

Feb. 23, 1943.

F. A. HOYT

2,311,751

TELEPHONE COIN COLLECTOR

Filed May 17, 1939

2 Sheets-Sheet 1

FIG. 1

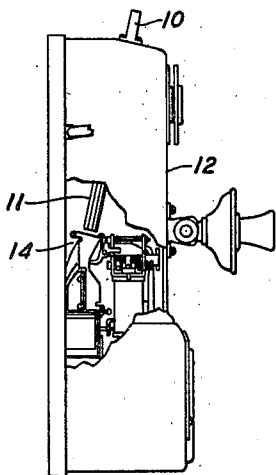


FIG. 2

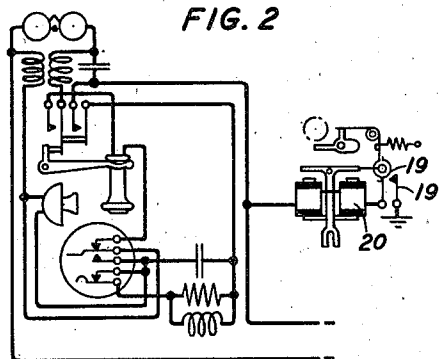
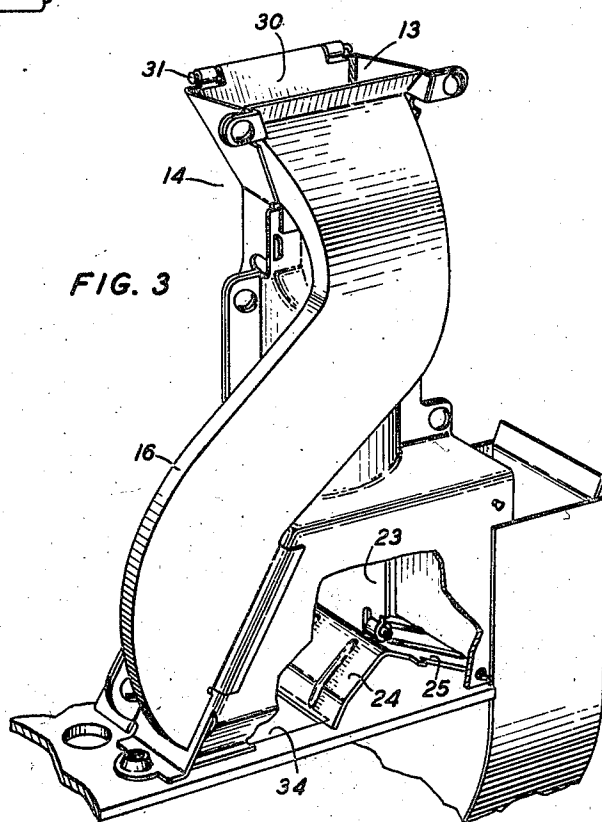


FIG. 3



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FIG. 4

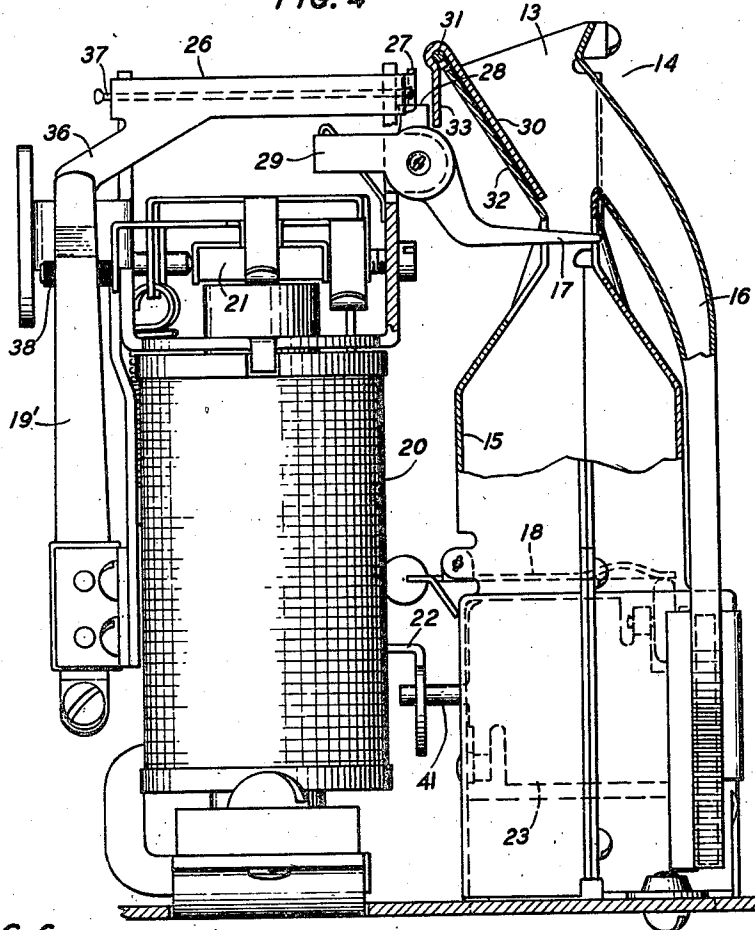


FIG. 6

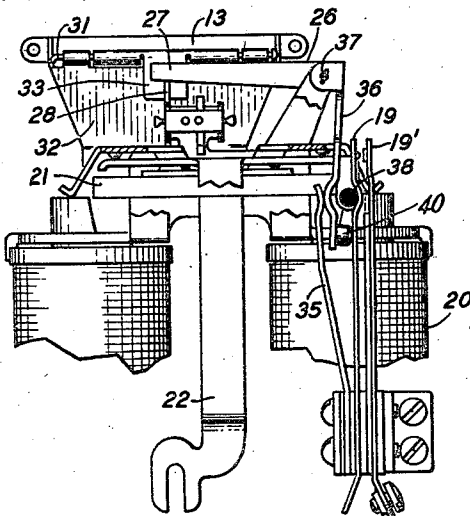
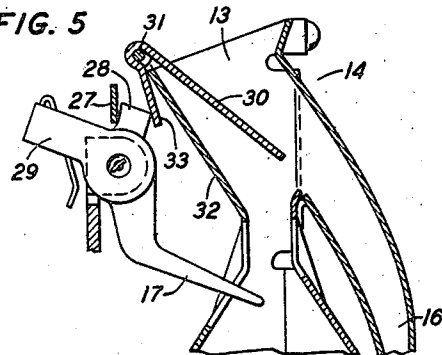


FIG. 5



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TELEPHONE COIN COLLECTOR

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4 Claims. (Cl. 194—1)

This invention relates to telephone coin collectors and has for an object the provision of a collector in which certain deposited coins will be held in suspense for subsequent collection or refund while other coins will be collected immediately upon deposit.

Telephone coin collectors as now used commercially are, in general, of two main types. In the prepay type the deposit of a coin is required before the operator can be signaled or before a number can be dialed; and in this case the deposited money is collected or refunded depending upon whether or not the desired connection is established. In the postpay type no money deposit is required until the desired connection is available or is established, whereupon the deposit of a coin is required, which coin is immediately collected without any provision for coin refund.

The collector of this invention is adapted to be used as a collector of the prepay type for local calls and as a collector of the postpay type for toll or long distance calls. For this purpose the coin hopper for receiving deposited coins is provided with two channels, one leading directly to the cash box and the other leading to a coin trap where a coin may be temporarily held in suspension for subsequent collection or refund depending upon conditions occurring after coin deposit. Mounted near the entrances to the two coin channels, above described, is a pivoted vane normally occupying a position directing a first deposited coin into the channel containing the coin trap, but responsive to the deposit of the first coin for directing a subsequently deposited coin or coins into the other channel which leads directly to the cash box. One manner in which the first coin deposited may be utilized to advance the vane to its abnormal position is to introduce a pivoted coin trigger into the initial channel below the vane, with the vane and the coin trigger having arms engaging in such a manner that the actuation of the coin trigger serves to actuate the coin vane whereby the biasing spring ordinarily employed to hold the coin trigger in actuated position will also serve to hold the coin vane in its actuated position until both of these elements have been released by the energization of the associated coin relay.

Referring to the drawings:

Fig. 1 is a general view of a telephone coin collector adapted to contain a coin hopper in accordance with this invention;

Fig. 2 is a circuit diagram of the electrical

connections of the apparatus associated with such a collector;

Fig. 3 is a view in perspective of the coin hopper of this invention;

Fig. 4 is a side view partly in section of the coin hopper of Fig. 3 associated with a coin relay;

Fig. 5 is a view of the upper portion of the coin hopper of Fig. 4 with certain parts in their coin actuated positions; and

Fig. 6 illustrates the manner in which certain electrical spring contacts are controlled by the apparatus of Fig. 4.

Fig. 1 is a side view of a telephone coin collector of the general type disclosed in the O. F. Forsberg U. S. Patent 1,043,219, issued November 5, 1912, to which reference may be had for a detailed description of its manner of operation. The collector of the present invention may be assumed to be the same as that disclosed by Forsberg except for the substitution of a new type of coin hopper for the coin hopper disclosed in the patent.

A nickel, dime or quarter deposited in the coin gauge 10 enters the proper channel of the multi-coin chute 11 located within the upper housing 12, which chute guides the deposited coin along a path to cause the coin to strike a signaling element such as a gong or bell after which the deposited coin drops into the mouth 13 of the coin hopper 14 shown in detail in Figs. 3 to 5, inclusive.

As will be noted from Fig. 4, the coin hopper has an initial coin channel 15 and a toll coin channel 16 with their entrances so arranged that a first deposited coin normally falls into channel 15 to actuate a coin trigger 17 and comes to rest upon a pivoted coin trap 18. The actuation of the coin trigger 17 serves in a well-known manner to close the spring contacts 19, 19' to establish a circuit through the windings of polarized relay 20 whereby equipment at the central office is prepared to connect the calling subscriber to the line dialed by the patron; and switches at the central office may subsequently be operated to supply collect current or refund current to relay 20 depending upon whether or not the desired connection is obtained. The application of collect current causes the relay armature 21 to move its arm 22 in the proper direction to cause vane 23 to release coin trap 18 and direct the deposited coin into the collect chute 24; while if refund current is applied, vane 23 is moved in the opposite direction to direct the coin on the trap into the refund chute 25.

In either event the energization of coin relay 20 serves to open contacts 19, 19' and restore coin trigger 17 to its normal position.

The control of the spring contacts 19, 19' by the coin trigger 17 is secured in the usual manner by a pivoted spring-pressed lever 26 which has an extension 27 resting normally on top of shoulder 28 of coin trigger 17; and with extension 27 resting on shoulder 28 as shown in Fig. 4 the contacts 19, 19' are kept open. This is illustrated particularly in Fig. 6 where contacts 19, 19' are shown open and the biasing spring 35 is restrained from closing the contacts by means of arm 36 of lever 26 due to the fact that lever arm 27 is resting on trigger shoulder 28. A deposited coin falling into channel 15 actuates the coin trigger 17 to its advanced position of Fig. 5 where shoulder 28 no longer serves to support arm 27, whereupon arm 27 acting under the pressure exerted by biasing spring 35 drops to the left of shoulder 28 as seen in Fig. 5; and spring 35 and arm 36 in moving to the right as shown in Fig. 6 cause button 40 to close contacts 19, 19'. The relay 20 is of the polarized type as disclosed in the above-mentioned Forsberg patent whereby its armature 21 is moved in a direction dependent upon the polarity of the applied voltage; and it will be noted that armature 21 has an extension 22 engaging a pin 41 on the pivoted coin vane 23 which normally supports the pivoted coin trap 18. When collect or refund current is applied at the central office to energize relay 20 it is therefore obvious that for a voltage of one polarity (collect current) armature 21 and its extension 22 will be rotated say in a counter-clockwise direction as seen in Fig. 6, thereby moving vane 23 to the right as seen in Fig. 3 to allow coin trap 18 to drop due to gravity and discharge its coins into collect chute 24; while for an applied voltage of the opposite polarity (refund current) armature 21 and its extension 22 will be rotated in a clockwise direction as seen in Fig. 6, thereby moving vane 23 to the left as seen in Fig. 3 to allow coin trap 18 to drop due to gravity and discharge its coins into refund chute 25.

As explained in the Forsberg patent, the momentary application of collect current or refund fund current to relay 20 also serves to restore coin trigger 17 to normal, thereby enabling spring contacts 19, 19' to reopen when the relay is subsequently deenergized. Armature 21 carries an insulating roller 38 which normally lies in a depression in the confronting faces of arm 36 and contact spring 19. When armature 21 is deflected by the energization of relay 20 this roller 38 rides out of said depression and acting against arm 36 of angular lever 26 elevates the horizontal arm 27 above the path of trigger shoulder 28 to allow counterweight 29 to restore coin trigger 17 from its operated position of Fig. 5 to its normal position of Fig. 4. When the relay is subsequently deenergized to return armature 21 to normal, roller 38 is likewise restored to its normal position of Fig. 6, thereby allowing lever arm 27 to drop down again on top of trigger shoulder 28 so that the trigger shoulder 28 again latches lever 26 to maintain the switch actuating button 40 out of engagement with spring contacts 19, 19' until the trigger 17 is again released by a deposited coin. Except for the reference to by-pass channel 16 the operation so far described is identical with that of the structure disclosed in the Forsberg patent.

It will be noted from Figs. 3 to 5, inclusive, 75

that the upper portion of the coin hopper contains a vane 30 pivoted about pin 31 and normally biased by gravity to lie against wall 32 in which position it performs no coin directing function except to permit a deposited coin to drop into channel 15. However, vane 30 external to the coin hopper has a downwardly extending arm 33 lying in the path of shoulder 28. As shown in Fig. 4 arm 33 normally lies adjacent to but out of contact with shoulder 28. When a coin is deposited to move coin trigger 17 from its position of Fig. 4 to its position of Fig. 5 the resulting clockwise movement causes shoulder 28 to contact with arm 33 to produce a counter-clockwise movement of vane 30 about its pivot 31, thereby advancing vane 30 to its position of Fig. 5 where vane 30 blocks the entrance to the initial channel 15 and serves to direct any subsequently deposited coin into the by-pass channel 16. Vane 30 is held in its advanced position as long as arm 27 of the spring-pressed lever 26 is in its position of Fig. 5 where it blocks the return of coin trigger 17 to its normal position.

However, as soon as collect current or refund current is applied to relay 20, arm 27 as previously described is elevated above shoulder 28, thereby permitting counterweight 29 to restore trigger 17 to normal; and trigger 17 in restoring to normal removes shoulder 28 from its blocking position for arm 33 thereby permitting vane 30 under the influence of gravity to move back to its normal position of Fig. 4.

It will be apparent from Figs. 3 and 4 that by-pass channel 16 leads directly to the collect chute opening 34 in the base of the coin hopper below coin trap 18 so that any coin deflected by vane 30 into channel 16 will not strike coin trigger 17 nor will such a coin be held in suspense on coin trap 18 but will pass directly through opening 34 into the cash box located in the lower portion of the housing of Fig. 1.

One advantage of the coin hopper construction above described is that there is no danger that the coin load on the coin trap will be sufficiently great to prevent the coin relay from operating coin vane 23 to dispose of any coins on the coin trap. For a local call involving only one coin it will be apparent that by-pass channel 16 performs no function since the single coin for each local call will pass into channel 15 and will be held suspended on coin trap 18 for subsequent collection or refund; and the energization of coin relay 20 will restore coin trigger 17 and vane 30 to their normal positions of Fig. 4 ready to permit the coin for the next local call to be directed into the initial coin chute 15.

However, for a toll call involving the deposit of more than one coin the operation is as follows: The central office operator upon ascertaining that a toll call is desired will refund the initial coin resting on trap 18 and will then request the deposit of the toll charges, say, twenty-five cents. The refunding of the initial call coin as previously described serves to restore trigger 17 and vane 30 to their normal positions of Fig. 4. If the patron now deposits five nickels in payment of the toll charges, the first nickel will, therefore, enter chute 15 and be held in suspense on trap 18 after the coin has actuated trigger 17 to advance vane 30 to its position of Fig. 5. The remaining four nickels deposited in payment of the toll charges will, therefore, be directed into by-pass channel 16 by means of which they drop directly into the cash box. The first nickel of the toll payment will be collected at the proper time

by applying collect current to relay 20; and relay 20 in operating will restore vane 30 to its normal position of Fig. 4 as previously described.

It will, therefore, be apparent that the coin hopper of this invention provides an arrangement whereby the coin trap load is limited to one coin and any additional coins deposited for a given call are by-passed around the coin trap and collected immediately upon deposit.

What is claimed is:

1. In a coin collector provided with a cash compartment, a coin hopper having a main coin receiving passage leading to two branch channels, one of said channels being an initial coin channel and a second of said channels leading directly to said cash compartment, a pivoted vane in said main passage which in one position permits a deposited coin to enter said first channel and in the second position directs a deposited coin into said second channel, said vane being biased to said first position, a coin trigger pivoted externally of said hopper and having an arm projecting into said first channel for actuation by a deposited coin, a shoulder on said trigger external to said hopper, said vane having an arm lying in the path taken by said shoulder when said trigger is moved by a deposited coin whereby the coin actuation of said trigger moves said vane to its said second position, means for holding said trigger in coin actuated position, and relay means for releasing said trigger from said holding means.

2. In a coin collector housing provided with a collection box, a coin hopper having a main coin receiving passage leading to two branched coin channels, one of said channels being an initial coin channel and a second of said channels leading directly to said collection box, said main passage being substantially vertically arranged and being defined by stationary side walls, a pivoted member comprising a coin deflecting vane lying within said main passage between said stationary walls, which vane in a first position permits a deposited coin to enter said first channel and in a second position directs a deposited coin into said second channel, said vane being biased to said first position, a coin trigger pivoted externally of said hopper and biased to a normal position in which said trigger projects into said first channel for actuation to an advanced position by a deposited coin, said member having external to said hopper an arm lying in the path taken by an external portion of said trigger when said trigger is moved by a deposited coin to its advanced position whereby said trigger in moving to said advanced position engages said arm to advance said vane to said second position, means

for holding said trigger in its coin actuated position and relay means for releasing said trigger from said holding means.

3. In a coin collector housing provided with a collection box, a coin hopper having a coin receiving mouth, a substantially vertically arranged coin passage leading from said mouth down which deposited coins are adapted to pass under the influence of gravity, said passage being defined by stationary side walls, one of said walls near said mouth having an aperture, a by-pass coin channel leading from said aperture to said box, a coin trigger pivoted externally of said hopper on the side of said hopper remote from said aperture, said trigger having an arm biased to a normal position in which said trigger projects into said passage below said aperture for actuation to an advanced position by an initially deposited coin, a movable member pivoted about an axis lying above the axis of said trigger and comprising a vane lying within said passage above said trigger, said vane being biased by gravity to a normal position in which said vane permits an initially deposited coin to strike said trigger and adapted to be moved to an advanced position in which said vane diverts a deposited coin through said aperture into said by-pass channel, an arm on said member adapted to be engaged by said trigger to move said vane to said advanced position when said trigger is actuated by a deposited coin, means for holding said trigger in its coin actuated position and relay means for releasing said trigger from said holding means.

4. In a coin collector housing, a coin hopper having a main coin receiving passage leading to two branch coin channels, said main passage being substantially vertically arranged and being defined by stationary side walls, a pivoted member comprising a coin deflecting vane extending downwardly from the axis of said member, said vane lying between said stationary walls and biased by gravity to a normal position directing a first deposited coin into one of said channels but adapted to be moved to a second position in which a subsequently deposited coin is deflected by said vane into said second channel, means actuated by said first deposited coin for engaging said member to advance said vane to said second position, means effective during the deposit in succession of several coins subsequent to said first coin for holding said vane in said second position to permit all of said successively deposited coins to be deflected by said vane into said second channel and relay means for releasing said vane from said holding means.

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