

No. 892,322.

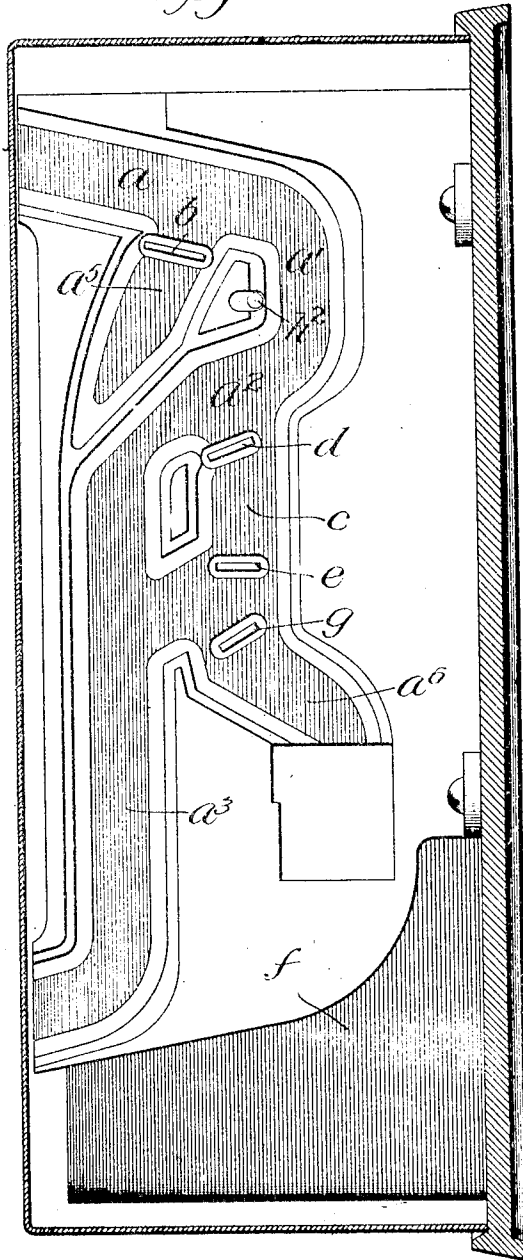
PATENTED JUNE 30, 1908.

E. H. SMYTHE
COIN COLLECTOR.

APPLICATION FILED OCT. 20, 1905.

5 SHEETS—SHEET 1.

Fig. 1.



Witnesses:

Ed. C. Dawson,
Irving Mac Donald

Inventor:

Edwin H. Smythe,
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Attys.

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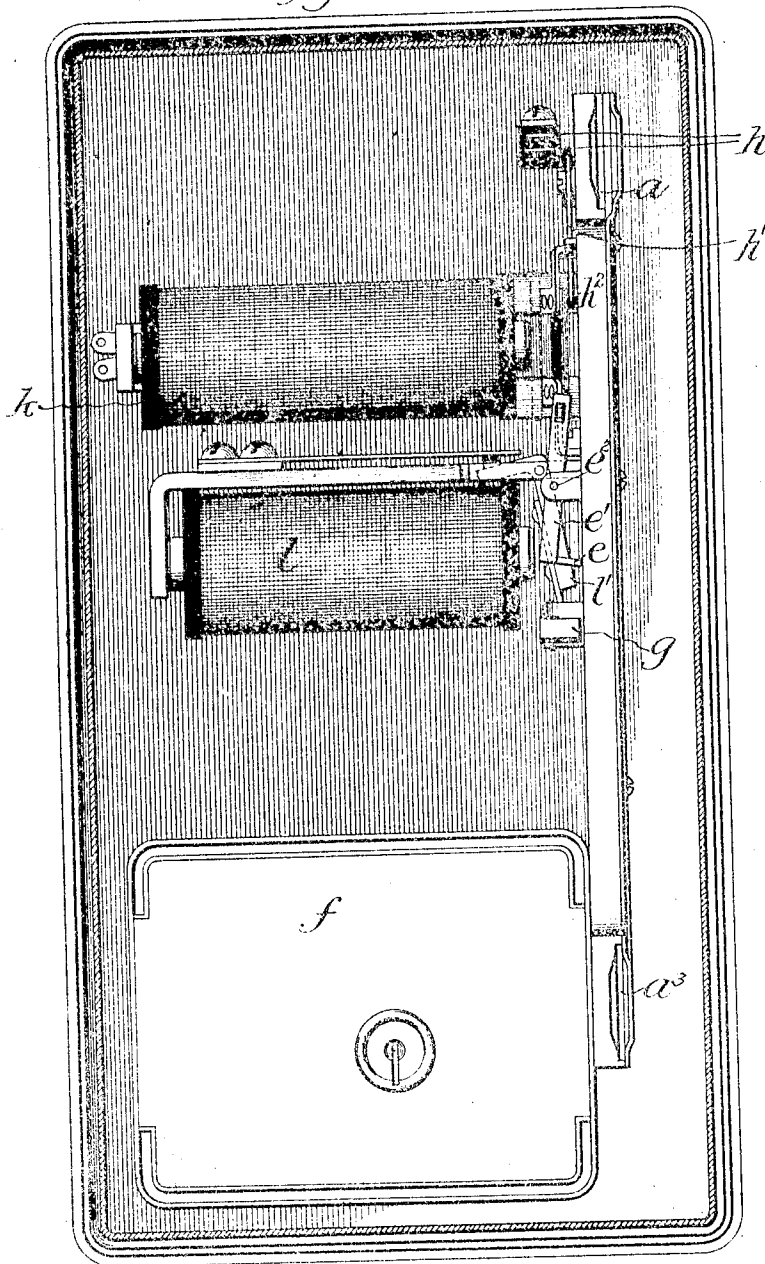
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5 SHEETS—SHEET 2.

Fig. 2.



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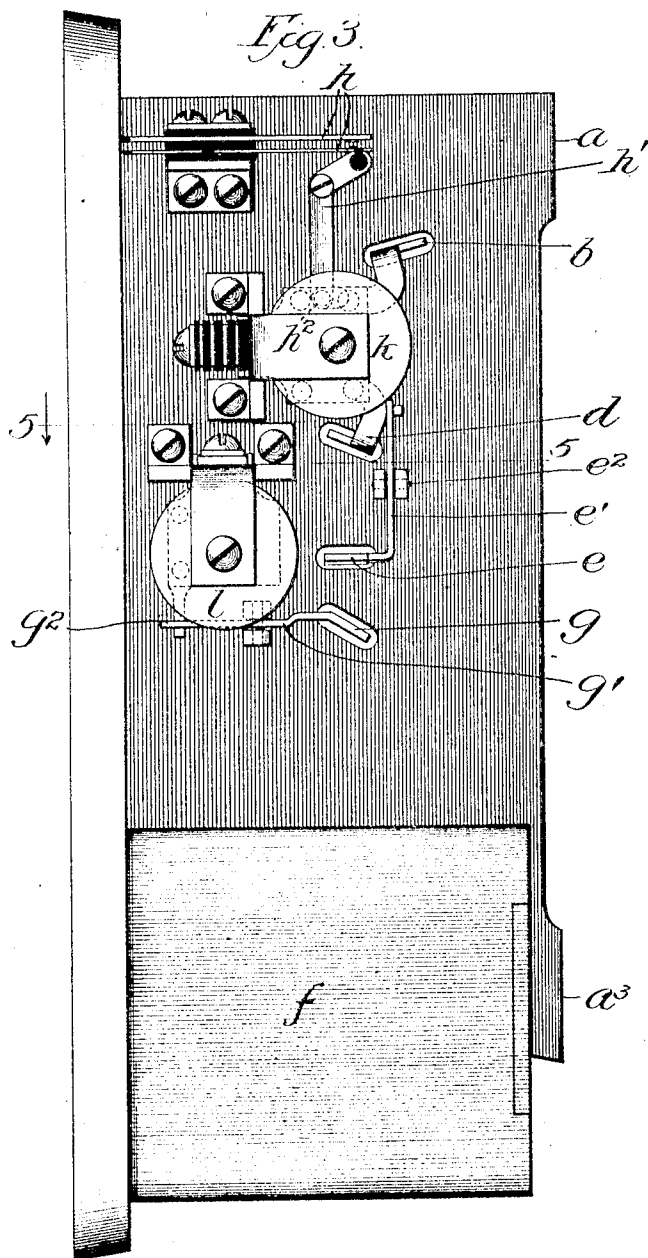
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5 SHEETS—SHEET 3.



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No. 892,322.

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APPLICATION FILED OCT. 20, 1905.

5 SHEETS—SHEET 4.

Fig. 4.

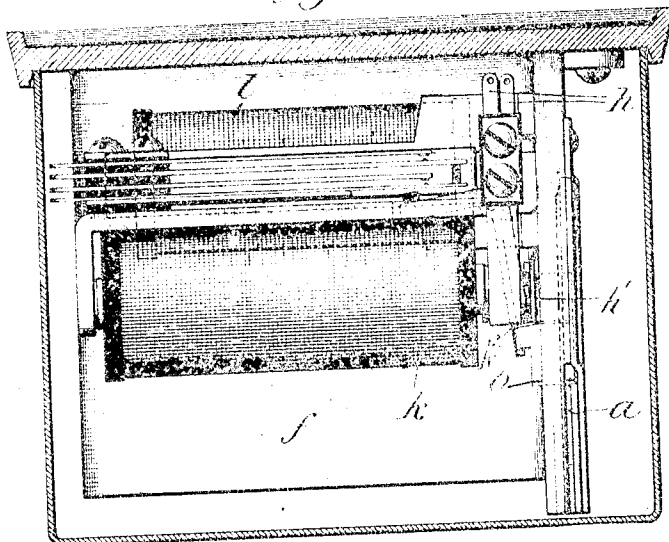
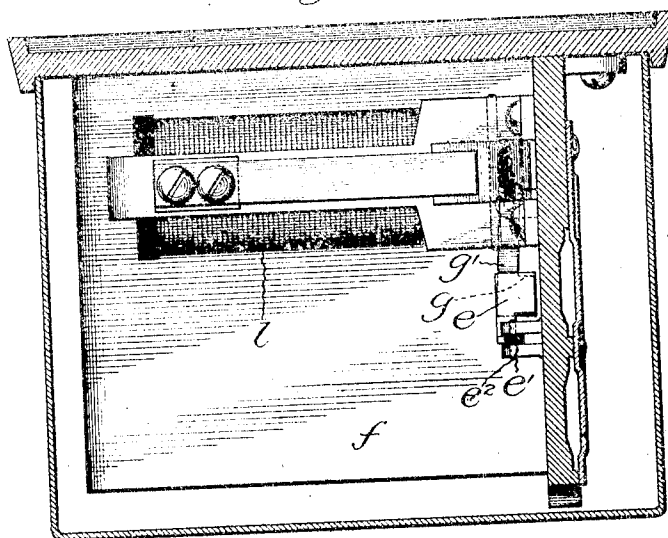


Fig. 5.



Witnesses:

Edw. C. L. Quinn.
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Inventor:

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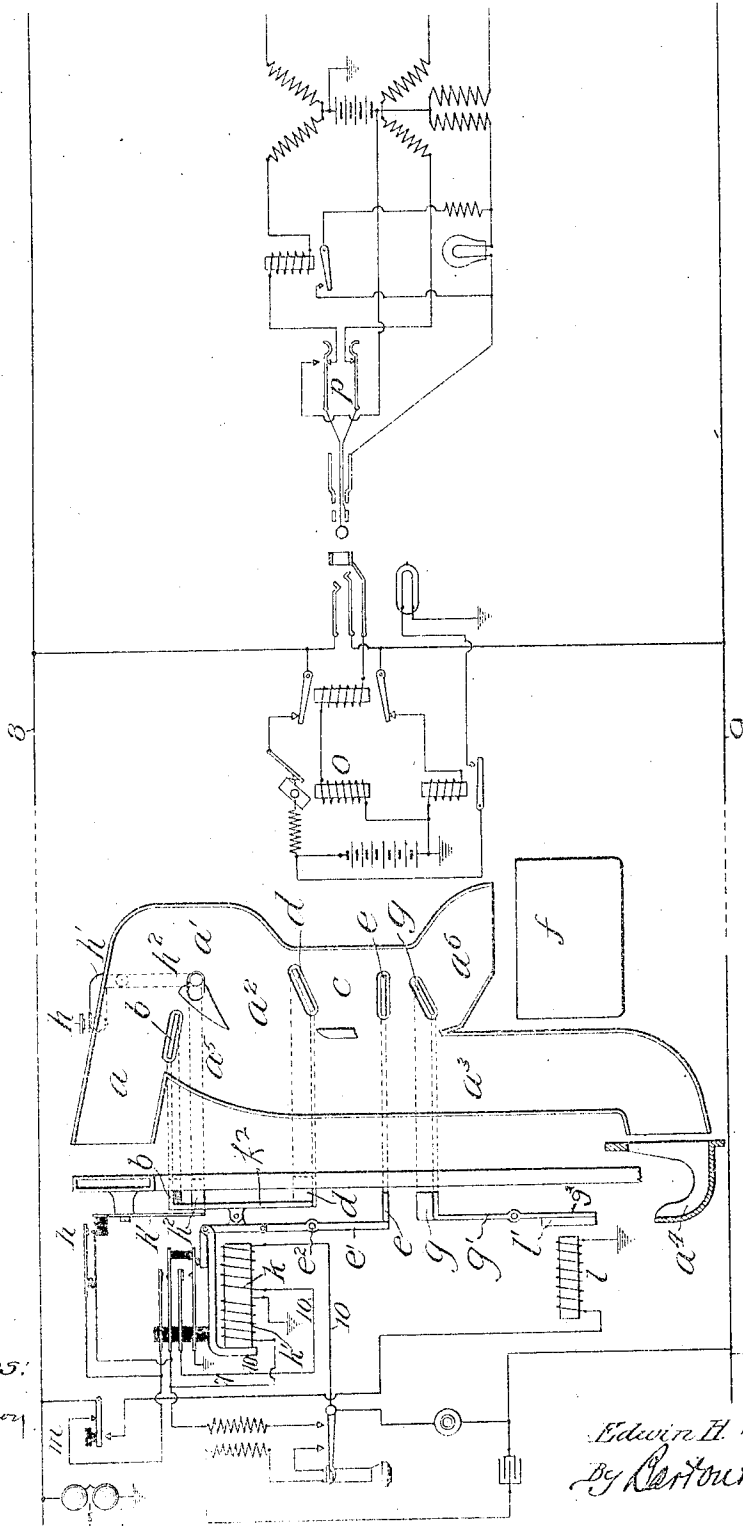
PATENTED JUNE 30, 1908.

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COIN COLLECTOR.

APPLICATION FILED OCT. 20, 1905.

5 SHEETS--SHEET 5.

Fig. 6.



Witnesses:
Geo. H. H. H.
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UNITED STATES PATENT OFFICE.

EDWIN H. SMYTHE, OF CHICAGO, ILLINOIS, ASSIGNOR TO WESTERN ELECTRIC COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

COIN-COLLECTOR.

No. 892,322.

Specification of Letters Patent.

Patented June 30, 1908.

Application filed October 20, 1905. Serial No. 283,621.

To all whom it may concern:

Be it known that I, EDWIN H. SMYTHE, citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, 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 a coin collector for subscribers' stations of telephone exchanges, and its object is to provide improved mechanism for effecting the proper disposition of a deposited coin under all the varying conditions which arise in practice.

The coin collector is designed particularly for use in connection with party lines, and is intended especially to provide against the loss of a coin deposited to call the central office when the line is already in use by another subscriber.

The invention is also intended to provide for the return of the coin in case the line is out of order or the operator does not respond, and also to provide for automatically directing the coin into a permanent cash box without any special act on the part of the operator when a connection which has been successfully completed is taken down.

The coin collector is also constructed in such a manner as to prevent the coin from being fraudulently returned.

The invention will be described in detail by reference to the accompanying drawings, in which

Figure 1 is a vertical sectional view showing the coin chute and the various stops; Fig. 2 is a view of the mechanism of the box in front elevation, the box being shown in section; Fig. 3 is a side view of the mechanism of the toll box; Fig. 4 is a plan view of the mechanism, the box being shown in section; Fig. 5 is a sectional plan view on line 5-5 of Fig. 3; and Fig. 6 is a diagram illustrating the electric circuits of a telephone line with which the coin collector of my invention is associated.

The same letters of reference designate the same parts throughout the drawings.

The coin collector is provided with a coin chute having a discharge outlet a^6 into the cash box f , and a refund passage a^3 leading to a refund tray a^1 outside the box. The receiving portion a of the coin chute leads

from the top of the box diagonally downward toward the rear, where it turns again at a' and continues in the passage a^2 leading diagonally downward and forward to the return passage a^3 . A by-pass a^5 leads from the receiving chute a directly into the return passage a^3 ; but the entrance to this by-pass is normally closed by a guide or stop b which forms a movable portion of the floor of the chute a . Similarly a pocket or temporary coin-receiver c opens off the continuation a^2 of the coin chute, the entrance to this pocket being normally blocked by a movable guide or stop d . When the guide d is removed, a coin passing through the chute will drop into the pocket c , where it will be held by a removable stop e forming the floor of said pocket. From the pocket c two exits are provided, one into the return passage a^3 and the other into a passage a^6 leading to the permanent cash box f . When the stop e is withdrawn, a coin in the pocket c will ordinarily be discharged through the passage a^6 into the cash box; but a guide or stop g is provided which may be interposed at the entrance of the passage a^6 to divert the released coin into the return chute a^3 .

An electrical contact is arranged to be closed by the coin soon after it enters the receiving chute. A coin passing down the chute will be retarded at the turn a' ; and a contact-actuating finger h^2 is located on the inner side of the chute at said turn. The engagement of the coin with said finger will therefore be prolonged, so that the mechanism controlled by said finger will be given time to act before the coin moves any appreciable distance beyond the turn. The finger h^2 is carried by a lever h' , which is arranged to operate contact springs h . As the coin engages said finger h^2 the lever h' will be rocked upon its pivot to move the contacts h into engagement with each other. This contact h controls a circuit 7 through one winding k' of a magnet k which operates the three stops b d and e . The stops b and d are normally interposed in the chute, but are withdrawn when the magnet k is excited; while the stop e is normally withdrawn from the chute, but is interposed therein when said magnet k is excited. The fourth stop g is operated by a magnet l , be-

ing normally withdrawn from the chute, but adapted to be interposed therein when the magnet *l* is excited.

The particular arrangement of mechanism by which the magnets *k* and *l* operate the stops *b d e g*, in the preferred form of my device, is shown in Figs. 2, 3, 4 and 5, but is only indicated diagrammatically in Fig. 6. With reference to Fig. 6, it will be noted that two views of the coin chute are shown, with dotted lines connecting the stops shown in the side view, with the same stops shown in the edge view.

The magnet *k* is provided with an armature *k*² which in its movement operates certain relay contacts, in addition to moving the stops. The stops *b* and *d* are rigidly mounted upon the armature *k*² so as to project into the coin chute when the armature is unattracted. A stop *e* is formed at one end of a centrally pivoted rocking lever *e'*, the opposite end of which is adapted to be moved by a projection carried by the armature *k*², so that as said armature is attracted the lever *e'* will be rocked about its pivot to interpose the stop *e* in the path of the coin.

The stop *g* is formed at one end of a centrally pivoted rocking lever *g'*, the opposite end *g*² of which is adapted to be engaged by a projection carried upon the armature *l'* of magnet *l*, so that as said armature is attracted the lever *g'* will be rocked about its pivot and the stop *g* interposed in the coin chute at the mouth of the passage *a*³.

Suitable electric circuits are provided for operating the magnets *k* and *l* at the proper times, as shown in Fig. 6; but these circuits form the subject matter of a separate patent No. 846628 March 12, 1907. It will be seen, however, that a coin inserted in the chute *a* will pass first over the normally interposed stop *b*, and then will strike the finger *h*² which operates the contact *h* controlling the magnet *k*. If the circuits are in order so that the magnet is excited upon the closure of contact *h*, the stops *b* and *d* will instantly be withdrawn, and the stop *e* inserted, so that the coin as it continues in its passage will drop into the pocket *c* where it will be held resting upon the stop *e*. The subsequent disposition of the coin when released from the pocket *c* by the withdrawal of stop *e* will depend upon whether the stop *g* has been inserted in the coin chute. Ordinarily the coin when released from the pocket *c* will drop into the passage *a*⁶, and so into the cash box; but if when the stop *e* is withdrawn, the stop *g* is also interposed, the coin, instead of falling into the passage *a*⁶ will be deflected into the return chute *a*³.

The device is intended particularly for use in connection with party lines, in which case the magnet *k* will be connected to receive current when the subscriber takes his tele-

phone from the hook, if a connection has already been established at the central office of the telephone line, or if a subscriber at some other station of the line has already taken his telephone from the hook to call. If a coin is deposited in the receiving chute *a* when the line is already busy, the stop *b* will thus be withdrawn from the entrance to the by-pass *a*³, so that the coin, instead of continuing on through the passage *a'* will be shunted through the by-pass *a*³ into the return passage *a*³, and so refunded to the depositor.

In the telephone system shown in Fig. 6, the subscriber's line is shown extending to a central office switchboard, where one of the springjacks for the line is illustrated, together with a portion of the operator's connecting apparatus. The electrical symbols used in the diagram are well understood by those skilled in the art, and the circuits may be easily traced. It is understood, of course, that several subscribers' stations may be connected upon the line between the conductors 8, 9, thereof in the same manner as the single subscriber's station which is shown.

A key *m* is provided at each station for operation by the subscriber to regain possession of the coin under certain circumstances. At the central office the usual line circuit is extended through the contacts of a slow-acting relay *o*; and a special key is provided in the operator's cord circuit for throwing current to the line to permit the depositor to recover the coin.

In the operation of the telephone system shown, the subscriber first takes his telephone from the hook, and then deposits a coin in the chute *a*. If the line is busy, either because a connection has been established at the central office, or because a subscriber at some other station of the line has taken his telephone from the hook to call, the magnet *k* will be excited and stop *b* withdrawn, so that the coin will fall into the return chute *a*³ and be refunded.

If the line is out of order in such a way as to deprive it of its normal current supply, the circuit 7 which is closed by the coin in falling past the finger *h*² does not energize said magnet *k*, and in consequence the second stop *d* remains in the chute and the coin is diverted into the refund tray.

If the normal current is on the line, but for some reason, such as the line lamp being burned out, the operator does not respond, the depositor can regain his coin by pressing the special key *m* associated with the coin collector, which causes the energization of magnet *l* and the deenergization of magnet *k*, with the result that the coin is released from the pocket *c* and diverted into the refund tray.

If the line is in order and the operator re-

sponds, the act of inserting the plug reverses the current on the line, so that current is applied to the side which was previously grounded. The coin is now under the sole control of the operator, for current is supplied to the magnet *k*, which holds the coin in its temporary receptacle, through a circuit 10 which does not include the special key *m*. Said key therefore is incapable of deenergizing the magnet *k* to release the coin, after the operator plugs in, unless the key *p* is also actuated. The coin therefore remains in the temporary receptacle *c* under the control of the operator, and may be deposited in the cash box upon the mere act of pulling out the plug from the springjack at the central office at the conclusion of the connection. The result of withdrawing the plug is that the current applied through the cord circuit is withdrawn from the line, and owing to the delay of the slow-acting relay *o* in again closing the connection of the central battery with the line, there is a brief interval when no current flows. During this interval the magnet *k* allows its armature to fall back, withdrawing the stop *e* and allowing the coin to fall through the passage *a*⁶ into the cash box. If the subscriber called for cannot be obtained, or if for any other reason the deposited coin is to be returned to the calling subscriber, this may be accomplished by the operator pressing her special key *p*, while the subscriber at the same time (by direction of the operator) presses his key *m*. The result of this is that current is cut off from the line conductor 9, and applied to the line conductor 8. The magnet *l* is thereby excited, while the magnet *k* is deenergized, with the result that stop *e* is withdrawn to release the coin, and stop *g* is inserted to deflect the coin into the refund tray.

It will be observed that the same agency (the magnet *k*) which responds to current on the line, due to its busy condition, to return the coin, responds to current in the circuit controlled by contact *h* to retain the coin. It will further be noted that if the magnet *k* does not respond until when the coin is deposited, the coin will be returned; but if the magnet does respond to retain the coin, the subsequent return to normal condition, instead of returning the coin, will cause it to be deposited in the cash box.

I claim:

1. In a coin collector, the combination with the coin chute having an abrupt turn therein, of a coin-distributing mechanism located below said turn, a contact-actuating finger adapted to be engaged by a passing coin, and means controlled by said finger for operating said coin distributing mechanism, said finger being located at the turn of the chute, whereby the engagement of the coin

with said finger is prolonged as the coin is retarded at the turn, and time is allowed for the distributing mechanism to act before the coin reaches it.

2. In a coin collector for telephone lines, the combination with the coin chute having an abrupt turn, of a controlling finger adapted to be actuated by the coin in its passage, said finger being located at the inner side of the turn of the chute, whereby the engagement of the coin with said finger is prolonged, coin distributing mechanism located below said turn, and means controlled by said finger for operating said coin distributing mechanism.

3. In a coin collector for telephone lines, the combination with a coin chute having a normally-blocked refund passage *a*⁷ near the entrance thereof, an electromagnet, means actuated in the response of said electromagnet adapted to arrest a coin in the chute beyond the entrance to said refund passage, and means also set in the response of said electromagnet adapted to divert into said refund passage coins in the chute above said passage.

4. In a coin collector, the combination with a box, of a coin chute having a branch *c* discharging within the box, and a refund passage *a*⁸ discharging outside the box, a coin-guide *d* controlling the entrance to said branch *c*, a stop *e* for retaining a coin in said branch, an electromagnet arranged in its response to actuate guide *d* and stop *e* to divert a deposited coin into said branch and retain said coin therein; whereby a deposited coin is automatically refunded if the electromagnet fails to respond, but if the electromagnet responds the coin is retained and is subsequently discharged within the box by the mere return of the electromagnet to normal condition; a second electromagnet and means controlled thereby for diverting the discharged coin into the refund passage.

5. In a coin collector for telephone lines, the combination with a coin chute having a refund passage *a*⁹, of an electromagnet, means actuated in the response of said electromagnet for diverting coins near the entrance of said chute into said refund passage, a stop also actuated in the response of said electromagnet adapted to arrest a coin in the chute beyond the mouth of said refund passage, means controlled by a coin in the chute between said refund passage and said stop, for causing the response of said electromagnet, and independent means for causing the response of said electromagnet; whereby a deposited coin will be either refunded or retained according as the electromagnet is excited before or after the deposit of said coin.

6. In a coin collector, the combination with the box, of a coin chute having a discharge outlet *a*⁹ within the box, of a return chute *a*³, a guide *b* near the entrance to the

coin chute controlling the passage of a coin
into the return chute, a contact finger *h*²
adapted to be actuated by the coin below said
guide *b*, a stop *e* adapted to retain a coin in the
chute below said contact, a guide *d* adapted
to divert a coin into the return chute before
it reaches said stop, an electromagnet *k* ar-
ranged to operate said guides *b* and *d* and said
stop *e*, a guide *g* in the chute below said stop
10 *e* controlling the passage of a coin into the re-

turn chute, and an electromagnet *l* for oper-
ating said last-mentioned guide; all substan-
tially as set forth.

In witness whereof, I hereunto subscribe
my name this 27th day of September A. D., 1905.

EDWIN H. SMYTHE.

Witnesses:

IRVING MACDONALD,
SYLVIA BLISS.