each other. The coin-deflector 41 has a pin 43 above its pivotal point which projects through an elongated slot 44 in the outer side of the chute 33 by means of which it is engaged by an arm 52 actuated by the armature 46 of a polarized electromagnet *p*. The armature is mounted to have a slight play in either direction to insure that the particular selective current applied will move the armature in the direction intended and thus properly dispose of the coin. The armature is carried by a plate 95 pivotally supported in the frame plate 86 at 90 (Fig. 2). The deflector-actuating arm 52 is connected to a lever 80 pivoted upon the same pivots as the armature-carrying plate 95 and lying parallel to and just above the said armature which, when moved, transmits motion through the said lever 80 and its connected arm 52 to the deflector 41, the direction of movement of the deflector depending upon the direction of current in the windings of the polarized electromagnet *p*. For the pur-

pose of retracting the armature and the plate 80 to their normal positions and maintaining them thereat, two spring-pressed levers 82 and 83 are provided, pivotally supported upon the same pivots 90 upon which the armature plate 95 moves. These levers are respectively maintained under tension by springs 88, 89, and respectively make contact at points 84, 84', with lever 80 at its ends, and thus maintain the deflector-actuating arm 52 carried thereby and the vane 41 which it engages, yieldingly in their normal vertical positions.

At a contracted portion of the chute 33 there is a slot 99 wherein the end 101 of an angular trigger 96 projects. This trigger is pivoted at 107 to an upright extension of the frame plate 86 and its said pivotal point is considerably above the point where the part 101 thereof enters the slot 99, for a purpose which will shortly appear. The part 100 of said lever on the other side of its pivotal point from the end 101 is the heavier and normally overbalances said end 101, the overbalancing tendency being limited by a back stop 102. An angular switch-actuating lever 103 pivoted at 104 to upright extensions 105, 106 of the frame plate 86 has a downwardly extending arm 108 carrying an insulated switch-actuating button 109 maintained under tension by a spring 110, said spring tending to cause said button to close contact springs 111, 112, normally maintaining the line circuit open, but being normally ineffective to do so since another arm 113 of the same lever, extending forwardly of the pivotal points 104, is latched by the portion 100 of the trigger 96. When a coin strikes the trigger 96, the spring 110 is permitted to act upon the arm 108 of the lever and cause the button 109 to close springs 111, 112, and, due to the contraction of the chute and the relation of the pivotal point of the trigger to the slot of the chute, the trigger falls substantially outside the chute, and is held there by the spring-pressed arm 113 of the lever 103 slipping over the vertical edge of the depression in the heavier part 100 of the trigger. Upon the energization of the polarized electromagnet at the termination of the connection an insulating roller 114 carried by its armature 46 and normally lying in a depression in the confronting faces of switch-actuating arm 108 and contact spring 111, rides out of said depression and, acting through the arm 108, elevates the end 113 to allow the trigger 96 to recover its normal horizontal position and upon the release of the armature and the consequent descent of the arm 113 the trigger again latches the lever to maintain the line switch actuating button 109 out of engagement with line springs 111, 112, until the trigger is again released.

A party desiring to use the pay station will deposit a coin, say a nickel, in the proper opening. The coin will pass through the coin runway 32 associated with the nickel slot, and, if a proper one, will be discharged from the runway into the hopper and chute and thence to the coin-distributing device 27, where it is caught by the trap-door 37 which is then retained in its horizontal position by the anti-friction bearing 42 of the coin-deflector 41. By sending a current of one direction through the electromagnet *p* its armature 46 is rocked upon its pivots 90 in a clockwise direction and the coin-deflector 41 caused to rotate in the opposite or contra-clockwise direction to the position shown in Fig. 8. The completion of the movement of the coin-deflector to this position permits the coin to overbalance the counter-weight 39 of the trap-door 37, whereupon the trap-door drops and the coin slides off its floor, and since the coin-deflector by this time has effectually closed the mouth of the refund chute 28 the coin can take but one course, namely, into the collect box 35. By sending current of the opposite direction through the electromagnet *p*, the armature is rocked in a contra-clockwise direction, whereupon the coin-deflector is moved in a clockwise direction to the position shown in Fig. 6. Similarly upon the completion of the movement of the deflector to this position, the trap-door drops and releases the coin, and since the deflector at this time extends across the mouth of the collect chute 20, the coin must pass along the refund chute 28 and into the return tray 36 associated therewith.

By virtue of the construction set forth, although the coin-deflecting vane rigidly supports the trap-door in its normal horizontal position when coins are deposited thereon, but very little energy is required to swing it to either of its alternative positions and thus permit the door to fall. In fact the moment the vane is moved either way from the dead center, the coins assist its continued movement. Being located beneath the trap-door, the vane cannot be manipulated from above to release the trap-door and since it is maintained in its normal vertical position by relatively strong spring tension, loss of coins from the cash box if moved about is prevented.

I claim:

1. In a coin collector, the combination with a chute, a trap-door therein adapted to support a deposited coin, a pair of receptacles, a coin-deflector pivoted at its lower edge below said trap-door, and means for releasing said trap-door and for causing said coin-deflector to guide the released coin into either receptacle.

2. In a coin collector, the combination

with a chute, of a trap-door therein adapted to support a coin, a coin-deflector pivoted at its lower edge below said trap-door and capable of assuming three positions, and electromagnetic means controlling the release of said trap-door and the movement of said coin-deflector.

3. In a coin collector, the combination with a chute, of a trap-door therein, a pair of branch chutes converging below said trap-door, a coin-deflector pivoted at its lower edge slightly above the convergence of the inner sides of said branch chutes, and means for releasing said trap-door and for moving said deflector across the mouth of either branch chute, to direct a released coin into the other.

4. In a coin collector, the combination with a chute, of a trap-door therein adapted to support a deposited coin, branch chutes beneath said door, and a coin-deflector below said door pivoted at its lower edge neutrally with respect to said branch chutes, and means for releasing said door and for moving said deflector across the mouth of either branch chute upon the release of the door.

5. In a coin collector, the combination with a main chute, of a trap-door therein, a coin-deflector pivoted on an axis below and at right angles to the pivotal axis of said trap door, a pair of branch chutes converging beneath said door, and means for releasing a coin deposited upon said door and for causing said coin-deflector to block the entrance to either of said branch chutes.

6. In a coin collector, the combination with a main chute, of a trap-door therein, a plurality of branch chutes beneath said door, a deflector having anti-friction means adapted upon the deposit of a coin in said chute to support said door, and means for removing said deflector as a support for said door and across the mouth of either of said branch chutes, to divert the released coin into the other.

7. In a coin collector, the combination with a main chute, of a trap-door pivoted therein, a coin-deflector pivoted on an axis below and at right angles to that of said trap-door, an anti-friction roller carried by said coin-deflector adapted upon the deposit of a coin upon said trap-door to support the same, a pair of branch chutes, and means for removing said deflector from under said door and across the mouth of either of said branch chutes to divert the released coin into the other.

8. In a coin collector, the combination with a main chute, a trap-door pivoted therein to receive a deposited coin, branch chutes converging below said trap-door, a coin-deflector pivoted at its lower edge below said trap-door, and a polarized electromagnet mounted alongside said chute and

having an arm adapted to swing said coin deflector into the mouth of either branch chute to direct a released coin into the other.

9. In a coin collector, the combination with a main chute, a trap-door therein, branch chutes converging below said trap-door, of a coin-deflector located below said trap-door and pivoted upon an axis at right angles to the axis of the trap-door, a polarized electromagnet having an arm adapted to maintain said coin-deflector in a vertical position to support said trap-door and to swing the same in either direction to deflect a released coin into one or the other of said branch chutes.

10. In a coin collector, the combination with a main chute, of a trap-door therein adapted to receive a deposited coin, branch chutes converging below said trap door, a coin-deflector pivoted at its lower edge within said main chute, and having a pin extending through a slot in said main chute, a polarized electromagnet mounted alongside said chute and having a slotted arm adapted to engage and normally maintain said coin-deflector in a vertical position to act as a support for said door and to swing said deflector from under said door and across the mouth of either branch chute to direct a released coin into the other.

11. In a coin collector, the combination with a main chute, of a trap-door therein adapted to receive a deposited coin, branch chutes converging below said trap-door, a coin-deflector pivoted within said main chute on an axis at right angles to that of the trap-door and having a pin projecting through a slot in the chute, a polarized electromagnet mounted adjacent said chute and having a slotted arm to engage said deflector pin and normally maintain the deflector vertical to support said trap-door and to swing said deflector across the mouth of either branch chute to release said door and direct the released coin into the other.

12. In a coin collector, the combination with a main chute, of a trap-door therein adapted to receive a deposited coin, branch chutes converging beneath said trap-door, a wafer-like coin-deflecting vane movably mounted below said trap-door, and a polarized electromagnet having an arm normally maintaining said vane vertical and adapted to release said trap-door and swing the said vane into the mouth of either chute to direct the released coin into the other.

13. In a coin collector, the combination with a coin chute, a coin-actuated switch-controlling device therein adapted to be struck by the first of a series of falling coins and removed from the path of succeeding coins, and electromagnetic means for restoring said device to normal position.

14. In a coin collector, the combination with a trigger adapted to be actuated by a

falling coin, an electrical contact, a lever controlled by said trigger and adapted when released by the actuation of said trigger to prevent the restoration of said trigger to normal position.

15. In a coin collector, the combination with a chute, a coin-actuated device therein, an electrical contact, and a lever adapted to cause the actuation of said contact but normally maintained inoperative by said coin-actuated device, and means whereby upon the actuation of said device by a falling coin said lever is released and actuates said contact and said device is prevented from being restored to its normal position.

16. In a coin collector, the combination with a chute, a spring-pressed lever, a contact adapted to be actuated thereby, a trigger pivoted outside said chute and having one end projecting therein and its other end latching said lever to maintain the same normally inoperative to close said switch, said lever being adapted upon the actuation of said trigger by a falling coin to close said contact and prevent the restoration of said trigger, and electromagnetic mechanism for restoring said trigger and lever.

17. In a coin collector, the combination

with a chute, a lever, a switch actuated thereby, a trigger pivoted outside said chute to swing in a horizontal plane and overbalanced to lie normally in a horizontal position, one end of said trigger lying across said chute in the path of falling coins and the other latching said lever to maintain the same normally inoperative to close said switch, said lever being adapted upon the actuation of said trigger by a falling coin to close said switch and prevent the restoration of said trigger.

18. In a coin collector, the combination with a coin chute having a contracted slotted neck with downwardly flaring walls, an angular trigger pivoted adjacent said chute above said perforation and having its point extending into said chute through said slot, in position to be struck by a falling coin, and a switch actuating lever controlled by said trigger.

In witness whereof, I hereunto subscribe my name this 18th day of May A. D. 1911.

OSCAR F. FORSBERG.

Witnesses:

IRVING MACDONALD,

FRANK A. FLEISCHMAN.