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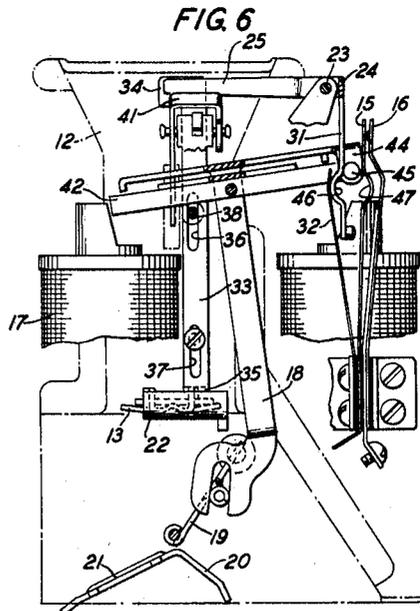
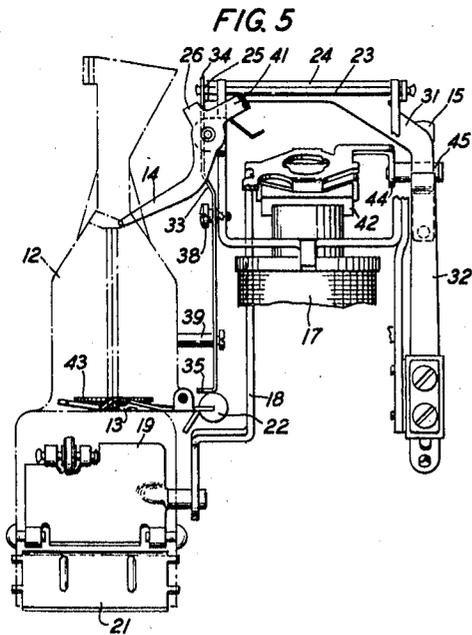
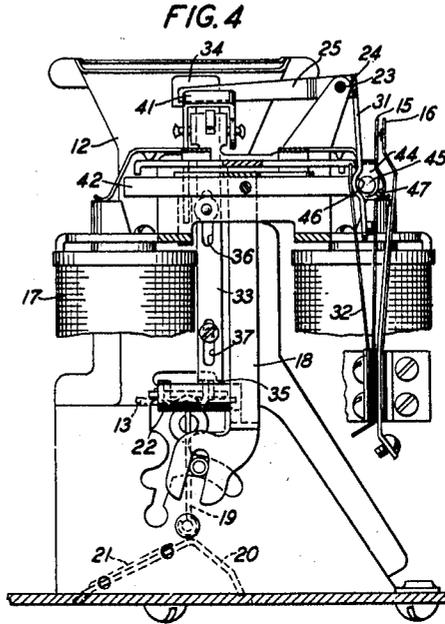
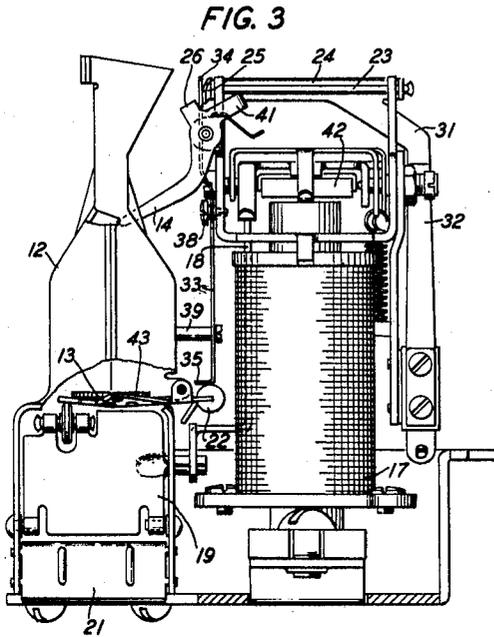
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2,342,593

COIN COLLECTOR APPARATUS

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3 Sheets-Sheet 2



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# UNITED STATES PATENT OFFICE

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## COIN COLLECTOR APPARATUS

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5 Claims. (Cl. 194—9)

This invention relates to coin collector apparatus particularly for use at telephone pay stations and has for an object the provision of an improved arrangement for collecting or refunding coins deposited in payment for the use of the instrument.

As disclosed in the O. F. Forsberg United States Patent 1,043,219, issued November 5, 1912, it is customary in a collector station of the prepay type to direct the deposited coins into a coin hopper where the first deposited coin actuates a coin trigger to an advanced position to close certain electrical contacts for the purpose of signaling the central office of coin deposit and for preparing an energizing circuit for the associated coin relay. The coins after passing the coin trigger come to rest on a pivoted coin trap where they are held until voltage is applied to the relay which upon operating serves to release the coin trap and direct the suspended coins into a collect or refund chute. The operation of the coin relay also serves to restore the coin trigger to normal so that when the relay is deenergized to permit the coin trap to be returned to its normal coin supporting position the electrical contacts are opened to break the energizing circuit for the relay.

From the above description it will be apparent that under certain conditions the operating voltage may be applied to the relay for such a short time that the relay may be deenergized before the coin trap has moved to coin discharging position; and upon the deenergization of the relay its energizing circuit is broken so that the failure to collect the coins cannot be corrected by the central office operator.

In accordance with this invention the energizing circuit for the coin relay is not broken until the coin trap has dropped to coin discharging position whereby if the first energization of the relay fails to permit coin discharge the central office operator will receive an indication of the trouble and may reapply collect current to the relay for the time necessary to secure coin collection. This result may be advantageously achieved by placing coin trigger restoral under the control of the coin trap whereby the trigger will be retained in its contact closing position until the coin trap has reached its coin discharging position.

The manner in which this may be accomplished will be better understood by reference to the following detailed description taken in connection with the accompanying drawings in which:

Fig. 1 is a side view of the central portion of a coin collector embodying this invention;

Fig. 2 is a view in perspective of the coin hopper and associated coin relay showing all parts in their normal positions;

Fig. 3 is a side view, and Fig. 4 is a front view of the apparatus of Fig. 2 after coin deposit but before the coin relay has been operated;

Figs. 5 and 6 are similar to Figs. 3 and 4, respectively, except that the relay is shown operated, but with the coin trap still in normal coin supporting position; and

Figs. 7 and 8 are similar to Figs. 5 and 6, respectively, except that the coin trap is shown in its coin discharging position.

Fig. 1 discloses the central portion of a telephone coin collector of the general type disclosed in the O. F. Forsberg United States Patent 1,043,219. Within the upper housing 10 is a multiple coin chute 11 for receiving deposited coins of various denominations and for directing them into a coin hopper 12 where the coins are temporarily held on a coin trap 13 after the first deposited coin has actuated the usual coin trigger 14 to close electrical spring contacts 15, 16 to notify the central office of coin deposit and to prepare an energizing circuit for the windings of coin relay 17. At the proper time equipment at the central office may be operated to apply collect or refund current to relay 17 which by means of its armature extension 18 rotates coin vane 19 to permit coin trap 13 to drop under the weight of its coin load and discharge its coin into collect chute 20 or refund chute 21 as the case may be, whereupon the counterweight 22 serves to restore the coin trap to its normal position in which it is supported by vane 19 after the relay has been deenergized.

The present invention is primarily concerned with the provision of means for placing the spring contacts 15, 16 under the control of the coin trap 13 in such a manner that contacts 15, 16 after being closed by the actuation of coin trigger 14 cannot be reopened until after coin trap 13 has moved to a coin discharging position. Otherwise the apparatus disclosed in the various figures is not substantially different from the disclosure of the Forsberg patent.

It will be noted that pivoted about a pin 23 is a lever 24 which has a laterally extending arm 25 normally resting on shoulder 26 of coin trigger 14. Lever 24 also has a downwardly extending arm 31 engaged by a spring 32 which is biased to move lever arm 31 to engage spring contact 15 and cause the closure of contacts 15, 16, but

arm 31 is normally prevented from so doing because of the engagement of lever arm 25 with trigger shoulder 26.

Coin trigger shoulder 26 also supports a slidable member 33 which has a lateral arm 34 resting on top of shoulder 26 while the lug 35 on the lower end of member 33 normally lies a short distance above the counterweight 22 of the coin trap. As shown particularly in Figs. 4 and 6, member 33 contains two elongated slots 36, 37 embracing stationary pins 38, 39 to guide member 33 in its upward and downward movement with member 33 being held in its upper position solely by means of trigger shoulder 26.

When a deposited coin reaches the coin hopper the coin trigger 14 is actuated from its normal position of Fig. 2 to its advanced position of Figs. 3 and 4 whereby trigger shoulder 26 is moved counter-clockwise (Fig. 3) a distance sufficient to release the slidable member 33 and the spring-pressed lever arm 25. Spring 32 is now free to move lever arm 31 to the position shown in Fig. 4 to cause the closure of contacts 15, 16 while member 33 is free to drop downwardly under the influence of gravity until its lower end 35 either rests on trap counterweight 22 or lies a short distance above it. From the position of the various parts in Fig. 3 it will be seen that arms 25 and 34 have dropped downwardly to lie in the return path of trigger shoulder 26 so that the trigger counterweight 41 is thereby prevented from restoring the coin trigger to its normal position of Fig. 2; and hence the coin trigger will be held in its operated position as long as either of the arms 25, 34 lies in its position of Fig. 3.

As described in the above-mentioned Forsberg patent the closure of contacts 15, 16 serves to prepare an energizing circuit through the windings of the polarized relay 17 whereby at the proper time either collect current or refund current may be applied to the relay to cause the collection or refund of the coins on the coin trap 13. The relay armature 42 has an extension 18 linked with the pivoted coin vane 19 which normally lies in a vertical position holding the coin trap 13 in its coin supporting position.

Assuming that refund current is applied to the relay for an appreciable time interval the relay armature 42 and its extension 18 will be operated to their positions of Figs. 7 and 8 whereby the coin vane 19 will be moved to the right to close the collect chute 20 and release the coin trap 13 to permit the coin trap under the influence of gravity to drop downwardly to its coin discharging position of Fig. 8 whereby the deposited coin such as coin 43 will be free to drop into refund chute 21.

Armature 42 also has an extension 44 carrying a pin 45 which normally lies between the bowed-out portions 46, 47 of lever arm 31 and electrical spring contact 15; but when the relay is energized this pin rides out of the bowed-out portions to move lever arm 31 clockwise as seen in Fig. 8, while also exerting pressure on spring contact 15 to maintain contacts 15, 16 closed. This clockwise movement of lever arm 31 obviously elevates lever arm 25 to a position above the return path of trigger shoulder 26. Also assuming that the coin trap 13 drops to its coin discharging position of Fig. 8 after being released from coin vane 19, this movement of the coin trap in raising its counterweight 22 obviously raises slidable member 33 a distance sufficient to permit its upper arm 34 to free the trigger shoulder 26. Hence with both arms 34, 25 in their elevated

positions of Figs. 7 and 8 the trigger counterweight 41 is free to restore coin trigger 14 to normal. Thereafter and with the deenergization of relay 17, armature 42 and its extensions will be restored to normal with coin trap 13 in a substantially horizontal position supported by vane 19 and with armature pin 45 again lying between bowed-out portions 46, 47 whereby lever arm 25 again engages the top edge of trigger shoulder 26 and with lever arm 31 holding spring 32 in a position permitting contacts 15, 16 to open. It will also be apparent that the restoration of coin trap 13 to normal lowers its counterweight 22 from the elevated position of Fig. 7 to its normal position of Fig. 2, thereby allowing slidable member 33 to drop downwardly under the influence of gravity until its lateral arm 34 again is supported by the top edge of trigger shoulder 26.

The above description of the operation of the coin relay is based on the assumption that the energization of the relay is prolonged for a time sufficient to permit coin trap 13 to discharge its coins before the relay is deenergized. However, the present invention is of particular importance in the case where non-standard conditions prevail such as would be the case if a lightweight coin was on the coin trap with the coin trap somewhat sluggish in its operation and the energizing current applied to the relay for such a short interval of time that the relay was deenergized and vane 19 restored to normal before the trap 13 had moved downwardly sufficiently far to permit coin discharge.

In Figs. 5 and 6 the relay is shown operated as in Fig. 8 but in Figs. 5 and 6 it is assumed that after operation the relay will be deenergized before trap 13 has had time to discharge its coin load. Hence in Figs. 5 and 6 the coin trap 13 is shown in its horizontal position even though supporting vane 19 has been temporarily removed. It will be noted in Fig. 5 that lever arm 25 has been elevated out of the path of trigger shoulder 26 but arm 34 of slidable member 33 still occupies a position obstructing the return of the coin trigger to normal due to the failure of the coin trap counterweight 22 to raise member 33 as in Fig. 7 or 8. Hence, with the coin relay deenergized before the coin trap 13 has discharged its coin load it will be obvious that coin trigger 14 will remain in its coin actuated position of Fig. 3 or 5 because its return is obstructed by arm 34. This, therefore, means that when relay 17 is energized under the assumed conditions for Fig. 5 lever arm 25 will not be supported by trigger shoulder 26 when the relay is deenergized and hence spring 32 will be free to maintain contacts 15, 16 closed. The closed condition of contacts 15, 16 will call the attention of the central office operator to the abnormal conditions existing at the coin substation and will permit the operator again to apply refund or collect current as the case may be, to relay 17 for an adequate time interval to permit trap 13 to reach coin discharging position, in which event the operation of the device is similar to that described in connection with Figs. 7 and 8. If, due to some abnormal condition, the trap 13 still fails to reach coin discharging position, the continued failure of contacts 15, 16 to open will serve as an immediate notice to the operator that the coin substation requires servicing to remove the cause of the trouble.

What is claimed is:

1. In a coin collector, an electrical relay, a coin

channel for receiving deposited coins, a pivoted coin trap in said channel, means for normally holding said trap in coin supporting position, a pivoted coin trigger projecting into said channel above said trap and biased to a normal position but adapted to be actuated to an advanced position by a deposited coin, normally open contacts in the actuating circuit of said relay, said trigger when actuated to the advanced position adapted to close said normally open contacts, means for latching said trigger in said advanced position, means controlled by said relay for releasing said trap from said holding means to permit said trap to drop to coin discharging position and means actuated by said trap in moving to said coin discharging position for releasing said trigger from said latching means.

2. In a coin collector, an electrical relay, a coin channel for receiving deposited coins, a pivoted coin trap in said channel biased to a coin obstructing position but adapted to drop to a coin discharging position, a pivoted coin trigger projecting into said channel above said trap and biased to a normal position but adapted to be actuated to an advanced position by a deposited coin, normally open contacts in the actuating circuit of said relay, said trigger when actuated to the advanced position adapted to close said normally open contacts, means for latching said trigger in said advanced position, means controlled by said relay for directing said trap to said coin discharging position, and means actuated by said trap in its movement to coin discharging position for rendering said latching means ineffective.

3. In a coin collector, an electrical relay, a coin channel for receiving deposited coins, a pivoted coin trap in said channel biased to a coin supporting position but adapted to drop to a coin discharging position under the weight of a deposited coin, means for normally holding said trap in coin supporting position, means controlled by said relay for releasing said trap to permit said trap to drop to a coin discharging position, a pivoted coin trigger projecting into said channel above said trap and biased to a normal position but adapted to be actuated to

an advanced position by a deposited coin, normally open contacts in the actuating circuit of said relay, said trigger when actuated to the advanced position adapted to close said normally open contacts, a shoulder on said trigger, a slidable member normally held in an elevated position by said shoulder but adapted with the coin actuation of said trigger to drop to a lowered position, latching said trigger in said advanced position, and means on said trap effective in the movement of said trap to coin discharging position for engaging said member to elevate said member to a position permitting said trigger to be restored to normal.

4. In a coin collector, an electrical relay, a coin hopper for receiving deposited coins, a pivoted coin trap in said hopper biased to a coin obstructing position but adapted to drop to a coin discharging position, a pivoted coin trigger projecting into said hopper above said trap and biased to a normal position but adapted to be actuated by a deposited coin to an advanced position, normally open contacts in the actuating circuit of said relay, said trigger when actuated to the advanced position adapted to close said normally open contacts, means for latching said trigger in said advanced position, means controlled by said relay for directing said trap to said coin discharging position, and means engaged by said trap in its movement to coin discharging position for moving said latching means to trigger releasing position.

5. In a coin collector, a coin channel for receiving deposited coins, a pivoted coin trap in said channel biased to a coin supporting position but adapted to drop to a coin discharging position under the weight of a deposited coin, means for holding said trap in said coin supporting position, a pivoted coin trigger projecting into said channel above said trap and biased to a normal position but adapted to be actuated to an advanced position by a deposited coin, means for latching said trigger in said advanced position, and means actuated by said trap in its movement to coin discharging position for rendering said latching means ineffective.

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