Aug. 3, 1943. H. A. HENNING 2,325,954

COIN DISPOSAL UNIT

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FIG. 1

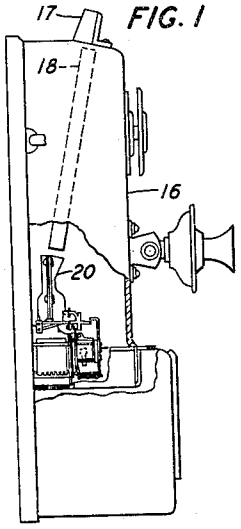


FIG. 2

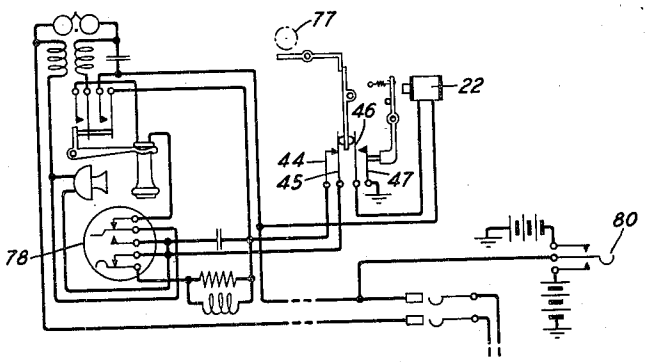


FIG. 6

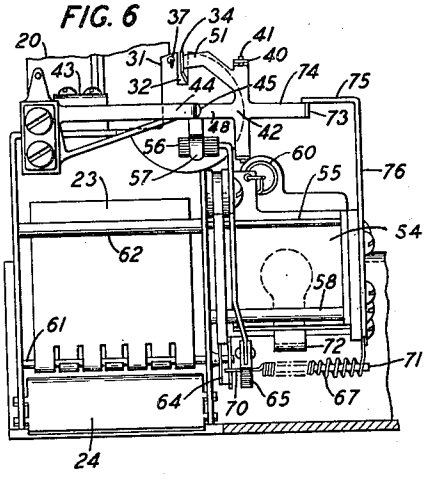


FIG. 7A

CONDITION AFTER COIN DEPOSIT

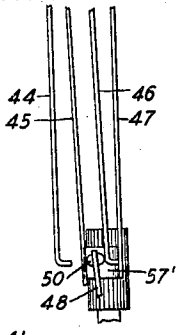
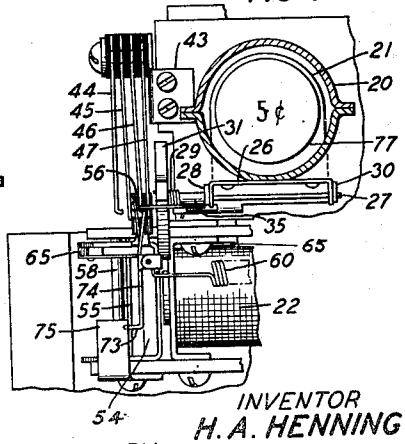


FIG. 3

FIG. 7



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COIN DISPOSAL UNIT

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FIG. 4

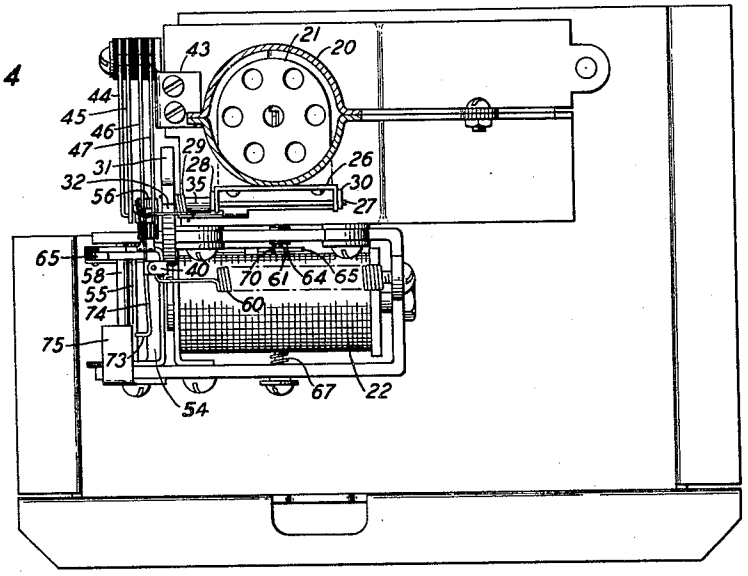

FIG. 4A

SPRINGS IN NORMAL CONDITION

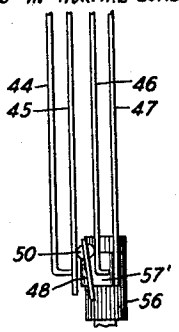

FIG. 5

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FIG. 8

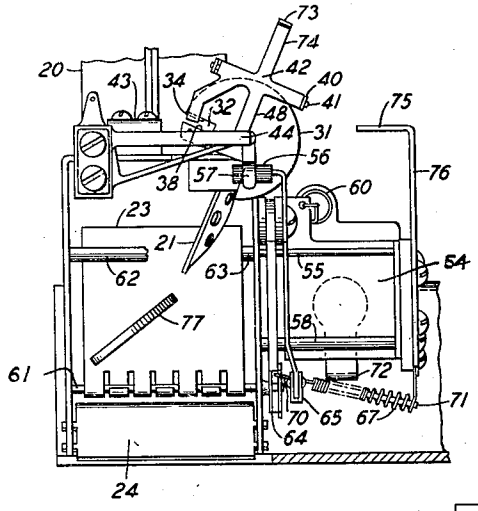

FIG. 9

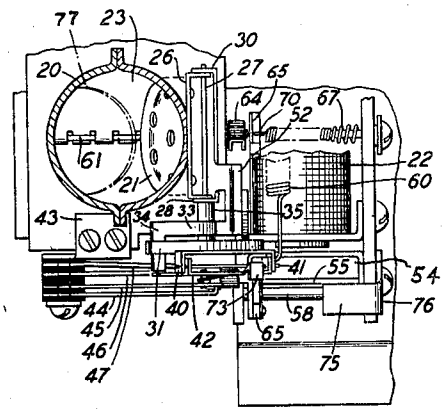

FIG. 9A

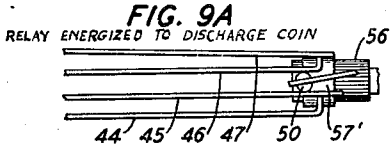

FIG. 10

FIG. 11

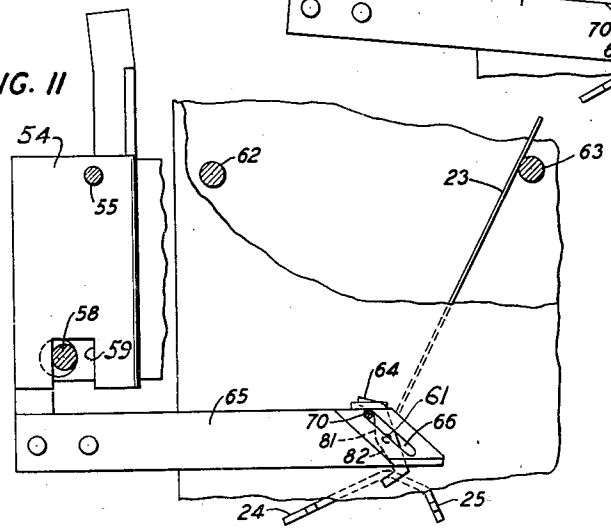

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FIG. 12

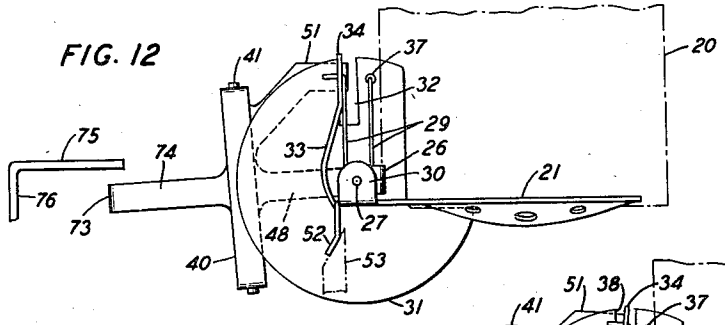


FIG. 13

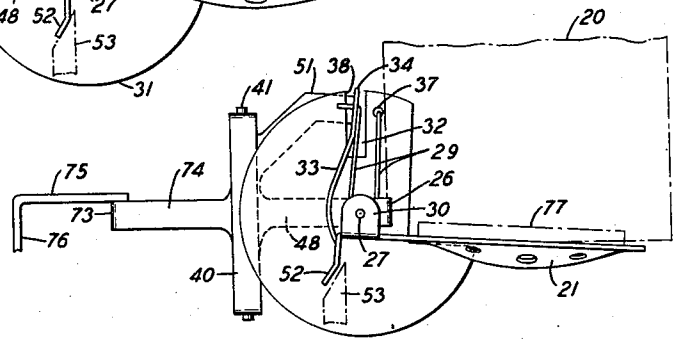


FIG. 14

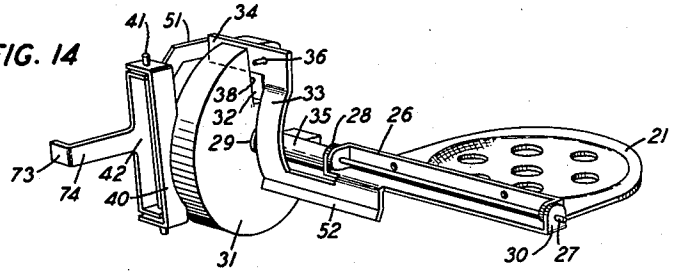
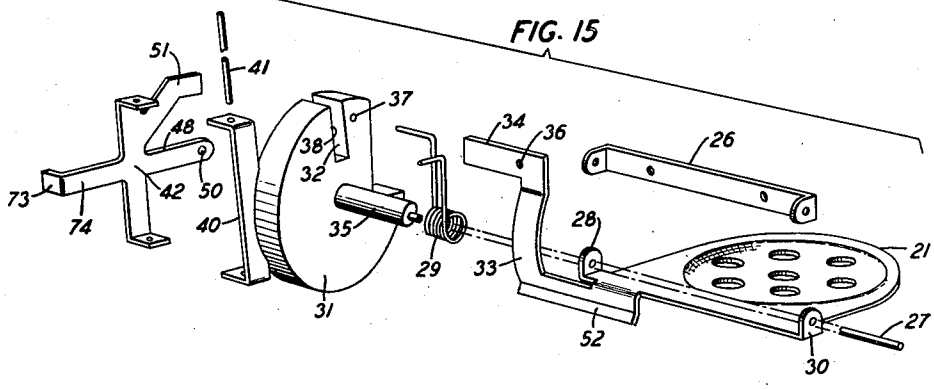


FIG. 15



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Patented Aug. 3, 1943 2,325,954

UNITED STATES PATENT OFFICE

2,325,954

COIN DISPOSAL UNIT

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Application January 1, 1942, Serial No. 425,269

18 Claims. (Cl. 232—57.5)

This invention relates to coin disposal units adapted for use in coin operated devices such as a telephone coin collector.

An object of the invention is to provide a simplified mechanism of increased efficiency for disposing of the coins deposited in a coin operated device.

In accordance with one embodiment of the invention as applied to a telephone coin collector, the coin disposal unit comprises a coin hopper having a normally unsupported coin trap below which lies the entrance to a coin collect chute and the entrance to a coin refund chute. A pivoted vane or other suitable means under the control of a relay and located below the coin trap serves to deflect deposited coins into the collect chute or the refund chute, as may be desired.

In order that any deposited coin may be temporarily held in suspense on the coin trap, the coin disposal unit includes means for latching the trap in coin supporting position which becomes immediately effective in response to the initial downward movement of the trap produced when the trap is struck by a deposited coin. This initial trap movement also serves to upset a trigger to permit the closing of electrical contacts associated with a coin relay whereby the relay may be subsequently energized to release the trap latch and establish the coin deflecting vane in the proper position for insuring the desired disposal of the deposited coins. A further feature of the invention is the avoidance of widely separated points of application of the relay displacement to the mechanism to be actuated whereby a much more compact coin disposal unit is realized. In accordance with a further feature of the invention, the time of operation of the relay is in no way a function of the time required for the coins to leave the trap since the trap is permitted to stay in coin discharging position until the last coin has been discharged therefrom even though in the meantime the relay has become deenergized.

Referring to the drawings:

Fig. 1 is a side view of a telephone coin collector embodying a coin disposal unit of this invention;

Fig. 2 is a simplified wiring diagram of a telephone coin collector substation;

Fig. 3 is a side view of the coin disposal unit with its various parts in their normal positions;

Fig. 4 is a top view of the coin disposal unit taken along the plane indicated by arrows 4—4 of Fig. 5;

Fig. 4A is an enlarged view of the electrical spring contacts of Fig. 4 and shows the normal condition of the spring contacts before the coin deposit;

Fig. 5 is a front view of the coin disposal unit of Fig. 3 with all parts in their normal positions;

Fig. 6 is a side view of the lower portion of the coin disposal unit of Fig. 3 showing certain movable parts in their positions attained after coin deposit and before relay operation;

Fig. 7 is a top view of the apparatus of Fig. 6;

Fig. 7A is an enlarged view of the electrical spring contacts of Fig. 7 and shows the condition of the spring contacts after coin deposit but before the coin relay has been energized;

Fig. 8 is a side view of the lower portion of the coin disposal unit of Fig. 3 after the relay has been energized for coin refund;

Fig. 9 is a top view of the apparatus of Fig. 8;

Fig. 9A is an enlarged view of the electrical spring contacts of Fig. 9 and shows the condition of the spring contacts when the coin relay is energized;

Figs. 10 and 11 are enlarged views of the two possible positions for the coin deflecting vane located in the lower portion of the coin hopper of Fig. 3;

Fig. 12 is an enlarged view of the coin trap and associated apparatus prior to coin deposit;

Fig. 13 shows the apparatus of Fig. 12 after coin deposit;

Fig. 14 is a view in perspective of the coin trap and associated rotatable parts; and

Fig. 15 is an exploded view of the coin trap apparatus of Fig. 14.

Fig. 1 is a side view of a conventional type of prepay telephone coin collector as shown, for example, in the C. F. Forsberg United States Patent 1,043,249 except that it includes the coin disposal unit of the present invention. Mounted on the upper housing 16 of the coin collector is a coin gauge 17 for receiving deposited coins and for directing them into a multichannel coin chute 18 where the coins are caused to engage selective sound signals before dropping into a coin hopper 20 where the coins are temporarily held in suspense on a coin trap 21 until the associated relay 22 is operated to set a coin deflecting vane 23 in a desired position and to release trap 21 to cause the discharged coins to be deflected either into a collect chute 25 or a refund chute 24 depending upon the position occupied by vane 23.

Mounted externally to the coin hopper is a bracket 26 (see particularly Figs. 14 and 15) for supporting a rotatable pin 27 which freely passes through apertured tabs 28 and 30 of the coin trap 21 to provide a pivotal support for the trap

while permitting relative movement of trap 21 and pin 27. Fastened to one end of pin 27 and rotatable therewith is a relatively heavy counterweight or inertia member 31 having a radial slot 32. Integral with trap 21 is an angular arm 33 having a lateral extension 34 which passes through and beyond the slot 32. Surrounding the cylindrical portion 35 of counterweight 31 are several turns of a biasing spring 29 which has one end fitted into an aperture 36 in trap extension 34 and has its other end secured in aperture 37 in counterweight 31 whereby extension piece 34 is biased to engage the side wall 38 of slot 32 in the absence of a coin load on trap 21. It is to be noted that there is a delayed motion connection between the counterweight 31 and trap 21 determined in amount by the width of slot 32. Mounted on the face of counterweight 31 remote from coin trap 21 is a vertical bracket 40 for supporting a fixed pin 41 about which is pivoted a trigger 42, with pin 41 being substantially perpendicular to a plane passing through the trap pivoting axis 27.

On one side of hopper 20 is mounted a bracket 43 for supporting a horizontally arranged electrical spring pile-up comprising a pair of normally closed spring contacts 44 and 45 and a pair of normally open spring contacts 46 and 47 (Figs. 4 and 4A). Trigger 42 has an arm 48 lying between springs 45 and 46 and carries at its free end a stud 50 which engages springs 45 and 46 at points aligned with the axis of pin 27. Spring 45 is strongly tensioned to exert pressure on trigger arm 48 to cause rotative movement of trigger 42 about its axis 41 and a closure of contacts 46 and 47 but spring 45 is restrained from so doing by reason of the fact that a second arm 51 of the trigger normally lies against the end of trap arm 34 (Fig. 12), with trigger arm 51 extending only a short distance beyond the free end of trap arm 34 when trap arm 34 lies against face 38 of counterweight slot 32. Trap 21 by means of the counterweight 31 is maintained in a substantially horizontal position, the upper limit of movement of trap 21 being defined by the engagement of trap arm portion 52 against the lower edge 53 of the slot in the hopper wall through which the trap projects.

Coin relay 22 has an armature 54 pivoted about a horizontal pin 55. An extension of the armature carries an insulating stud 56 which lies beneath the free ends of the spring pile-up, with contact spring 47 having an extension comprising a lateral arm 57' and a downwardly directed tab 57, with tab 57 lying adjacent stud 56 and in the path traversed by stud 56 when the relay armature is moved to its attracted position. The means for holding the armature 54 in its unoperated position is a suitable biasing spring 60. The limits of the armature travel are determined by a fixed pin 58 which is supported in oversize holes in the relay framework and which passes through slots in the flanged portions of the armature such as slot 59, Fig. 5, with the armature restoring spring 60 normally holding the armature in its non-operated position of Fig. 5.

The upper edge of the coin deflecting vane 23 lies well below and out of engagement with the coin trap 21. Vane 23 is fastened to a horizontally arranged rotatable pin 61 and vane 23 is adapted to occupy either one of two possible positions, as shown in Figs. 10 and 11. In Fig. 10, the upper end of vane 23 lies against a stationary pin 62 closing the entrance to refund chute 24 and directing into collect chute 25 any coins discharged from trap 21. In Fig. 11, vane 23 lies against stationary pin 63 to close the entrance to collect chute 25 and to direct into the refund chute 24 any coins discharged from the coin trap. External to the coin hopper vane, pin 61 carries an irregularly shaped cam member 64 to enable the vane to be controlled in position by relay armature 54. The lower portion of armature 54 comprises a laterally extending arm 65 which lies beneath the winding of relay 22 and which has at its free end a diagonally disposed slot 66. Also located below the relay winding 22 is a spirally coiled wire 67 (Fig. 3) fastened at one end 68 to the relay framework while the main portion of wire 67 lies in a horizontal position with its opposite end 70 projecting through slot 66 to lie adjacent cam member 64 of coin vane 23. Supported inside the coils of wire 67 is an elongated permanent magnet 71, one end of which lies adjacent an extension 72 of the relay core. The manner in which wire end 70 engages cam member 64 to selectively set coin deflecting vane 23 in a desired position will be described later.

The coin disposal unit is shown in its normal condition in the side, top and front views of Figs. 3, 4 and 5. Before describing the operation of the device, it should be noted that the coin trap 21 is normally biased to a coin obstructing position solely by its counterweight 31 and is not otherwise latched or held in its coin supporting position. For example, the coin trap 21 and counterweight 31 may be readily rotated by hand from its normal coin obstructing position of Fig. 12 to its coin discharging position of Fig. 8. It should also be noted, as shown particularly in Fig. 3, that the bent end portion 73 of trigger arm 74 normally lies a short distance below the horizontal tab 75 of the stationary member 76 and that as seen in Fig. 4 the position of stationary tab 75 is such that if the trap 21 and counterweight 31 were rotated by hand the trigger end 73 would just escape being caught by tab 75 in the resulting upward movement of trigger arm 74.

The operation of the coin disposal unit will now be described, starting with the assumed deposit of a coin in the coin gauge 17. Such a coin acquires considerable velocity while traversing coin chute 18 and while falling through the upper portion of coin hopper 20 so that the coin strikes coin trap 21 with considerable force. The intertia of trigger counterweight 31 is considerably greater than the inertia of trap 21 with its extension 33 so that at the instant of coin impact the trap starts moving downwardly while the counterweight 31 tends to remain stationary. As the trap starts its downward movement its integral arm 34 rotates with it so that with counterweight 31 still stationary, trigger arm 34 moves away from side wall 38 of slot 32 towards the opposite side of the slot and in so doing acts against the tension of spring 29. This initial relative movement of trap arm 34 with respect to counterweight 31 causes the free end of trap arm 34 to slide out from its normal engagement with trigger arm 51, whereby trigger 42 is released from the restraining action of trap arm 34 at the time trap arm 34 has reached a point about half way between the two side walls of slot 32.

As previously stated, trigger 42 is normally biased for movement of trigger arm 51 towards counterweight 31 by reason of the pressure exerted by contact spring 45 on trigger arm 48.

Therefore, as soon as trap arm 34 has reached a point about half way between the side walls of slot 32, trigger arm 51 is released from the restraining action of trap arm 34 to permit the tensioned spring 45 to move trigger arm 51 and spring 46 to the right, as seen in Fig. 4A. This lateral movement is stopped by the engagement of spring 46 with the relatively stiff spring 47, as shown in Fig. 7A. This resulting rotating movement of trigger 42 about its pivot brings the end 73 of trigger arm 74 directly beneath the stop member 75.

After releasing the trigger 42, the trap arm 34 continues its travel until it strikes the opposite side wall of slot 32, whereupon the inertia in counterweight 31 is overcome and the counterweight starts rotating with the coin trap; but the rotative movement of counterweight 31 can take place through only a small angle since before there can be an appreciable movement of counterweight 31 trigger end 73 has been moved beneath stop 75 to cause their subsequent engagement, as shown in Fig. 6, to hold the trap and the counterweight in coin supporting position. If desired, coin trap 21 may be arranged to be tilted slightly upwardly prior to coin deposit, whereby the slight downward movement of coin trap 21 caused by coin deposit and terminated by engagement of trigger end 73 with stop 75 will leave the trap 21 in a substantially horizontal coin supporting position, as shown in Fig. 13.

After the relative movement of the coin trap with respect to the counterweight to remove the restraining action of trap arm 34 on trigger arm 51, it will be apparent from Fig. 6 that coiled spring 29 cannot at this time move trap arm 34 back into engagement with slot side wall 38 because trigger arm 51 after being released moves towards the counterweight 31 under the force supplied by spring 45 so that the end of trigger arm 51 now lies in the return path of trap arm 34, with trap arm 34 being held away from slot wall 38 by engagement of trap arm 34 with the end of trigger arm 51 (Figs. 6 and 13).

The above-described operation produced by coin deposit will be better understood by comparing the condition of the apparatus before coin deposit (Figs. 3, 4, 5 and 12) with the condition of the apparatus after coin deposit (Figs. 6, 7 and 13). As shown in Fig. 7, deposited coin 77 lies on coin trap 21 and the discharge of the coin is temporarily prevented by engagement of trigger end 73 with the under surface of stop member 75. By comparing Fig. 4A with Fig. 7A it will be seen that as a result of coin deposit, spring contacts 44, 45 are opened and spring contacts 46, 47 are closed. A reference to the schematic wiring diagram of Fig. 2 will show that the opening of spring contacts 44, 45 by coin deposit removes a short circuit from the pulsing contacts of calling dial 78 while the closing of spring contacts 46, 47 establishes a circuit to ground through the winding of relay 22 to prepare apparatus at the central office for extending the calling line to the called line corresponding to the number dialed by the operation of dial 78 and for subsequently permitting the application of collect current or refund current to relay 22 to dispose of the deposited coin.

The next step in the operation of the coin disposal unit is the control of coin relay 22 to collect or refund the deposited coin. For illustrative purposes, it may be assumed that prior to the deposit of coin 77 the coin deflecting vane 23 was in its position of Fig. 10 with the vane lying against stationary pin 62 so as to close refund chute 24 and serve as a deflector for guiding discharged coins into collect chute 25. Prior to relay operation, the end 70 of coiled wire 67 lies in its normal position about midway the length of slot 66 in relay arm 65, as shown in the enlarged view of Fig. 10. If it is desired to refund coin 77, a key 80 at the central office is operated to apply refund current to relay 22 with the current flowing in such a direction through the relay winding that the polarity of pole-piece 72 is opposite to the polarity of the adjacent end of permanent magnet 71, whereby magnet 71 is attracted upwardly to move wire end 70 to the upper end of slot 66 before any appreciable attractive movement of the relay armature has taken place. The subsequent rotative movement of armature arm 65 about its pivot 55 causes wire end 70 to engage the sloping cam surface 81 of member 64 and rock member 64 from its position of Fig. 10 to its position of Fig. 11, whereby vane 23 is moved from its collect position of Fig. 10 to its refund position of Fig. 11 with the upper end of vane 23 now resting against stop pin 63.

The attractive movement of armature 54 also serves to release trap 21 for coin discharge and prepare the spring pile-up for return to normal. As previously stated, relay armature 54 carries a stud 56 above the armature pivot which stud during armature attraction engages extension 57 of contact spring 47 to move the free ends of the spring pile-up to the left, as viewed in Figs. 4A or 7A, whereby when the armature is fully attracted the free ends of the spring pile-up will lie substantially in the positions of Fig. 9A with the relay winding contacts 46, 47 still remaining closed. This movement of the spring pile-up from its position of Fig. 7A to its position of Fig. 9A carries with it the arm 48 of trigger 42 to rotate trigger 42 a distance sufficient to free trigger arm 74 from its engagement with stop 75 thereby unlatching the coin trap and permitting the coin trap with its additional weight due to coin 77 to drop downwardly to its coin discharging position of Fig. 8. Prior to the release of coin trap 21, the coin vane 23 had been set as previously described, to its refunding position of Fig. 11, whereby vane 23 will guide the discharged coin into refund chute 24.

On the other hand, if it is desired to collect coin 77 relay 22 will be energized by a voltage of such polarity that core piece 72 will be of the same polarity as the adjacent end of permanent magnet 71 and the repelling forces developed thereby will move wire end 70 downwardly from its normal position of Fig. 10 to a point adjacent the lower end of slot 66. With the attractive movement of armature arm 65, wire end 70 will move towards the sloping cam surface 82 of member 64. Obviously if vane 23 is already in the collect position of Fig. 10, no further movement of vane 23 will be produced by the movement of wire end 70, just described; but if the vane 23 should happen to be lying in the coin refunding position of Fig. 11, the engagement of wire end 70 with cam surface 82 will rock vane 23 from its position against pin 63 to its collect position against pin 62, whereby upon the release of the coin trap in the previously described manner vane 23 will serve to guide the discharged coin into collect chute 25.

In any event, it is to be understood that before the relay armature upon attraction is moved

sufficiently far to release coin trap 21, the attractive or repelling forces between pole-piece 72 and permanent magnet 71 have established vane 23 in a collect or refund position depending upon the polarity of the voltage applied to the relay.

There still remains to be described in greater detail the effect of relay operation on trigger 42, counterweight 31 and coin trap 21. After coin deposit and when the relay is energized, either by collect current or refund current, the attractive movement of armature 54 moves the insulating stud 56 away from the counterweight 31 to engage spring end 57 to move to the left, as viewed in Fig. 7, the free ends of the spring pile-up as well as trigger arm 48. The resulting pivoting movement of trigger 42 not only moves trigger arm 73 out of engagement with stop 75 to permit coin discharge but also moves trigger arm 51 out of the return path of trap arm 34 to permit coiled spring 29 to again cause the engagement of trap arm 34 with side wall 38 of slot 32.

When relay 22 is deenergized the restoring spring 60 serves to retract armature 54 to its normal position of Fig. 5 thereby moving armature stud 56 towards counterweight 31 to remove the pressure exerted on the spring pile-up by stud 56. Spring 45 due to its own tension is now free to exert pressure on stud 50 of trigger arm 48 but the reengagement of trigger arm 51 with the end of trap arm 34 prevents spring 45 from moving stud 50 far enough towards counterweight 31 to cause the closing of contacts 46 and 47, although the movement is not sufficient to permit spring 45 to break its contact with srping 44. In other words, the withdrawal of the armature from its attracted position to its retracted position permits the spring pile-up and trigegr 42 to assume their normal positions as they existed before coin deposit (as shown in Fig. 4A).

It will be noted that even after the deenergization of relay 22 the coin trap 21 may remain in its coin discharging position of Fig. 8 until all coins have left the trap after which the counterweight 31 overbalances the unloaded trap to move the trap back to its normal substantially horizontal position of Fig. 12, to which position counterweight 31 is free to move the trap by reason of the fact that trigger arm 73 is again held out of engagement with stop 75. The coin disposal unit is now completely restored to normal with all parts ready for a repetition of its cycle of operation upon the deposit of another initial coin.

The cycle of operation of the coin disposal unit may be summarized as follows: The trigger 42 is upset when a coin hits trap 21 which act closes the ground circuit contacts 46, 47 and opens the dial shorting contacts 44, 45 (see Fig. 7A). In addition, a catch extension 73 of the trap mechanism operates to support the trap and the coins. When the coins are to be disposed of the pilot magnet operated selector 70 moves to the proper position in armature slot 66 whereupon the armature in closing locates a coin selector vane 23 and resets the trigger 42, thereby releasing the trap to discharge the coins. Following this brief operation, the energizing voltage for relay 22 may be removed and the ground contacts 46, 47 opened even though all coins have not yet left the trap. With the exit of the last coin the trap mechanism swings shut and the unit is ready for the next deposit.

In order to make the coin trap 21 serve as the coin trigger and yet perform the above sequence of operations, an inertia tripping device is employed. The inertia is represented by the trigger mounting or counterweight 31 which is free to rotate with the coin trap; that is, the trigger 42 and the trap catch extension 73 also rotate with the trap. A minimum frictional moment is attained at the connection to the fixed set of contact springs 44 to 47 by having springs 45, 46 bear on the trigger arm 48 at the center of rotation. In addition to this freedom of rotation, there is provided a differential motion of limited amplitude between the trigger 42 and a rigid extension 34 from the coin trap. Normally the trigger arm 51 rests on the trap extension 34; the trap being held substantially horizontal by counterweight 31, with the differential motion being taken up by a light spring force (spring 29) operating between the trap extension 34 and the trigger mounting 31. When a coin is deposited its impact on the trap moves the lightweight trap before the heavier trigger mechanism 31 can get in motion. Thus the trap extension 34 slides from under the arm 51 of the trigger which then trips, closing ground contacts 46, 47. The trap catch 73 which forms a part of the trigger closes under an extension 75 of the framework and thereafter the trap, the coins and the entire rotatable mechanism are restrained from further motion. This entire action takes place in an extremely short interval of time and with but slight displacement of the various parts. In disposing of the coins, the relay force applied by stud 56 through ground circuit contacts 46, 47 swings the trigger to release catch 73 and the weight of the coins on the trap serves to drop the trap to coin discharging position. Simultaneously the differential between the trigger 42 and the trap extension 34 is taken up by biasing spring 29 so that the trigger resets quickly and is ready for the next deposit. The trap meanwhile remains open until the exit of the last coin whereupon it swings shut freely.

While an advantageous embodiment of the invention has been described above, it is to be understood that the invention is not limited thereto but is capable of alternative forms commensurate with the scope of the appended claims.

What is claimed is:

1. In a coin operated device, a coin hopper, a coin trap in said hopper for receiving deposited coins and normally free to move downwardly when an additional weight is added to the coin trap and spring controlled means released by said trap in its initial downward movement upon being struck by a deposited coin for latching said trap in coin supporting position.

2. In a coin operated device, a coin hopper, a pivoted coin trap in said hopper biased to a coin supporting position but normally free for manual rotation to a coin discharging position, means controlled by said trap and effective when said trap is struck by a deposited coin for latching said trap in coin supporting position and relay means for rendering said latching means ineffective.

3. In a coin operated device, a coin hopper, a pivoted coin trap in said hopper for receiving a deposited coin and normally free to rotate to a coin discharging position when the force tending to cause rotation is gradually applied, spring controlled means biased to a first position to latch said trap in coin supporting position but adapted to occupy a second position to permit said trap to rotate to coin discharging position, and means comprising an extension of said trap normally effective to hold said first means in said second

position but adapted upon the coin actuation of said trap to release said first means for movement to said first position.

4. In a coin operated device, a coin hopper, a pivoted coin trap in said hopper biased to a coin supporting position but in the absence of a deposited coin being free for manual rotation to a coin discharging position whenever the force tending to cause rotation is gradually applied and means released by said trap in its initial downward movement resulting from the trap being struck by a falling coin for latching said trap in coin supporting position.

5. In a coin operated device, a coin hopper, a pivoted coin trap in said hopper biased to a coin supporting position but in the absence of a deposited coin being free for manual rotation to a coin discharging position whenever the force tending to cause rotation is gradually applied, means biased to a position locking said trap in coin supporting position and means on said trap normally latching said locking means in a trap freeing position but adapted to unlatch said locking means when said trap is struck a sudden blow by a falling coin.

6. In a coin operated device, a coin hopper, a pivoted coin trap in said hopper rotatable about a fixed axis, a counterweight for said trap rotatable about said axis and coupling means between trap and said counterweight permitting a limited differential movement between said trap and said counterweight before compelling the counterweight to rotate with said trap, said means comprising a spring pressed trigger mounted on said counterweight and normally engaging a rigid extension of said trap but released from the restraint of said extension by the relative movement of said trap with respect to said counterweight when said trap is struck by a deposited coin, and electrical spring contacts controlled by said trigger.

7. In a coin operated device, a coin hopper, a pivoted coin trap in said hopper rotatable about a fixed axis, a counterweight for said trap rotatable about said axis, coupling means between said trap and said counterweight effective when said trap is struck a sudden blow to permit a limited movement of said trap with respect to said counterweight before compelling said counterweight to rotate with said trap, a pivoted trigger mounted on said counterweight adapted in one position to hold said trap in coin supporting position and adapted in a second position to release said trap to a coin discharging position, spring means for biasing said trigger to said first position and means on said trap normally latching said trigger in said second position but effective when said trap is struck a sudden blow for releasing said trigger.

8. In a coin operated device, a coin hopper, a rotatable member mounted for rotative movement about an axis external to said hopper, a lever pivotally mounted on said member, spring means for biasing said lever to a position locking said member against substantial movement in one direction, means mounted for rotation about said axis for latching said lever in a position ineffective to prevent the movement of said member in said one direction and coin operated means projecting into said hopper and mounted for rotation about said axis for moving said latching means to lever freeing position.

9. In a coin operated device, a coin hopper, a rotatable member mounted for rotative movement about an axis external to said hopper, a lever pivotally mounted on said member, spring means for biasing said lever to a position locking said member against substantial movement in one direction and a coin trap projecting into said hopper, said trap being pivoted about said axis, said trap having an arm normally engaging said lever to latch said lever in a position ineffective to prevent the movement of said member in said one direction but unlatching said lever when the trap is moved by the impact of a falling coin on said trap.

10. In a coin operated device, a coin hopper, a rotatable member mounted for rotative movement about a fixed axis, a lever pivotally mounted on said member, means for biasing said lever to a position locking said member against substantial movement in one direction, a coin trap pivotally mounted about said axis and projecting into said hopper, extension means on said trap normally latching said lever in a position ineffective to prevent the movement of said member in said one direction, said extension means upon the coin actuation of said trap being movable to an advanced position unlatching said lever and coupling means between said trap and said member for permitting a small relative movement of said trap with respect to said member before compelling said member to rotate with said trap.

11. In a coin operated device, a coin hopper, a rotatable member mounted for rotative movement about a fixed axis, a lever pivotally mounted on said member, means for biasing said lever to a position locking said member against substantial movement in one direction, a coin trap pivotally mounted about said axis and projecting into said hopper, extension means on said trap normally latching said lever in a position ineffective to prevent the movement of said member in said one direction, said extension means upon the coin actuation of said trap being movable to an advanced position unlatching said lever and resilient coupling means between said extension and said member.

12. In a coin operated device, a coin hopper, a rotatable member mounted for rotation about a fixed axis, a lever pivotally mounted on said member about an axis remote from said first axis, said lever having an arm portion aligned with said first axis, spring means engaging said aligned portion for biasing said lever to a position locking said member against substantial movement in one direction, a coin trap in said hopper pivotally mounted about said first axis, coupling means between said member and said trap permitting a slight relative movement of said trap relative to said member before compelling said member to rotate with said trap, means integral with said trap and normally latching said lever in a position ineffective to prevent the movement of said member in said one direction, said integral means unlatching said lever upon a relative movement of said trap with respect to said member initiated by the impact of a coin on said trap, said member having a moment of inertia substantially greater than the moment of inertia of said trap.

13. In a coin operated device, a coin hopper, a rotatable member mounted for rotative movement about a fixed axis, a lever pivotally mounted on said member about an axis substantially perpendicular to a plane passing through said first axis, spring means biasing said lever to a position locking said member against substantial movement in one direction, a coin trap in said

hopper pivoted about said first axis, coupling means between said member and said trap permitting a small relative movement of said trap with respect to said member before compelling said member to rotate with said trap, and means integral with said trap and normally latching said lever in a position ineffective to prevent the movement of said member in said one direction but unlatching said lever upon a relative movement of said trap with respect to said member initiated by the impact of a coin on said trap, the distributed mass of said member being unbalanced about said first axis for normally holding said trap in a coin obstructing position.

14. In a coin operated device, a coin hopper, a rotatable member mounted for rotative movement about a fixed axis, a lever pivotally mounted on said member about a second axis, said lever normally occupying a retracted position but adapted to be moved to an advanced position, said lever in said advanced position locking said member against substantial movement in said one direction, said member being free to rotate in said one direction when said lever is in said retracted position, spring means urging said lever towards said advanced position, a coin trap in said hopper pivotally mounted about said first axis, said member comprising spaced shoulders, an arm on said trap positioned between said shoulders and permitting angular movement of said trap with respect to said member an amount determined by the spacing between said shoulders, a second spring means for biasing said arm against one of said shoulders, said arm having an extension engaging said lever when said arm engages said first shoulder to hold said lever in said retracted position but releasing said lever for movement by said spring means to said advanced position when said arm engages the second of said shoulders.

15. In a coin operated device, a coin hopper, a rotatable member mounted for rotative movement about a fixed axis, a lever pivotally mounted on said member about a second axis, said lever normally occupying a retracted position but adapted to be moved to an advanced position, said lever in said advanced position locking said member against substantial movement in said one direction, said member being free to rotate in said one direction when said lever is in said retracted position, spring means urging said lever towards said advanced position, a coin trap in said hopper pivotally mounted about said first axis, said member comprising spaced shoulders, an arm on said trap positioned between said shoulders and permitting angular movement of said trap with respect to said member an amount determined by the spacing between said shoulders, a second spring means for biasing said arm against one of said shoulders, and means on said trap effective when said arm lies against said first shoulder for engaging said lever to hold said lever in said retracted position but releasing said lever when said arm lies against the other of said shoulders.

16. In a coin operated device, a coin hopper, a rotatable member mounted for rotative movement about a substantially horizontal axis, a lever pivotally mounted on said member about a second axis substantially normal to a plane passing through said first axis, said lever normally occupying a retracted position but adapted to be moved to an advanced position, said lever in said advanced position locking said member against substantial movement in one direction, said member being free to rotate in said one direction when said lever is in said retracted position, spring means urging said lever towards said advanced position, a coin trap in said hopper pivotally mounted about said first axis, said member comprising spaced shoulders, an arm on said trap positioned between said shoulders for permitting angular movement of said trap with respect to said member an amount determined by the spacing between said shoulders, a second spring means for biasing said arm against one of said shoulders, and an extension on said trap effective when said arm lies against said second shoulder to engage said lever and latch said lever in said retracted position, said extension being ineffective to latch said lever when said arm lies against said second shoulder, said member having a moment of inertia substantially greater than the moment of inertia of said trap.

17. In a coin operated device, a coin hopper, a rotatable member mounted for rotative movement about a substantially horizontal axis, a lever pivotally mounted on said member about a second axis substantially normal to a plane passing through said first axis, said second axis being spaced a substantial distance from said first axis, said lever normally occupying a retracted position but adapted to be moved to an advaned position, said lever in said advanced position locking said member against substantial movement in one direction, said member being free to rotate in said one direction when said lever is in retracted position, spring means engaging said lever substantially at the center of rotation of said member for urging said lever towards said advanced position, a coin trap in said hopper pivotally mounted about said first axis, said member comprising spaced shoulders, an arm on said trap positioned between said shoulders for permitting angular movement of said trap with respect to said member an amount determined by the spacing between said shoulders, a second spring means for biasing said arm against one of said shoulders, said arm engaging said first shoulder at a point located a substantial distance from said first axis, and an extension on said trap effective when said arm lies against said first shoulder to engage said lever and latch said lever in said retracted position, said extension being ineffective to latch said lever when said arm lies against the second of said shoulders, said member having a moment of inertia substantially greater than the moment of inertia of the said trap.

18. In a coin operated device, a coin hopper, a coin trap in said hopper pivoted for rotative movement from a coin supporting position to a coin discharging position, a counterweight member for said trap for normally biasing said trap to a coin supporting position, means providing a differential motion of limited amplitude between said trap and said member, a lever pivotally mounted on said member, spring means for biasing said lever for movement to an advanced position, means comprising a rigid extension of said trap for normally restraining said lever to a retracted position but tripping said lever upon relative movement of said trap with respect to said member to permit movement of said lever to said advanced position, said lever in said advanced position locking said member against substantial movement in one direction, said member being free to rotate in said one direction when said lever occupies its retracted position.

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