Jan. 27, 1942. L. VIETH 2,271,320

COIN COLLECTOR

Filed Sept. 16, 1939 4 Sheets-Sheet 1

FIG. 1

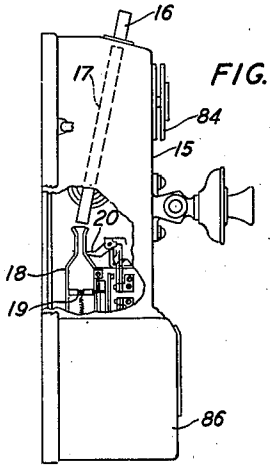


FIG. 2

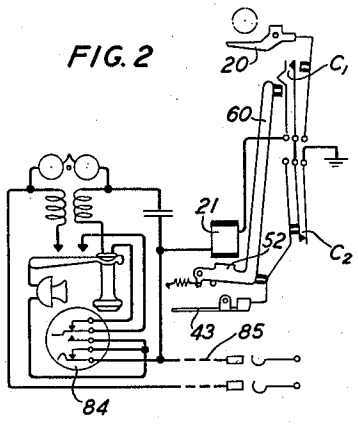


FIG. 3

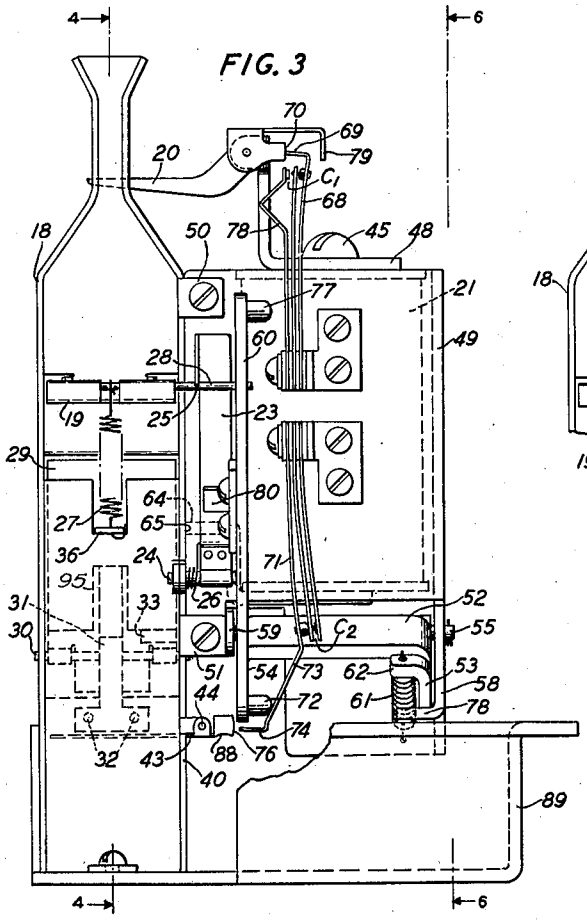
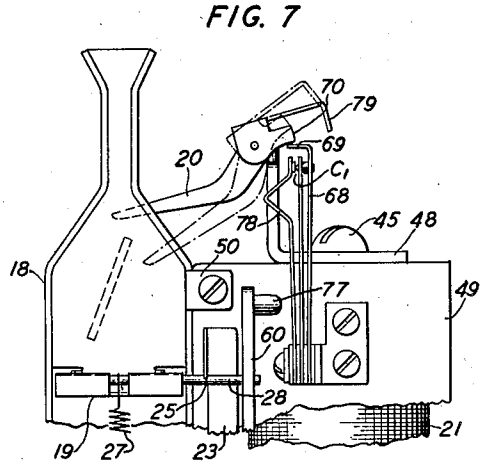


FIG. 7



INVENTOR
L. VIETH
BY
T. H. Jackson
ATTORNEY

Jan. 27, 1942. L. VIETH 2,271,320

COIN COLLECTOR

Filed Sept. 16, 1939 4 Sheets-Sheet 2

FIG. 5

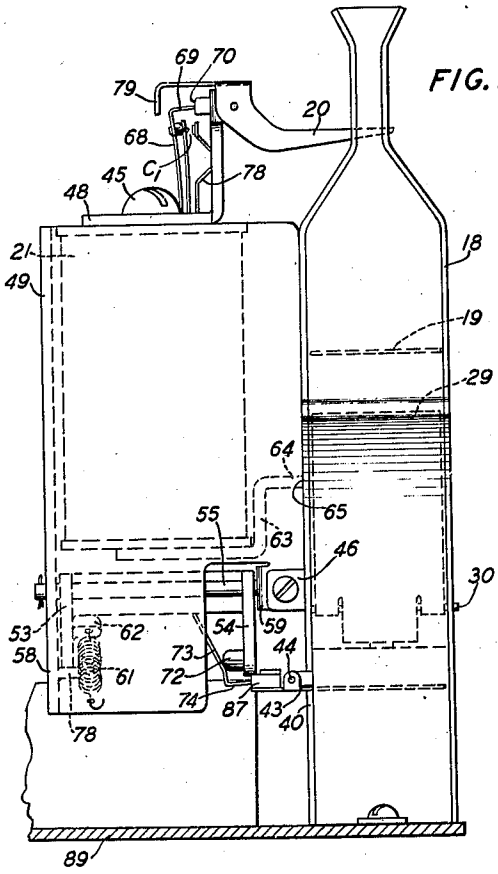
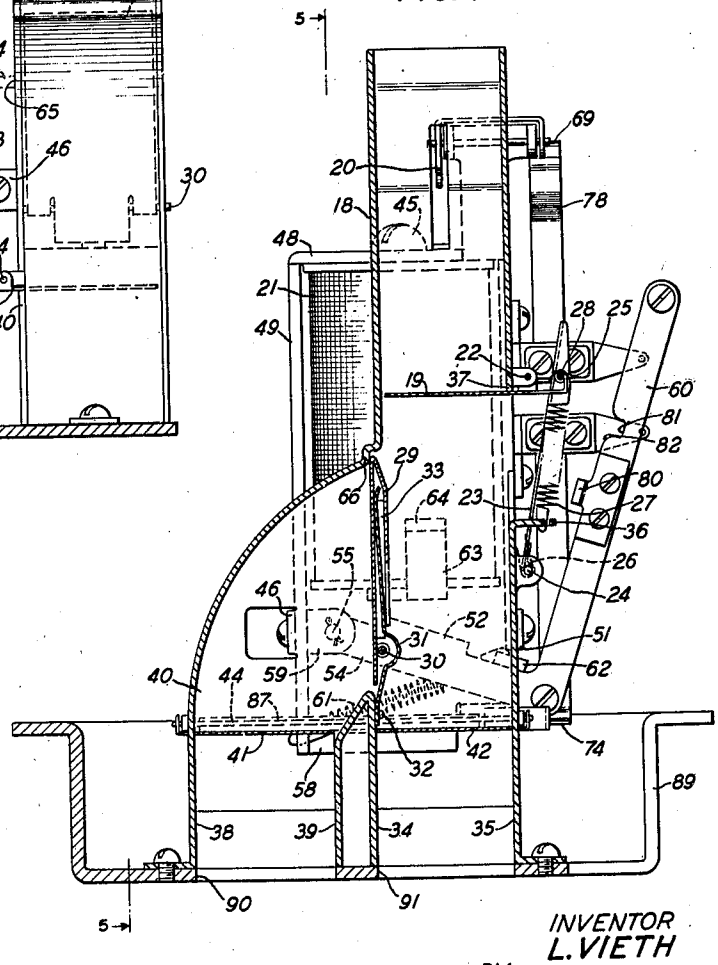


FIG. 4



INVENTOR
L. VIETH

BY
T. H. Jackson

ATTORNEY

Jan. 27, 1942. L. VIETH 2,271,320

COIN COLLECTOR

Filed Sept. 16, 1939 4 Sheets-Sheet 3

FIG. 6

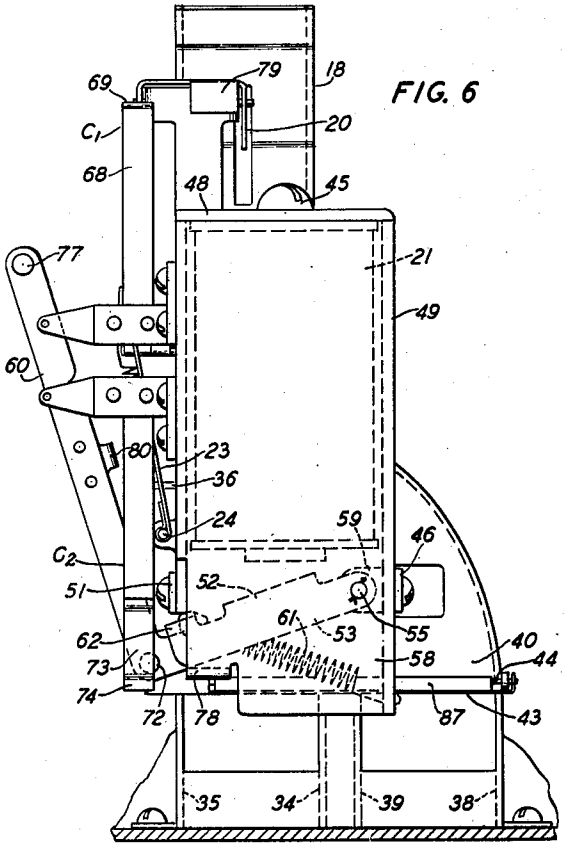


FIG. 4A

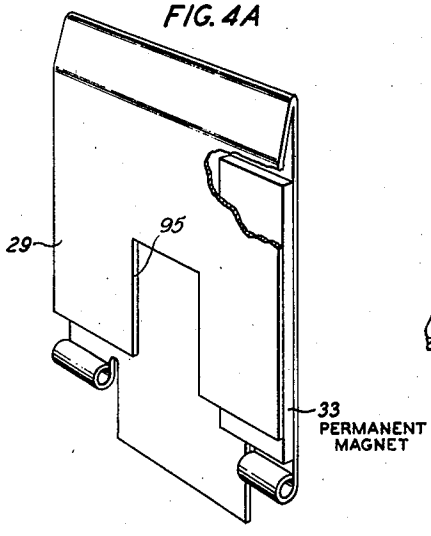
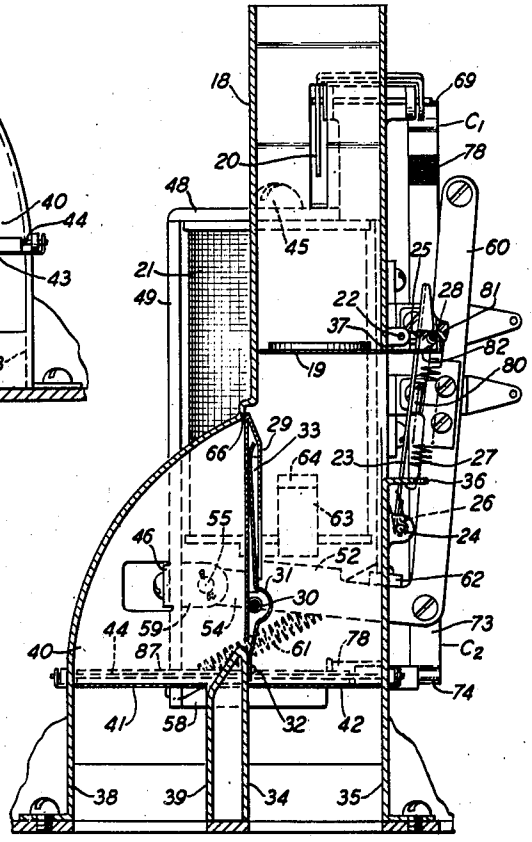


FIG. 8



INVENTOR
L. VIETH

BY
B. H. Jackson

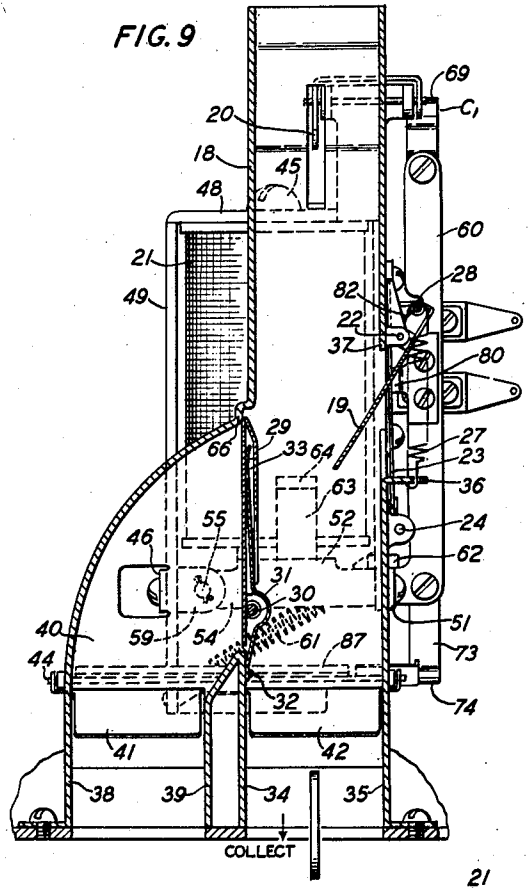
ATTORNEY

Jan. 27, 1942. L. VIETH 2,271,320

COIN COLLECTOR

Filed Sept. 16, 1939 4 Sheets-Sheet 4

FIG. 9



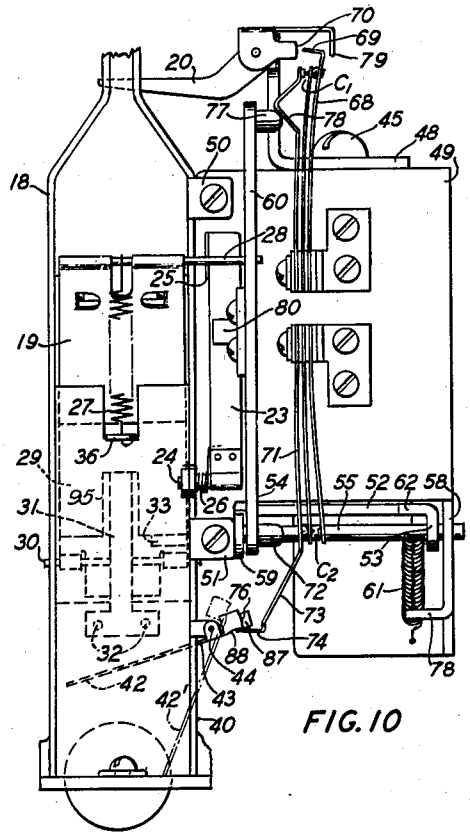


FIG. 10

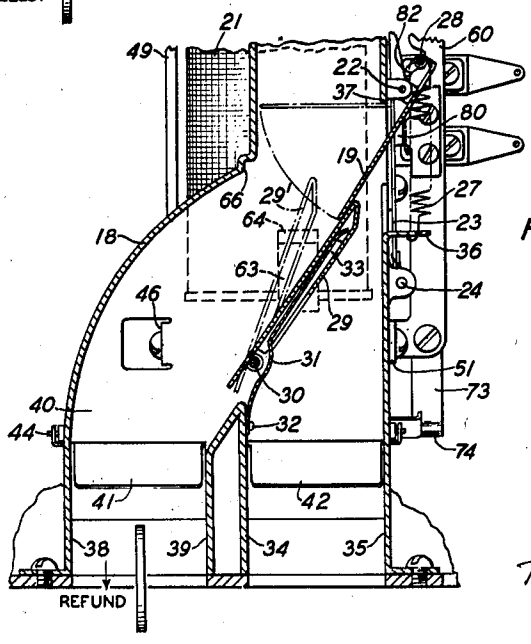


FIG. 11

INVENTOR
L. VIETH
BY
B. H. Jackson
ATTORNEY

Patented Jan. 27, 1942 2,271,320

UNITED STATES PATENT OFFICE

2,271,320

COIN COLLECTOR

Leonard Vieth, Jackson Heights, N. Y., assignor to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York

Application September 16, 1939, Serial No. 295,228

12 Claims. (Cl. 194—16)

This invention relates to coin collectors and has for an object the provision of improved apparatus for collecting or refunding deposited coins.

In telephone coin collectors of the prepay type it is necessary that a deposited coin be held temporarily in suspense and subsequently collected or refunded, depending upon whether or not the desired connection is obtained. The apparatus provided by the present invention for performing these functions has exceptional performance characteristics as will be explained hereinafter.

In a preferred embodiment of the invention a deposited coin is directed into a coin hopper having a pivoted coin trap which is positively held in coin supporting position by a latch controlled by a single coil electromagnet. The energizing circuit for the electromagnet is adapted to be established after the closure of electrical contacts controlled by a coin trigger actuated by the deposited coin prior to reaching the coin trap.

Below the coin trap are two coin channels, one leading to a cash box and the other leading to a refund opening in the outer wall of the collector housing. In order that a coin released from the trap may be selectively directed into the proper channel for collection or refund, a pivoted vane is provided between the coin trap and the two coin channels. This vane carries a permanent magnet while the core of the electromagnet has a pole-piece located within the field of the permanent magnet in such a manner that when the electromagnet is energized the vane will be biased for movement in a direction dependent upon the polarity of the applied voltage. A pivoted armature for the relay when attracted strikes the holding latch for the coin trap and the released trap discharges the coins into the refund channel or the collect channel depending upon the selective position of the coin vane due to the reaction between its permanent magnet and the specified pole-piece of the electromagnet. In the preferred embodiment the actuated armature not only releases the trap from its holding latch but also strikes an extension of the trap to positively move the trap to coin discharging position. Both the refund channel and the collect channel preferably contain a lever actuated by the released coin for opening the energizing circuit for the electromagnet whereupon all actuated parts of the mechanism are restored to normal.

The coin collecting and refunding mechanism just described has a number of outstanding features among which may be mentioned the self-releasing feature by which the device is restored to normal as soon as the deposited coin has been disposed of, making unnecessary any release requirements on the relay structure; the independence of relay operating current on the coin load; the positive action of the coin trap under the lightest coin load; the positive action of the latch in locking the trap in coin supporting position; and improved protection afforded against fraudulent tampering.

Referring to the drawings:

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

Fig. 2 is a circuit schematic of a typical collector substation embodying this invention;

Fig. 3 is a side view partly in section of a coin hopper and relay mechanism suitable for use in disposing of coins deposited in a collector of the type shown in Fig. 1;

Fig. 4 is a sectional view of the apparatus of Fig. 3 taken along the line 4—4 of Fig. 3;

Fig. 4A is an enlarged view of the coin vane showing the permanent magnet held thereby;

Fig. 5 is a side view of the apparatus of Fig. 4 taken in the direction indicated by the arrows marked 5—5;

Fig. 6 is a view of the apparatus of Fig. 3 as seen from the rear of the collector housing;

Fig. 7 illustrates the operation of the coin trigger located adjacent the upper part of the coin hopper;

Fig. 8 is similar to Fig. 4 except that a deposited coin is shown supported by the coin trap within the hopper;

Figs. 9 and 10 illustrate the operation of the mechanism for coin collection; and

Fig. 11 illustrates the operation of the mechanism for coin refunding.

As shown in Fig. 1 the type of coin collector in which this invention may be employed resembles in general the prepay coin collector disclosed in the U. S. patent to O. F. Forsberg 1,043,219, issued November 5, 1912. The upper housing 15 has a coin gauge 16 for receiving coins of various denominations and for directing them through individual coin channels in the multiple coin chute 17 where they may be tested as to genuineness, and the spurious coins discarded. All genuine coins upon leaving the coin chute 17 are directed into the mouth of a coin hopper 18 where they are temporarily held upon a coin trap 19 for subsequent collection or refund depending upon whether the desired telephone connection is secured.

The coin hopper and relay mechanisms for disposing of the deposited coin or coins are disclosed in Figs. 3 to 11. Projecting into the mouth of the coin hopper is a pivoted coin trigger 20 for actuation by the first deposited coin for closing, in a manner subsequently described, the electrical contacts C_1 which are in series with the winding of a single coil electromagnet 21. Below the coin trigger is a coin trap 19 for temporarily supporting the deposited coins. Trap 19 is pivoted externally of the hopper by means of a horizontal pin 22 and the external end of the trap

carries a laterally arranged pin 28. This trap 19 is biased to its normal horizontal position by a coiled spring 27 which has one end fastened to stationary tab 36 and the other end engaging pin 28 (Fig. 10) to hold the trap 19 against the top edge 37 of a slot in the hopper side wall. Trap 19 is locked in coin supporting position by means of a latch member 23 pivoted at its lower end at the point 24 while its upper end has a hook 25 engaging that portion of the horizontal pin 28 extending laterally from that end of the trap 19 remote from the coin hopper. Stationary pin 24 also carries a coiled spring 26 (Figs. 3 and 4) having one end fixed to the adjacent hopper side wall with its other end pressing against one face of latch member 23 to bias member 23 to a position engaging pin 28 (Fig. 3).

Below the coin trap 19 is a coin vane 29 pivoted along the horizontal axis 30 and normally held in a substantially vertical position by a biasing spring 31 the lower end of which is fastened to the hopper wall at the point 32. As shown more clearly in the enlarged view of Fig. 4—A, vane 29 is made of sheet metal folded back on itself and located between the two portions of the vane near that edge of the vane adjacent the electromagnet 21 is an elongated permanent magnet 33 normally held in a vertical position. The folded portion of the coin vane contains a slot 95 to permit the free end of biasing spring 31 to lie between the two portions of the vane.

As shown particularly in Figs. 4 and 8 the coin hopper below the coin trap 19 is branched into a collect channel defined by walls 34, 35 and a refund channel defined by walls 38, 39; and it will be noted from these figures that the opening into the refund channel 38, 39 is normally closed by the coin vane 29.

The rear wall 40 of the branched portion of the coin hopper has a laterally extending slot to receive a horizontally disposed plate 43, one portion 41 of which closes the refund channel 38, 39 and another portion 42 of which closes the collect channel 34, 35. Plate 43 is pivoted externally of the hopper along the axis 44 and has a suitable counterweight 87 external to the hopper for biasing plate 43 to a normally horizontal position. It will be apparent that any coin discharged from coin trap 19 will strike plate portion 41 or plate portion 42 and thereby deflect the plate downwardly whereby the discharged coin is free to continue on down the collect channel or refund channel as the case may be. This actuation of plate 43 by any coin discharged from trap 19 serves to open the energizing circuit for electromagnet 21 as will be described hereinafter.

The solenoidal winding 21 of the electromagnet has a magnetic core fastened by screw 45 to the top 48 of a three-sided cover 49 of magnetic material which substantially surrounds the winding on all sides except the side adjacent the coin hopper. This cover which forms a part of the magnetic return path is suitably supported by three spaced ears 46, 50, 51 (Figs. 8 and 10) projecting from the adjacent coin hopper. The armature for the electromagnet comprises a plate 52 having downwardly projecting flanges 53, 54 which are apertured to receive the pivoting pin 55 for the armature, the pin 55 being suitably supported by portions 58 and 59 of cover 49.

Armature flange 54 extends laterally beyond the cover 49 and then upwardly to form a substantially vertical arm 60 for performing several desired functions when the armature is attracted by the electromagnet. The said armature is biased to its non-operated position by a spring 61 which extends between a lower portion of cover 49 and a lug 62 forming a part of flange 53 remote from the pivoting axis of the armature. The relay cover 49 at its bottom edge has a horizontally disposed tab 78 acting as a stop to define the released position of the armature since one portion of flange 53 normally rests on tab 78 as shown in Fig. 3.

The core of the electromagnet has an angular pole-piece extension 63 (Fig. 5) terminating in a horizontal portion 64 lying against side wall 65 of the coin hopper adjacent the upper end of bar magnet 33 but laterally offset therefrom as shown in Fig. 4. Therefore, whenever the electromagnet is energized the polarity of pole-piece 64 will determine whether or not the upper end of bar magnet 33 is attracted or repelled. For one direction of current flow through the winding of electromagnet 21, pole-piece 64 and the upper end of bar magnet 33 will be of the same polarity and the bar magnet will be repelled tending to move vane 29 in a counter-clockwise direction as viewed in Fig. 4 to cause the upper end of vane 29 to be forced against the shoulder 66 formed in a wall of the coin hopper. For current flowing through the electromagnet in the opposite direction bar magnet 33 will be attracted so that vane 29 will be moved to the broken line position 29' of Fig. 11. The reaction between bar magnet 33 and pole-piece 64, therefore, serves to bias vane 29 to a position determined by the polarity of the voltage applied to the single coil electromagnet 21 and this biasing insures the desired collection or refunding of the deposited coin as will be described hereinafter.

Mounted on the cover plate 49 but insulated therefrom are two sets of electrical spring contacts C_1 and C_2. Spring contacts C_1 are normally biased to open position. Associated with spring contacts C_1 is a biasing spring 68 which is adapted to close contacts C_1 but is normally restrained from so doing by spring end 69 resting against shoulder 70 of the coin trigger 20 as shown in Fig. 3. However, when the coin trigger is actuated by a deposited coin the said shoulder 70 is moved upwardly out of the path of spring end 69 and hence spring 68 is permitted thereby to close contacts C_1 as shown in Fig. 7; and spring end 69 now occupies (Fig. 7) a position beneath shoulder 70 to temporarily prevent coin trigger 20 from being restored to normal by its counterweight 79.

Contacts C_2 are also biased to open position and the associated spring member 71 is biased for movement away from contacts C_2 but spring 71 is normally held in contact closing position by spring extension 73 resting against an insulating stud 72 (Fig. 3) carried on the armature extension 60. The actuation of armature 52 serves to remove stud 72 from the path of biasing spring 71 but the end 74 of the spring thereupon strikes a cam surface 76 on plate 43, in which new position spring 71 still maintains contacts C_2 closed. However, whenever plate 43 is tilted downwardly by the passage of a coin discharged from trap 19, cam 76 is moved upwardly as shown in Fig. 10 to enable spring 71 to move far enough away from contacts C_2 to permit them to open.

As shown in Fig. 2 the two sets of contacts C_1 and C_2 are connected in series with each other between ground and the winding of the single coil electromagnet 21, so that both sets of contacts

must be closed to establish an energizing circuit for the electromagnet and the opening of either pair of contacts will cause the electromagnet to be deenergized.

Armature extension 60 has a laterally extending lug 80 which upon armature attraction contacts with an intermediate portion of latch member 23 to release pin 28 from hook 25 whereby the coin trap 19 is free to drop downwardly to coin discharging position providing the coin load is sufficient to overcome the restoring spring 27 for the coin trap. However, positive coin dumping is assured after the release of latch 23 since pin 28 is subsequently positively moved upwardly by armature extension 60. Arm 60 on its edge adjacent the coin hopper has a slot 81 and the counter-clockwise movement of arm 60 about the armature pivot 55 brings the rounded surface 82 below the slot into contact with pin 28 whereupon pin 28 enters slot 81 so that the continued counter-clockwise movement of arm 60 positively moves pin 28 upwardly after releasing latch 23. Arm 60, therefore, not only unlocks the coin trap 19 but also positively engages an extension of trap 19 to force the trap into coin discharging position and finally resets the coin trigger 20 as described below.

The vertical armature extension 60 at its upper end also carries a stud 77 which performs no function when the armature is in normal position but when the armature is attracted for movement about its pivot 55, stud 77 is swung in an arcuate path which brings the stud to bear against a bowed portion 78 of the left spring member of contacts C_1 to force the pair of spring contacts to the right as shown in Fig. 10 whereby contacts C_1 which were closed by the actuation of the coin trigger 20 are still maintained closed but the spring pile-up (comprising spring contacts C_1) in its new position removes spring end 69 from beneath trigger shoulder 70 to permit the trigger to restore to normal due to its counterweight 79 so that the subsequent release of armature 52 will again cause contacts C_1 to be opened because shoulder 70 would now be interposed in the path of spring end 69.

The manner in which the above-described apparatus operates to collect or refund a deposited coin will now be described in detail. In the following description it will be assumed that the telephone line 85 of Fig. 2 which is connected to the coin collector of Fig. 1 is a calling line and extends to a central office containing apparatus for connecting this calling line to a desired or called line.

Assuming it is desired to make a local call from the telephone coin collector disclosed in the above figures, a five-cent piece is deposited in coin gauge 16 and the coin after successfully meeting certain tests as to genuineness while traversing coin chute 17 will drop into coin hopper 18 and come to rest on coin trap 19 since the trap is positively held in coin supporting position by latch member 23 (Fig. 8). Before reaching coin trap 19 the coin strikes coin trigger 20 whose normal position is shown in Fig. 3 and the coin trigger in being actuated to its lowermost position of Fig. 7 releases biasing spring 68 to close contacts C_1. Since the other set of contacts C_2 are normally closed the coin operated closure of contacts C_1 serves to connect one terminal of the electromagnet winding 21 to ground through both sets of contacts in series as shown in Fig. 2, so that one side of the telephone line is grounded through said winding. Apparatus at the central office is thereupon prepared in the usual manner to extend the calling line to the desired called line as determined by pulses transmitted by a calling dial 84. If the desired connection is obtained means at the central office are operated to apply battery to line 85 of such polarity that the deposited coin is collected. In the present instance it has been assumed that channel 34, 35 leads to the usual cash compartment in the lower housing 86 and hence to insure collection the applied voltage should be of that polarity which causes pole-piece 64 to repel bar magnet 33, biasing vane 29 against shoulder 66, in which position the said vane closes the opening to the refund channel 38, 39 and lies out of the path taken by coin trap 19 in reaching its coin discharging position. This biasing of vane 29 takes place immediately upon the application of collect current and before armature 52 has been moved an appreciable distance from its non-operated position. The position of armature 52 with the electromagnet deenergized is shown in Figs. 3, 4 and 6. In Fig. 8 there has been a substantial upward movement of the armature while the said armature is shown in its fully attracted position in Figs. 9 and 10, the armature movement taking place about its axis 55 in a counter-clockwise direction as viewed in Fig. 8.

Several mechanical operations are produced by the movement of the armature 52 to its attracted position. Lug 72 at the lower end of armature extension 60 is moved out of the path of spring end 73 but contacts C_2 are still held closed since spring 71 is still restrained because spring end 74 now rests against cam 76 which is a part of pivoted plate 43. Lug 80 fastened to an intermediate portion of arm 60 strikes latch member 23 to release trap 19 well before the armature movement has been completed. After lug 80 has freed pin 28 from latch 23 the continued movement of arm 60 brings cam surface 82 into contact with pin 28 so that pin 28 on entering slot 81 is positively lifted upwardly to throw trap 19 downwardly to the coin discharging position of Fig. 9 in the event that the coin load on the trap 19 was not sufficient to overcome the restoring force exerted on the trap by its biasing spring 27. With the trap 19 moved from its horizontal position of Fig. 8 to its discharge position of Fig. 9 any coins on the trap will fall directly on pivoted plate portion 42 and tilt the said plate to its lowermost position 42' of Fig. 10 whereby the coin freely passes down collect channel 34, 35 to the cash box located in the lower housing 86 of the collector (Fig. 1). After all coins from trap 19 have passed beyond plate portion 42 the said plate portion tends to return to its normal horizontal position under the action of its counterweight 87 but is temporarily restrained from so doing since spring end 74 now lies against the upper curved surface 88 on the lower edge of cam 76 whereby spring end 74 holds plate portion 42 tilted slightly downwardly, say, in its upper position of Fig. 10.

However, the tilting of plate portion 42 frees spring 71 of the restraining action of cam 76, thereby enabling the contacts C_2 to be opened to deenergize electromagnet 21. With the circuit so interrupted the holding force of the magnetic system is limited to residual forces and is easily overcome by the restoring force supplied by the biasing spring 61. The armature 52 is, therefore, restored to normal by its biasing spring 61 to remove arm 60 from engagement with spring 78, latch member 23 and pin 28. Contacts C_1

are thereupon opened since shoulder 70 of the coin trigger 20 is now in position to prevent the biasing spring 68 from closing contacts C_1. Spring 27 is now free to restore trap 19 to its horizontal position of Fig. 8 whereupon it again is locked in coin supporting position by latch member 23 since biasing spring 26 is now effective to move hook 25 over pin 28 as shown in Figs. 7 and 8. The movement of arm 60 back to its normal position also brings stud 72 again into engagement with spring portion 73 to force the spring pile-up comprising spring contacts C_2 to the right as viewed in Fig. 10 so that the spring pile-up is brought into its normal condition of Fig. 3 with contacts C_2 closed.

The above description has assumed that it is desired to collect the coin or coins on the trap 19. If, however, it is desired to refund the deposited coin the refund battery current applied at the central office will be of the opposite polarity to that assumed above whereby there will be mutual attraction instead of repulsion between bar magnet 33 and pole-piece 64, the attractive force being sufficient to move vane 29 from its normal position of Fig. 4 to its broken line position of Fig. 11 against the restoring force exerted by spring 31. As shown in Fig. 11 this movement of vane 29 to a point adjacent pole-piece 64 brings the upper end of the vane well within the downward path of trap 19 and trap 19 under the positive action of arm 60 drives vane 29 to the full line position of Fig. 11 whereby the coins on trap 19 will be deflected into refund channel 38, 39 which as in the usual collector directs the coin down into the lower housing to a pocket adjacent a refund opening in the front wall of the housing. Except for the different position taken by vane 29 the operation of all moving parts upon the application of refund current is the same as that previously described for the application of collect current. In this connection it will be noted that plate portion 41 in the refund channel is integral with plate portion 42 in the collect channel and hence the refunded coin in striking plate portion 41 to tilt it downwardly performs the same functions described above by the downward movement of plate portion 42 by a coin to be collected.

In the attraction of armature 52 by either collect current or refund current, it is desirable that armature extension 60 perform its functions in the following sequence: (1) releases latch 23; (2) positively forces trap 19 to coin discharging position; and (3) permits the trigger 20 to be restored to normal. This sequence precludes the possibility that the collect or refund current might be applied for such a short time interval that the trigger 20 might be reset to open the circuit of the relay without dumping the coins on the coin trap, whereby the deposited coin would remain on the trap until the next coin is deposited and the collect or refund current applied for a longer time interval. In the present invention the coin trigger 20 cannot be reset to open the circuit of the relay until after the trap has been moved to coin discharging position; and the application of collect or refund current for a time interval too short to discharge any coin on trap 19 will keep trigger 20 in actuated position with coin collection or refund still under control of the remote central office without the necessity of depositing an additional coin.

In the above construction it is assumed that the coin hopper 18, as shown in Fig. 4, is suitably mounted on an apparatus tray 89 of the coin collector, this tray having an opening 90 leading to the refund channel in the lower housing and an opening 91 leading to the cash box. It has previously been described that the electromagnet 21 is supported from the coin hopper instead of being supported on the apparatus tray as in the construction of the above-mentioned Forsberg patent.

The force and load characteristics of one particular embodiment of the disclosed magnetic system may be described as follows: The system was so designed that for a current of .045 ampere through the coil of the electromagnet the forces were sufficient to overcome the load which initially consists of the weight of the armature 52, armature extension 60, the tension of restoring spring 61 and whatever friction is involved. As the air-gap shortens with the upward movement of the armature the operating forces increase rapidly and at a point just before the latch 23 is engaged by arm 60 a force of 240 grams is available resisted by a load of about 70 grams. The load then increases abruptly to about 150 grams due to the latch spring 26 and friction and a short time later decreases to about 80 grams when the latch releases. When the coin trap pin 28 is engaged by arm 60 the load again increases to about 130 grams, but by this time the operating force has increased to 275 grams. Thereafter the load increases to its final value of 210 grams and the operating force increases to 850 grams. These excesses of armature forces over loads at the given positions of the armature are of such magnitude that positive operation is insured even under the adverse conditions occasionally encountered in the field. After the current has been interrupted the residual holding forces are very low and are easily overcome by the restoring spring system which comprises the major portion of the 210-gram load.

It may be noted from the above description that the self-releasing feature of the magnetic system due to the coin operated opening of contact C_2 by means of which the device is restored to its initial condition as soon as the coins have been properly disposed of, makes absolutely unnecessary any release requirement for the relay. The operating current is also independent of the coin load since the coin load is not picked up by the armature until near the completion of its stroke. The positive action of the coin trap 19 under the lightest coin load is also an important feature of this invention. Other advantageous features are the positive return of the trap 19 to normal; the positive action of the latch 23 in locking the trap in coin supporting position thus eliminating the possibility of premature operation as coins are dropped on the trap; the sequence of events by which the resetting of coin trigger 20 is not possible until the coins have been disposed of; and the inherent protection afforded against fraudulent tampering.

With respect to the last-mentioned feature of protection against fraudulent tampering it will generally be preferable that the winding of the electromagnet be so connected that the talking battery current will tend to bias vane 29 in the same direction as produced by the application of collect current so that any fraudulent attempt to effect premature operation will result in the collection of the coins on the trap.

While the preferred embodiment of the invention has been disclosed in the above-described figures it is to be understood that the invention may possess numerous alternative forms com-

mensurate with the scope of the appended claims.

What is claimed is:

1. In a coin collector, a coin channel, a movable coin controlling member in said channel, said member comprising spaced plate portions adapted to guide coins traversing said channel, a permanent magnet within said channel and mounted on said member between said plate portions, and means external to said channel and adjacent a pole of said magnet for creating a magnetic field tending to move said magnet.

2. In a coin collector, a coin channel, a pivoted coin trap in said channel having an arm projecting external of said channel, a latching member normally engaging said arm to hold said trap in coin supporting position, an electromagnet, means controlled by said electromagnet for releasing said trap from said member and for engaging said arm to force said trap into a coin discharging position, a pair of coin chutes converging into said channel at a point below said trap, a pivoted coin vane below said trap for determining by its position which chute will receive coins discharged from said trap, and a permanent magnet within said channel and carried by said vane, said electromagnet having a core with a pole-piece projecting into the field of said permanent magnet whereby upon the energization of said electromagnet said vane is biased to a position determined by the polarity of said pole-piece, said vane in one of said biased positions extending into the path taken by said trap in reaching its coin discharging position whereby said trap in its coin discharging movement actuates said vane from said biased position to an advanced position.

3. In a coin collector, a coin channel, a coin trap in said channel for receiving coins deposited in said channel, an electromagnet, mechanism controlled by said electromagnet for discharging coins from said trap, a switch in the energizing circuit for said electromagnet and means actuated by a coin discharged from said trap for controlling said switch.

4. In a coin collector, a coin channel, a coin trap in said channel for receiving coins deposited in said channel, an electromagnet, mechanism controlled by said electromagnet for discharging coins from said trap, a pair of electrical contacts adapted to be connected in an energizing circuit for said electromagnet, means adapted to hold said contacts in closed condition and means actuated by a coin discharged from said trap for rendering said holding means ineffective.

5. In a coin collector, a coin channel, a coin trap in said channel for receiving coins deposited in said channel, an electromagnet, a pair of electrical contacts in circuit with the winding of said electromagnet, a first means for holding said contacts in closed condition, means controlled by said electromagnet for discharging coins from said trap and for rendering said holding means ineffective, a second means adapted to hold said contacts closed when said first holding means is ineffective, and means actuated by a coin discharged from said trap for rendering said second holding means ineffective.

6. In a coin collector, a coin channel, a coin trap in said channel normally maintained in a coin supporting position for receiving coins deposited in said channel, an electromagnet, means controlled by said electromagnet for actuating said trap to coin discharging position, a pair of electrical spring contacts biased to open position and adapted to be connected in circuit with the winding of said electromagnet, means adapted to hold said contacts in closed condition, and means actuated by a coin discharged from said trap for releasing said contacts from said holding means.

7. In a coin collector, a coin channel, a coin trap in said channel for receiving deposited coins, an electromagnet, mechanism controlled by said electromagnet for discharging coins from said trap, a coin trigger in said channel below said trap and biased to a normal coin obstructing position but adapted to be actuated to an advanced position by a coin discharged from said trap, a cam on said trigger, and spring means engageable with said cam for preventing the opening of said contacts when said trigger is in normal position while permitting said contacts to open when said trigger is in said advanced position.

8. In a coin collector, a coin channel, a pivoted coin trap in said channel and having an arm external to said channel, a latching member engaging said arm to hold said trap in coin supporting position, an electromagnet, and means controlled by said electromagnet for releasing said trap from said member and for engaging said arm to force said trap into a coin discharging position.

9. In a coin collector, a coin channel, a pivoted coin trap in said channel, said trap having an arm projecting externally of said channel, latching means normally engaging said arm for holding said trap in coin supporting position, an electromagnet, and means actuated by said electromagnet for engaging said latch to release said trap and for engaging said arm to force said trap into a coin discharging position.

10. In a coin collector, a coin channel, a pivoted coin trap in said channel, said trap having an arm projecting externally of said channel, a latching member engaging said arm for holding said trap in coin supporting position, a pair of normally open electrical contacts, a coin trigger in said channel biased to a normal position and adapted to be actuated by a deposited coin to an advanced position, means effective upon the actuation of said trigger for closing said contacts and for holding said trigger in said advanced position, an electromagnet, a pivoted armature for said electromagnet, and means on said armature effective when said armature is moved from its normal position by the energization of said electromagnet for releasing said trigger from said holding means, for releasing said trap from said member, and for positively engaging said arm to force said trap into a coin discharging position.

11. In a coin collector, a coin channel, a pivoted coin trap in said channel, said trap having an arm projecting externally of said channel, latching means for said arm to hold said trap in coin supporting position, a relay, and means controlled by said relay for releasing said latch and for positively engaging said arm to deflect said trap to a coin discharging position.

12. In a coin collector, a coin channel, a pivoted coin trap in said channel, said trap having an arm projecting externally of said channel, latching means engaging said arm to hold said trap in coin supporting position, an electromagnet, a pivoted armature controlled by said electromagnet, said armature having an extension effective when said armature is attracted by said electromagnet to first engage said latching means to release said trap, and second, to engage said arm to force said trap to a coin discharging position.

LEONARD VIETH.