

Feb. 3, 1942.

O. A. SHANN

2,271,718

TELEPHONE COIN COLLECTOR

Filed Oct. 31, 1939

2 Sheets-Sheet 1

FIG. 1

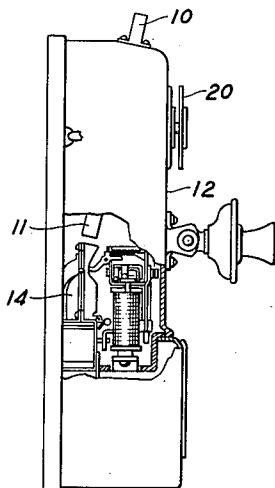


FIG. 2

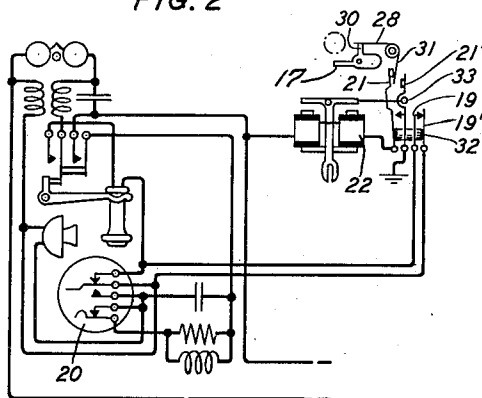
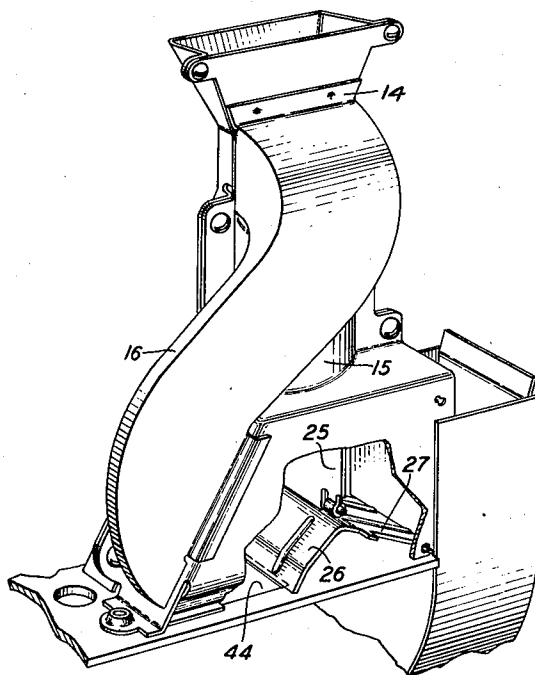


FIG. 3



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FIG. 4

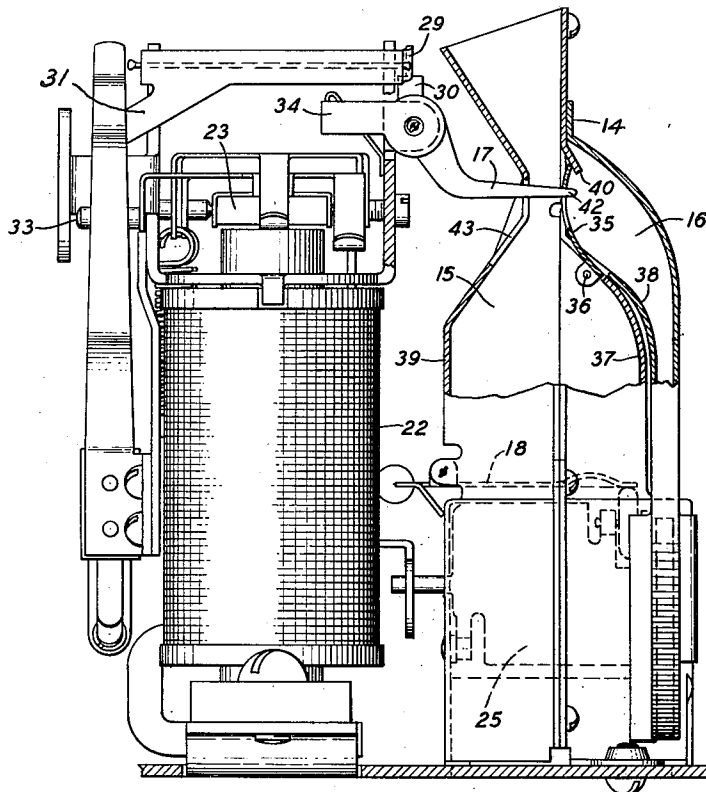


FIG. 6

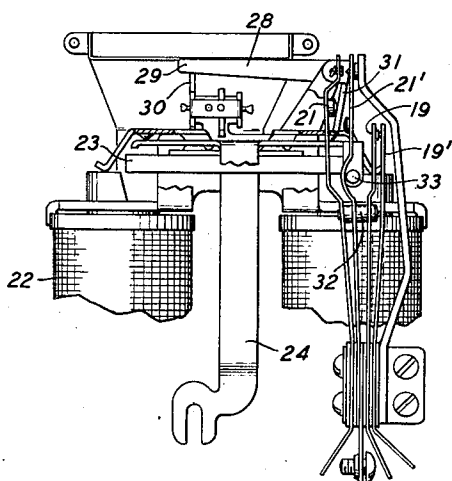
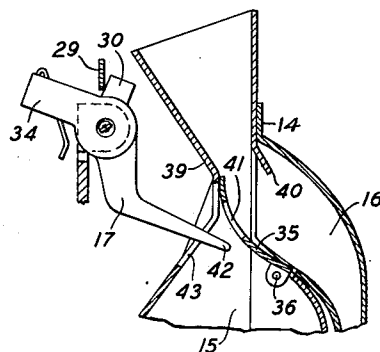


FIG. 5



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TELEPHONE COIN COLLECTOR

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3 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, dependent 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 established, whereupon the deposit of a coin is required, which coin is immediately collected without any provision for 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 a by-pass channel leading directly to the cash box and the other leading to a coin trap where a coin may be temporarily held in suspense for subsequent collection or refund, depending upon conditions occurring after coin deposit. Near the entrances to the two coin channels 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 by-pass channel leading directly to the cash box.

One manner in which this may be accomplished is to pivot the vane along such an axis that it is biased to a position closing the entrance to the coin trap channel but is normally supported in a position closing the entrance to the by-pass channel by means of a coin trigger projecting into the hopper and engaging the vane. The first deposited coin strikes the coin trigger and enters the channel containing the coin trap but the resulting actuation of the coin trigger permits the vane under its biasing means to advance to its other position whereby any subsequently deposited coins are directed into the by-pass channel. This coin trigger for supporting the vane may also serve the same functions as the coin trigger disclosed in the O. F. Forsberg United States Patent No. 1,043,219 for establishing a circuit through the windings of the associated coin relay. The application of collect or refund current to the associated electromagnet for disposing of the coin on the coin trap will serve to release the coin trigger from its biasing spring and the trigger in moving to nor-

mal position will lift the vane back to normal where it closes the by-pass channel.

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 sectional view of the upper portion of the coin hopper 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 United States Patent No. 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 essentially the same as that disclosed by Forsberg except for the substitution of a new type of coin hopper for the hopper disclosed in the patent.

A nickel, dime or quarter deposited in the coin gauge 10 enters the proper channel of the multiple coin chute 11 located in 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 of a coin hopper 14 of the type shown in detail in Figs. 3 to 5, inclusive.

As will be noted in Fig. 4, the coin hopper has an initial coin channel 15 and a toll channel 16 with their entrances so arranged that a first deposited coin upon entering the hopper strikes a coin trigger 17 and falls vertically into channel 15 to come to rest upon a pivoted coin trap 18. The coin trigger 17 serves, in a well-known manner, to open the spring contacts 19, 19' which normally short-circuit the pulsing contacts of the calling dial 20 and at the same time serves to close the spring contacts 21, 21' to establish a circuit through the windings of the polarized relay 22 whereby equipment at the central office is prepared to connect the calling subscriber to the subscriber dialed by the patron; and switches at the central office may subsequently be operated to supply collect current or refund current to relay 22 depending upon whether or not the desired connection is obtained. The application of collect current causes the relay armature 23 to move its arm 24 in the proper direction to

cause vane 25 to release coin trap 18 and direct the deposited coin into the collect chute 26; while if refund current is applied, vane 25 is moved in the opposite direction to direct the coin on the trap into refund chute 27. In either event the subsequent deenergization of coin relay 22 serves to close contacts 19, 19', open contacts 21, 21', and to restore coin trigger 17 to normal position.

The control of the spring contacts by the coin trigger is secured by a pivoted lever 28 which has an extension 29 normally resting on top of shoulder 30 of the coin trigger 17. A downwardly projecting arm 31 of lever 28 is interposed between studs on spring contacts 21 and 21' with spring contact 21 biased to a position closing spring contacts 21, 21' but prevented from so doing as long as lever extension 29 rests on trigger shoulder 30. It may also be noted that spring contact 21 carries a stud 32 which passes through apertures in spring contact 21' and 19 and terminates adjacent spring contact 19'. As soon as lever extension 29 is released from shoulder 30 the movement of spring contact 21 to the right, as viewed in Fig. 6, serves to bring stud 32 into engagement with spring contact 19' to separate spring contacts 19, 19' whereby the spring contacts 19, 19' will remain open until spring contact 21 is moved to the left by the raising of lever extension 29. It thus follows that a first deposited coin falling into the coin hopper actuates the coin trigger 17 to its advanced position of Fig. 5 where shoulder 30 no longer serves to support extension 29, whereupon extension 29 acting under the pressure exerted by spring contact 21 drops to the left of shoulder 30 as seen in Fig. 5; and spring contact 21 in moving to the right, as shown in Fig. 6, serves to close spring contacts 21, 21' and open spring contacts 19, 19'. When the armature 23 is actuated by the application of collect current or refund current to the relay windings the armature extension 33 serves to deflect lever arm 31 to the left, as seen in Fig. 6, an amount sufficient to raise arm 29 above the path of shoulder 30, thereby allowing counterweight 34 to restore the coin trigger 17 to normal.

It will be noted from Figs. 3 to 5 that the upper portion of the coin hopper has a vane 35, suitably pivoted at its lower end along an axis 36 adjacent the junction of the adjacent walls 37, 38 of the coin channels 15, 16. This vane is normally biased by gravity to its position of Fig. 5 with its upper end resting against side wall 39 of the hopper, in which position the vane completely closes the entrance to channel 15, the inclined position of the vane serving to deflect all coins into the by-pass channel 16 leading directly to the cash compartment in the lower housing of the collector. However, vane 35 is normally held in its position of Fig. 4 where its upper edge lies against the inclined lip 40 of the hopper mouth just above the entrance to the by-pass channel 16 whereby the entrance to channel 16 is completely closed to deposited coins. Vane 35 has an upwardly extending slot 41 of sufficient width to freely receive the end 42 of coin trigger 17. The arrangement is such that with the coin trigger in its normal position the trigger end 42 positively engages the upper edge of slot 41 to hold vane 35 against the hopper wall 40. This normal position is shown in Fig. 4 where trigger 17 is shown projecting through a vertical aperture 43 in hopper side wall 39, across the coin passage and into the slot 41 in the vane

with the end of the trigger engaging the upper edge of slot 41.

In the absence of a deposited coin the normal position of coin trigger 17 and vane 35 is, therefore, that of Fig. 4. The first deposited coin upon entering the hopper will strike trigger 17 to deflect it downwardly substantially to its position of Fig. 5. This removes the trigger shoulder 30 from beneath lever extension 29 and lever arm 31, acting under the pressure of spring contact 21, moves to the right as shown in Fig. 6 whereby lever extension 29 drops behind trigger shoulder 30 to temporarily hold the trigger 17 in its actuated position whereby the other lever arm 31 is permitted to move to the right to close spring contacts 21, 21' and open contacts 19, 19'.

With trigger 17 in its actuated position of Fig. 5 the vane 35 is obviously freed from the trigger end 42 and hence the vane falls, due to gravity, to the position of Fig. 5, in which position the vane 35 will remain until the coin trigger 17 is restored to normal position. With vane 35 in its position of Fig. 5 any coins now deposited will be prevented from entering the initial channel 15 but will be deflected by vane 35 into the by-pass channel 16 leading directly into the cash compartment.

As soon as collect current or refund current is applied to relay 22, lever extension 29, as previously described, is elevated above shoulder 30 thereby permitting counterweight 34 to restore trigger 17 to normal position as soon as the relay armature 23 has assumed its neutral position.

It will be apparent from Figs. 3 and 4 that by-pass channel 16 leads directly to the collect chute opening 44 in the base of the coin hopper but below coin trap 18 so that any coin deflected by vane 35 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 44 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 25 to dispose of the coins held in suspense. 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 22 will restore coin trigger 17 and vane 35 to their normal positions of Fig. 4 ready to permit the coin for the next local call to be directed in the same manner into the initial coin channel 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 deposit of the toll charges, say twenty-five cents. The refunding of the initial coin as previously described serves to restore trigger 17 and vane 35 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 such coin has actuated trigger 17 to permit vane 35 to occupy its lower position of Fig. 5. The remaining four nickels deposited in

payment of the toll charges will therefore be directed into by-pass channel 16 through 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 22; and relay 22 in operating will restore vane 35 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, a coin hopper having a coin entrance passage, a first coin channel and a second coin channel leading from said passage, said channels having their coin entrances offset with respect to each other, each channel being downwardly extended, a coin vane pivoted adjacent the entrances to said channels and biased to a first position for closing the entrance to said first channel and for directing a deposited coin into said second channel, said vane in a second position closing the entrance to said second channel and directing a deposited coin into said first channel, means for normally holding said vane in said second position, said means comprising a coin trigger engaging said vane and normally projecting into said passage for actuation by a first deposited coin, and means for holding said trigger after coin actuation out of engagement with said vane.

2. In a coin collector, a coin hopper for receiving deposited coins, said hopper having a substantially vertical coin entrance passage leading to a first coin channel substantially vertically

aligned with said passage, whereby a coin drops substantially vertically in traversing said passage and said first channel, said hopper having a second coin channel inclined from the vertical and also communicating with said passage, a coin vane pivoted along an axis intermediate said channels and biased to a position for closing the entrance to said first channel and for directing a deposited coin into said second channel, and a pivoted coin trigger projecting into said passage for actuation by a deposited coin and normally engaging said vane to hold said vane in a position which permits a first deposited coin to enter said first channel and which prevents said first deposited coin from entering said second channel.

3. In a coin collector, a coin hopper having a coin passage for receiving deposited coins, a pair of coin channels leading from said passage, one side wall of said passage having an aperture, a coin deflecting vane within said hopper and pivoted adjacent the side wall of said hopper opposite said aperture, said vane in one position directing a deposited coin into one of said channels, said vane in a second position directing a deposited coin into the second of said channels, said vane being biased to said second position and having an elongated slot, means for normally holding said vane in said first position, said means comprising a coin trigger pivoted externally of said hopper and having an arm projecting through said aperture across said passage and into said slot whereby said trigger normally prevents said vane from advancing to said second position, and means effective after said trigger has been struck by said deposited coin for holding said trigger in its actuated position.

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