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2,064,280

COIN COLLECTING APPARATUS

Filed May 17, 1935

FIG. 1

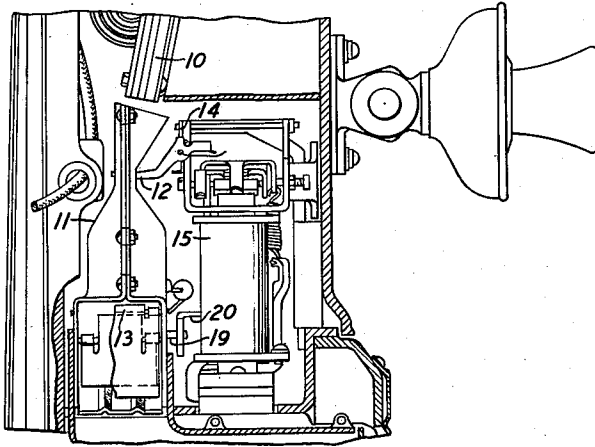


FIG. 4

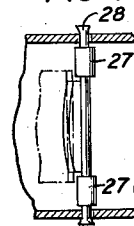


FIG. 2

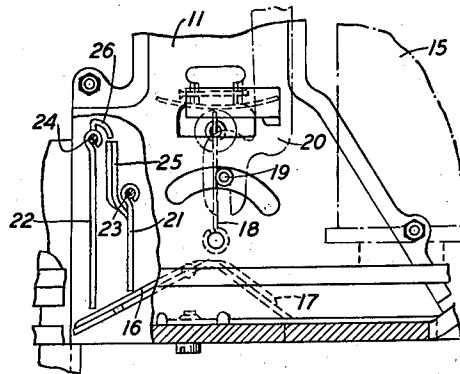


FIG. 3

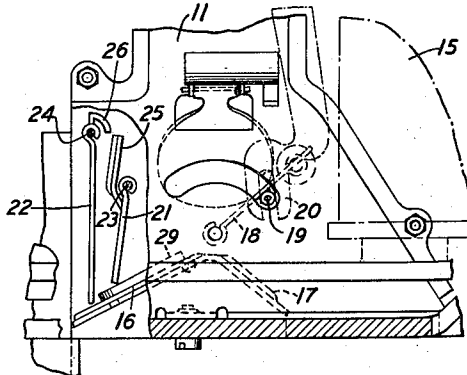


FIG. 6

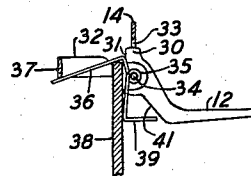
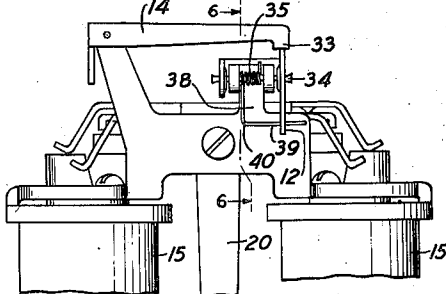


FIG. 5



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2,064,280

COIN COLLECTING APPARATUS

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Application May 17, 1935, Serial No. 21,932

3 Claims. (Cl. 194—97)

This invention relates to coin collecting apparatus, particularly of the type for use in a telephone pay station.

In the usual type of telephone coin collector as exemplified in the disclosure of the O. F. Forsberg U. S. Patent 1,043,219, issued November 5, 1912, deposited coins, after striking a coin trigger to close a circuit for the coin relay, are temporarily retained upon a coin trap and subsequently directed into a collect chute or a refund chute depending upon whether the desired telephone connection is established. The coin trap may be supported by a normally vertical vane pivoted at its lower end and controlled by the coin relay to be moved in one direction to allow the coins on the trap to be discharged into the collect chute and moved in the opposite direction to discharge coins into the refund chute, leading to an opening in the housing where the refunded coins may be recovered by the user of the instrument.

The refund side of the coin hopper is usually equipped with a shutter hinged in such a way as to freely swing outwardly to permit the normal passage of coins from the hopper into the lower part of the refund chute but blocked against any movement in the reverse direction towards the coin vane. Unscrupulous persons, however, occasionally insert wires or other tools up the refund chute in an attempt to swing this shutter outwardly in order to gain access to the coin vane and secure a fraudulent refund of coins before the central office operator has operated the electromagnet to collect the coins on the trap.

An object of this invention is to increase the difficulty of obtaining fraudulent refunds from a coin collector and to increase the protection of the coin refunding mechanism from tampering.

A further object is the provision of an improved coin trigger mounting for a coin collector of the above described type.

In accordance with the preferred form of this invention, a pair of interlocking shutters are provided for the refund outlet of the coin hopper so arranged that the exterior shutter is free to move outwardly only when it has been released from a locked condition by a substantial outward movement of the inner shutter. Thus, the upper end of the inner shutter may have an extension normally lying in the path of the movement of an extension from the outer shutter, so that any attempt to move the outer shutter with the inner shutter in its normal position will be frustrated, but the outer shutter may be

moved freely outwardly as soon as there has been a substantial outward movement of the inner shutter. This arrangement will lock the outer shutter against any attempt to force it outwardly to permit the insertion of a wire or other tool into the coin hopper but will not interfere in any manner with the legitimate discharge of coins from the coin trap.

Referring to the drawing,

Fig. 1 is a fragmentary view, partly in section, of the central portion of a telephone coin collector disclosing a coin hopper embodying this invention;

Fig. 2 is an enlarged front view of the coin hopper of Fig. 1, showing the interlocking shutters in normal unactuated position;

Fig. 3 is similar to Fig. 2 and shows the interlocking shutters being operated by a discharged coin;

Fig. 4 is a top view of the inner shutter of Fig. 2;

Fig. 5 illustrates an improved coin trigger mounting, and

Fig. 6 is a sectional view taken along the line C—C of Fig. 5.

Fig. 1 shows only a portion of a telephone coin collector of the type disclosed in the above-mentioned Forsberg patent, to which reference is made for further details as to its construction and method of operation. As explained in the Forsberg patent, a coin deposited by a subscriber after passage through a coin chute drops into a coin hopper 11, actuates a coin trigger 12 and is temporarily retained upon a coin trap 13. The actuation of trigger 12 releases the spring pressed lever 14 to enable a circuit to be closed through the windings of a polarized relay 15 whereby the remote central office operator by an arrangement disclosed in the Forsberg patent may subsequently cause the coin on trap 13 to be directed into a refund chute 16 or a collect chute 17 depending upon the polarity of the current applied to the relay 15.

Trap 13 is normally supported in a substantially horizontal position by a vane 18 which is pivoted at its lower end and which has a pin 19 projecting through an arcuate slot in the hopper for engagement with the forked end of the extension 20 of the relay armature. Referring to Fig. 2, if the armature extension 20 is moved to the right it is obvious that the coin trap 13 in falling will discharge the coins thereon into refund chute 16 leading to an opening (not shown) in the collector housing where such coins

may be recovered by the user of the instrument. If the armature extension 20 is moved to the left it will also be apparent that the coin trap 13 will discharge the coins thereon into chute 17 which may lead to a cash compartment.

In view of the fact that the refund chute 16 as in the Forsberg patent leads to an opening in a side wall of the collector housing, it is necessary to protect the vane 18 from tampering, specifically to prevent the vane 18 from being fraudulently actuated by wires or other instruments inserted through the refund opening. Referring particularly to Figs. 2 and 3, it will be seen that refund chute 16 is normally closed by two shutters 21, 22, shutter 21 being pivoted about axis 23 and shutter 22 being pivoted about axis 24. Due to the sloping bottom of refund chute 16 it will be apparent that neither shutter can be pushed inwardly from its normal vertical position since such movement is prevented by the bottom edge of each shutter striking the bottom wall of the refund chute.

Shutter 21 which is pivoted on a lower axis than shutter 22 has an upwardly extending arm 25 the upper edge of which lies in the path of travel of a downwardly curved extension 26 on shutter 22. If a coin is dropped by coin trap 13 into refund chute 16, the discharged coin will, of course, first strike shutter 21 which yields freely to allow the coin to pass and this outward movement as shown in Fig. 3 removes extension 25 out of the path of extension 26 so that the outer shutter 22 will also freely yield when the coin subsequently strikes it to enable the coin to pass on down the refund chute to the refund opening in the lower part of the coin collector housing. That is, when shutter 21 is moved outwardly prior to shutter 22 the two shutters in turn yield freely to permit the passage of any refunded coins but an attempt to operate the two shutters in reverse order will be frustrated. For example, if a wire or tool is inserted up the refund chute in an attempt to pry the shutters 22, 21 outwardly, the shutter 22 can be moved outwardly only a small distance before its extension 26 contacts with the upper arm of shutter 21 and not only prevents further outward movement of shutter 22 but also prevents shutter 21 from being moved outwardly. It is, therefore, apparent that shutter 22 cannot be opened unless shutter 21 has previously been opened, so that there is no danger that a tool or wire can pass beyond the two shutters and produce a fraudulent refund operation of vane 18.

In order that the upper edge of extension 25 may provide a satisfactory cam surface for extension 26, it may be desirable as shown in Fig. 4 to have arm 25 bowed slightly from a vertical plane to produce the same result as if the arm 25 were of increased thickness. From Fig. 4 it will also be seen that each side edge of shutter 21 has an extension 27 curved to form a bearing surface for the pivoting pin 28. For efficient operation the two shutters 21, 22 should be located in close proximity to each other although, if desired, they may be somewhat farther apart than indicated in the drawing.

Fig. 3 shows the operation of the shutters by a coin 29 which has been dropped from trap 13 after coin vane 18 has been moved to the right by electromagnet 15. In the position shown, the coin has pushed shutter 21 outwardly so that shutter 22 will yield freely when it in turn is struck by the descending coin.

As previously stated, one of the important

functions performed by a deposited coin is to strike trigger 12 and cause a circuit to be established through the windings of electromagnet 15. The spring pressed lever 14 rests on a shoulder 30 formed on the coin trigger just above its pivoting axis. When a coin strikes trigger 12, knocking the trigger downwardly, the end piece 33 of lever 14 slides off shoulder 30 into a recess 31 formed in the counterbalance 32 of the trigger. This lowering of arm 14 causes contact springs to be closed to establish the desired circuit and the subsequent operation of relay 15 as described in the Forsberg patent raises arm 14 upwardly a sufficient distance to allow trigger 12 to restore so that when the relay is deenergized lever 14 will again rest upon shoulder 30 of the trigger.

In order to minimize the danger of false operation of the trigger by blows on the housing and to minimize sticking troubles in its operated position, a resilient stop is provided to limit both the upward and the downward movement of the trigger. This is preferably accomplished by a helical spring, each end of which serves as a resilient stop for movement in one direction. As shown in Figs. 5 and 6 the pivoting pin 34 has wrapped around it several turns of a wire 35. One end of wire 35 comprising a straight portion 36 projects over the upper edge of the trigger support 38 and under arm 37 of the counterbalance to provide a resilient stop for the trigger in its restoring movement. The other end of wire 35 projects downwardly from the pivoting pin 34 and is then bent at right angles to provide a substantially horizontal arm 39 which at the point 40 is pressed against the face of support 38, but then is bent outwardly in a horizontal plane so that the main portion of arm 39 lies a substantial distance away from the face of support 38. As will be apparent from Figs. 5 and 6, this projecting wire 39 forms a resilient stop for the trigger in its downward movement since portion 41 of trigger 13 will strike wire 39 when the trigger has been knocked downwardly by a deposited coin.

This resilient stop for the coin trigger is described and claimed in my divisional application Serial No. 64,690 filed February 19, 1936.

An additional modification of the coin collector of the Forsberg patent should be noted with respect to coin trigger 12 and the associated spring pressed lever 14. In order to obtain increased spring pressure on lever 14 while still permitting coin trigger 12 to be positively actuated by a thin dime the height of shoulder 30 above the pivoting axis of the trigger has been reduced and lug 33 projecting from the under surface of lever 14 has been added to offset the reduction in height of shoulder 30.

While the forms of this invention described above are preferred it is to be understood that the invention may possess other embodiments commensurate with the scope of the appended claims.

What is claimed is:

1. In a coin collector housing, a collect chute, a refund chute, means for guiding a deposited coin at times into said collect chute and at other times into said refund chute, said refund chute leading to a refund opening in said housing, a pivoted shutter in said refund chute between said means and said opening, a second pivoted shutter between said means and said first shutter, said second shutter being pivoted upon an axis lying in a horizontal plane below the horizontal plane

containing the pivoting axis of said first shutter, a downwardly projecting lug on said first shutter, and an upwardly projecting lug on said second shutter arranged to engage said first lug
5 when pressure is applied to move said first shutter outwardly towards said opening when said second shutter is in its normal unactuated position, said second lug being out of the path
10 of said first lug when said second shutter is moved outwardly from its normal unactuated position.

2. In a coin collector housing, a collect chute, a refund chute, means for guiding a deposited coin at times into said collect chute and at other
15 times into said refund chute, said refund chute leading to a refund opening in said housing, a plurality of pivoted shutters in said refund chute between said opening and said means, each
20 of said shutters normally lying in a position closing said refund chute, said refund chute beneath said shutters having a bottom wall which slopes downwardly away from said means, said

sloping wall preventing said shutters from being opened inwardly, and means for preventing one shutter adjacent said opening from being opened
outwardly towards said opening until a second
5 shutter between said first shutter and said first means is opened outwardly, said second means holding the bottom end of said second shutter tightly against said bottom wall when any attempt
10 is made to open said first shutter outwardly.

3. A coin collector housing in accordance with claim 2 in which said first shutter is pivoted on an axis above the pivoting axis of said second shutter and said second means comprises an
upwardly extending lug on said second shutter
15 and a downwardly extending lug on said first shutter contacting with said first lug when an attempt is made to move said first shutter outwardly with said second shutter in its normal
20 position.

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