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F. A. HOYT

1,938,698

COIN CONTROLLED APPARATUS

Original Filed Sept. 30, 1930

FIG. 1

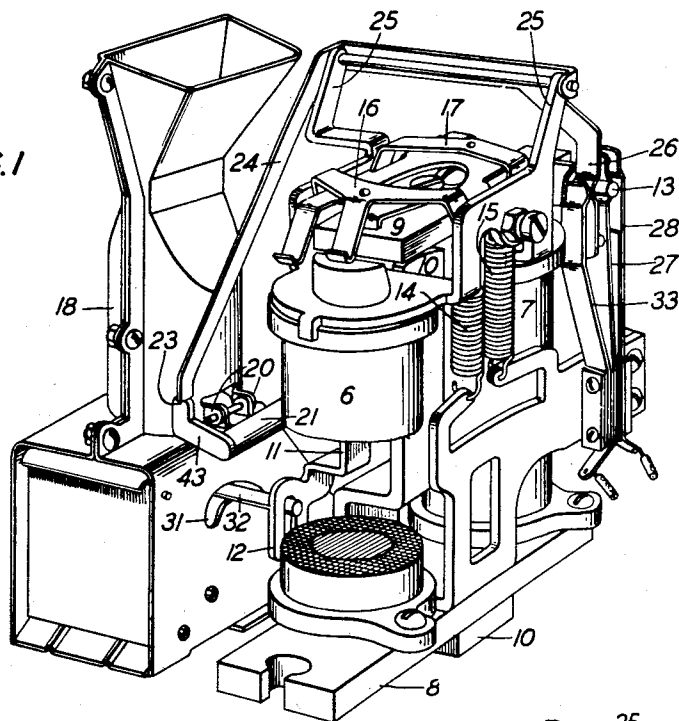


FIG. 2

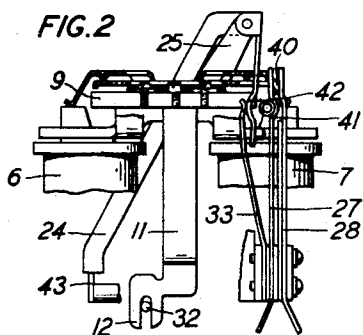


FIG. 3

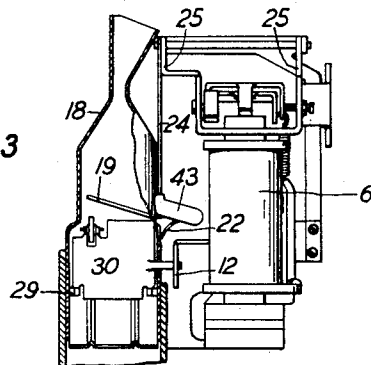


FIG. 4

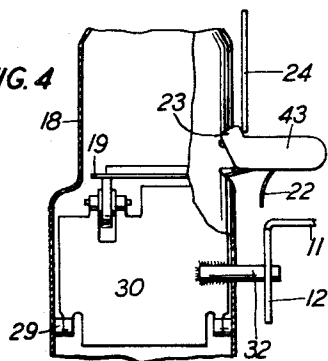
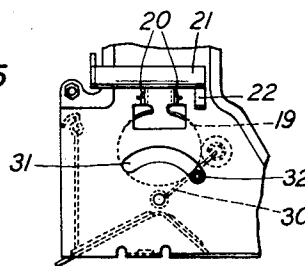


FIG. 5



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UNITED STATES PATENT OFFICE

1,938,698

COIN CONTROLLED APPARATUS

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485,387. Renewed January 20, 1933

8 Claims. (Cl. 194-16)

This invention relates to coin collection apparatus for use at telephone pay stations and more particularly to an electromagnetic coin handling and switching mechanism therefor.

5 The invention is particularly suitable for use in telephone pay station apparatus of the class shown in Patent 1,043,219 to O. F. Forsberg dated November 5, 1912, in which the deposit of a coin or token is necessary in order that the substation may be able to signal a central office, and in which other coins are deposited for the use of a toll connection, said coins being subsequently distributed by the operator, that is, cashed, if the connection is successfully completed, and re-
10 turned to the depositor if the said connection is not obtained. In apparatus of this type the coins are usually held in a trap which is controlled by a relay energized through a circuit closed by the operator by means of suitable contact making means. The operation of the relay automatically disconnects the operator from the substation and should cause the removal of the coins from the trap. It sometimes happens that the operator does not keep the circuit closed for a time sufficient to allow the coins to be removed from the trap. However, even the momentary closing of this circuit operates the relay and breaks the line connection. The operator thereby loses all control over the coin mechanism and
20 has no means of knowing whether any coins or tokens remain in the trap.

An object of the invention is to provide a telephone coin collector with coin control and switching means which are under the control of the central office operator until the deposited coins have been cashed or returned.

In accordance with the present invention, a telephone coin collector having an electromagnetic switch and coin control apparatus, a coin chute and a trap door therein upon which coins are deposited, is provided with means associated with the trap door for operating the switch to put the coin handling apparatus under the control of the central office operator and to positively
40 maintain this control until the coins are discharged from the trap door.

Specifically, the trap door is provided with a cam which cooperates with a lever to maintain the line switch contacts open until the trap door and its associated cam are rotated a predetermined distance by a deposited coin to disengage the cam and lever and thus permit the switch contacts to close. While any coins remain on the trap door the cam will be held out of engagement with the switch lever and the contacts will
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remain closed so that the electromagnetic coin handling device may be energized repeatedly if necessary by the operator to release the coins, whereupon the trap door returns to normal and the cam engages the switch lever to hold the contacts open, the switch contacts having been set by the electromagnet.

Referring to the drawing:

Fig. 1 is a perspective view partly in section of an electromagnetically operated coin handling mechanism embodying the invention;

Fig. 2 is a fragmentary view partly in section showing the switching mechanism under normal conditions;

Fig. 3 shows in vertical section the coin chute and the normal position of the coin trap therein;

Fig. 4 is a fragmentary view partly in section of the coin chute showing the position of the coin trap and its relation to the switch lever after a coin has been deposited and before it has been released by the electromagnet; and

Fig. 5 is a fragmentary view in elevation showing one position of the coin control means when the electromagnet has been operated to release the deposited coin or coins.

The electromagnetic coin control device is similar to that described in Patent 1,117,485 of November 17, 1914 to O. F. Forsberg and consist in general of a polarized electromagnetic device having two electromagnetic coils 6 and 7 each supported at one end on a yoke 8, an armature 9 pivotally supported at its center between the poles of the opposite ends of the coils 6 and 7, and a permanent magnet 10 supported on the yoke 8 for polarizing the armature and the electromagnet. Associated for movement with the armature 9 is a lever 11 having a forked end 12 and a stud 13 of insulating material. Springs 14 and 15 cooperate respectively with the members 16 and 17 to separately act upon the armature 9 to return it to its normal position as shown in Fig. 1, depending upon the direction of the displacement of the armature.

In a coin chute 18 is a trap 19 pivotally supported on externally projecting lugs 20. Supported on an outwardly extending arm of the trap 19 and on the opposite side of the pivots from the chute 18 is a weight 21 which under normal conditions is more than sufficient to maintain the trap 19 in an elevated position against the force of a spring 22 cooperating with the outer wall of the chute 18 to limit the upward movement of the trap 19 and damp its oscillation.

Attached to the arm of trap 19 or the weight 21 is a cam 43 having a curved surface 23 the

axis of which is preferably in line with the axis of the pivot of the trap 19. A lever 24 pivoted at 25 on the electromagnetic structure is adapted to engage the surface 23 of the cam 43. An arm 26 attached to the lever upon the opposite side of pivots 25 is adapted to engage the spring 27 to control its relation to spring 28 and thereby operate the contacts 40 to control the line circuit between the central office and the electromagnet. The spring 27 is provided with a semi-circular portion 41 which partly surrounds the stud 13 so that any upper or downward movement of the stud will cause it to engage spring 27 and maintain the contacts 40 closed until the armature is returned to normal. The arm 26 is also provided with a similar bend 42 to engage the stud 13 so as to disengage the cam surface 23 and the lever 24 upon the movement of the armature 9 in either direction.

In the coin chute 18, below the trap 19 and adapted to temporarily support it and a deposited coin, is a vane 30 pivoted at its lower edge 29, the line of pivots being at right angles to the line of pivots 20 of the trap. Projecting through an arcuate opening 31 in the wall of the chute 18 and attached to the vane 30 is a stud 32 engaging the forked end 12 of the lever 11.

The operation of the invention in connection with the electromagnet operating device is briefly as follows: Normally the contacts 40 are open and the trap 19 is elevated as shown in Figs. 2 and 3 respectively and the end of the lever 24 is held in engagement with the cam surface 23 by the force of spring 33 acting upon the arm 26. The weight of a deposited coin carries the trap 19 downwardly to the horizontal position against the vane 30 as shown in Fig. 4 and disengages the cam surface 23 from the lever 24 which is rotated by the action of the spring 33 so that the arm 26 moves into the path of the stud 13 and also forces the spring 27 to make contact with the spring 28 thereby closing the line contacts 40 and placing the electromagnet under the control of the central office operator who presses the usual key to energize the electromagnet and cause the armature 9 and the stud 13 attached thereto to move either clockwise or counter-clockwise to operate the lever 24 and the contacts 40. At the same time the lever 11 moves vane 30 either to the right or left depending on whether the coin is to be returned or collected. If the operator maintains the circuit closed for a sufficient length of time to release the coin and permit the trap to return to normal the lever 24 will again engage the cam 23 and allow the contacts 40 to open upon the release of the line current. However if the operator releases the circuit too soon to permit the coins from being released from the trap 19 the cam 23 and the lever 24 will remain disengaged and the line contacts 40 will remain closed so that the operator may repeatedly energize the electromagnet until the coin is released. After the coin has been returned or collected and the operator circuit opened, the contacts 40 open and the device remains out of control of the operator until another coin is deposited.

What is claimed is:

1. In coin controlled apparatus comprising a coin chute, a coin trap in said chute for arresting the movement of a coin or coins deposited therein and electrical contacts for controlling a circuit, a cam rigidly secured to said trap, means including a pivoted member controlled by said cam to close said contacts upon the deposit of a coin on

said trap, and means under the control of said contacts for releasing the coin or coins from said trap.

2. In coin controlled apparatus comprising a coin chute, a coin trap pivotally supported in said chute for arresting the movement of a coin or coins deposited therein and switching means, means holding said trap in an elevated position whereby a deposited coin effects a predetermined initial movement of said trap, means associated with said trap to control said switching means and lock said trap in its displaced position and means under the control of said switching means to release said trap and the coin or coins arrested thereby.

3. In coin controlled apparatus, a coin chute, a coin trap pivotally supported in said chute for arresting the movement of a coin or coins deposited therein, a weighted arm for balancing said trap and integral therewith, a flexible member between said arm and said chute for damping the oscillations of said trap and arm, switching means actuated by the deposit of a coin or coins on said trap and electromagnetic means under the control of said switching means to actuate said trap and release the coin or coins therefrom.

4. In coin controlled apparatus, a coin chute, a coin trap pivotally supported in said chute for arresting the movement of a coin or coins deposited therein, a weighted arm integral with said trap, a cam on said arm, circuit control device including a lever adapted to engage said cam for a predetermined movement of said trap and lock said trap in its displaced position, and means to actuate said lever to release said trap for further movement to release the deposited coin or coins.

5. In coin controlled apparatus comprising a coin chute, a trap therein adapted to be deflected downwardly a predetermined amount by the weight of the deposited coin, means arresting the deflection of said trap, a switching device associated with said trap and adapted to lock said trap against upward movement and means for actuating said trap arresting means to release said trap and discharge the coin or coins therefrom.

6. In a coin collector for telephone pay stations, a coin chute, a pivotally supported coin trap therein for arresting the movement of a coin or coins, means for maintaining said trap in an elevated position inclined downwardly toward the pivotal support, said trap being adapted to move about its axis under the weight of a coin or coins, means for stopping said trap after a predetermined movement, a switch including electrical contacts operated by the initial movement of said trap and an electromagnet for removing said stopping means to permit the further movement of the trap about its axis under the weight of a coin or coins and their discharge therefrom.

7. In a coin collector or pay station, a coin chute, a pivotally supported coin trap therein for arresting the movement of a coin or coins, means for maintaining said trap in an elevated position inclined downwardly towards a pivotal support, said trap being adapted to move about its axis under the weight of a coin or coins, means for stopping said trap after a predetermined movement, means locking said trap independent of a coin or coins against return to its initial position, a switch including electrical contacts operated by the initial movement of said trap and said locking means, and means including an electromagnet for removing said stop to permit

further movement of the trap about its own axis under the weight of a coin or coins and their discharge therefrom.

predetermined initial displacement about said pivotal support, a switch including electrical contacts operated by the initial movement of said trap and an electromagnet under the control of said switch to remove said stopping means from the path of said trap thereby permitting the coins to further move said trap about said pivotal support and effect their discharge therefrom.

8. In coin controlled apparatus a coin chute, a coin trap for arresting the movement of coins deposited in said chute, a pivotal support for said trap and about which it moves under the weight of the coins, means in spaced relation to said trap to stop the movement thereof after a

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