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COIN CONTROLLED APPARATUS

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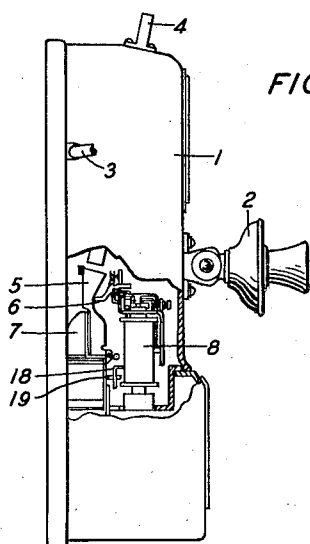


FIG. 1

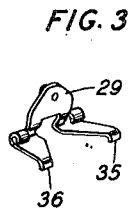


FIG. 3

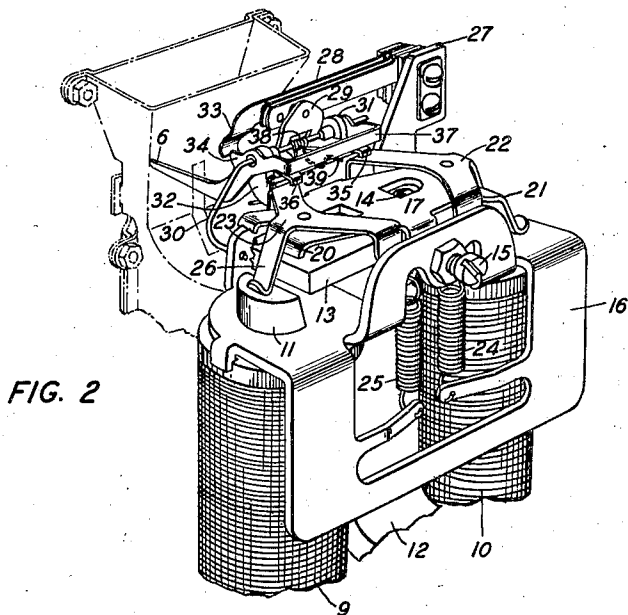


FIG. 2

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COIN CONTROLLED APPARATUS

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6 Claims. (Cl. 194—16)

This invention relates to coin collector apparatus for use at telephone pay stations and more particularly to the operating mechanism for the switch by means of which a signal is given at the central office when it is desired to make a call and through which the proper disposition of the deposited coin is controlled from the central office.

The telephone pay station to which the present invention is applicable is disclosed generally in O. F. Forsberg Patent 1,043,219 to which reference may be made for a complete description of the apparatus.

In the operation of such apparatus, a coin or token is deposited by the subscriber which in its passage operates a mechanism which causes the closure of a switch whereby a circuit is closed to cause the operation of a signal at the central office which indicates that communication is desired. As a part of this mechanism, as described in the Forsberg patent, there is an electromagnet which may be operated in one direction to collect the deposited coin and in the other direction to return the coin to the depositor. The operating circuit of this electromagnet includes the switch contacts which are closed when the coin is deposited.

Heretofore, the switch operating mechanism has been somewhat complicated and has required rather fine adjustment of the clearances and tensions of various levers and springs.

The present invention has as an object the simplification of telephone pay station switch operating mechanisms.

Another object of this invention is to insure the actuation of the switch contacts when a coin is deposited.

Another object of the invention is to prevent false actuation of the switch contacts.

These objects and the manner of their accomplishment will be understood from the following description and drawing forming a part thereof, in which:

Fig. 1 shows the general form of a telephone pay station with a part of the case removed to show the usual location of the mechanism to which the invention is directed;

Fig. 2 is a perspective view of the mechanism; and

Fig. 3 is a perspective of one of the details of the mechanism.

The general form of telephone pay station is well known and is shown in Fig. 1. It comprises a case 1 on which a telephone transmitter 2 is mounted with electrical connections through

the case. The receiver is mounted on a bracket at the side, only a small portion of which is shown at 3. On the top of the case is mounted a plate 4 having openings to accommodate coins of different size and denomination. These openings connect with different runways adapted to discharge spurious coins. There are also associated with these runways various sound devices indicative of the denomination of the coin deposited.

A hopper 5 at the lower end of the runway receives the deposited coin. A trigger 6 projects into the hopper so that a coin passing through the hopper moves the trigger downwardly. The bottom of the hopper 7 is provided with a trap upon which the coin is held until proper disposition is made of it. The coin is either returned through an opening in the front of the case or is collected in a receptacle in the bottom of the case by the operation of the relay arrangement indicated at 8 which is controlled from the central office.

The relay arrangement comprises two coils 9 and 10 having magnetic material cores and is mounted on a piece of magnetic material forming a part of the magnetic circuit. The cores terminate in pole pieces, one of which is shown at 11. A piece of magnetic material 12 extends from the piece upon which the coils are mounted to just under the middle portion of armature 13 to complete the magnetic circuit.

A yoke-shaped metallic piece not visible because of plate 17, is fastened to the armature 13 by screws, one of which is shown at 14. This yoke piece has narrow extensions down the sides of the armature which provide bearings into which the ends of trunnion screws fit to support the armature pivotally near the middle. One of the trunnion screws is shown at 15.

The trunnion screws are supported by bridge plate 16 which extends between the coils and through which the pole pieces extend as shown in Fig. 2.

Mounted on the trunnion screws and positioned just above the armature is a metallic plate 17. This plate is provided with an arm which extends downwardly adjacent the coils. This arm is forked at its lower end 18 (Fig. 1) to engage an extension 19 of the trap supporting vane. Short downwardly projecting pieces 20 of this plate are adapted to contact with the armature after a small movement of the armature. Other downwardly projecting pieces 21 contact with the bridge plate 16 and act as stops for plate 17.

Independently movable restoring arms 22 and 23 are also mounted on the trunnion screws above the armature and are adapted to be moved by the armature. Springs 24 and 25 are attached to arms 22 and 23, respectively, at one end and to projections of the bridge plate at the other end. These springs function through the restoring arms to restore the armature to its normal position. The restoring arms are provided with downwardly extending end pieces 26 which contact the pole pieces to act as stops.

On an upwardly extending portion 27 of the bridge plate there is mounted a contact spring pile-up. Spring 28 of this pile-up is tensioned to force the other springs together and against bifurcated angle piece 29.

Trigger 6 and angle piece 29 are pivoted on rod 30 which is supported on two lugs 31 and 32 which are extensions of the bridge plate. Rod 30 is bent as shown and projects into a hole in the bridge plate to hold it in position. A notch in the edge of the bridge plate will serve just as well as the hole. The end of rod 30 may easily be withdrawn from the hole and then the rod removed from the trigger, angle piece and supporting lugs. This construction facilitates replacement of parts.

Spring 28 is provided at its free end with a downwardly projecting extension 33 adapted to cooperate with cam portion 34 of trigger 6. When trigger 6 is in its upper and normal position its cam portion 34 contacts with extension 33 of spring 28 to restrain the spring from forcing the contacts together thereby holding the circuit open. When trigger 6 is moved by a deposited coin to its lower and operated position, extension 33 of spring 28 acts as a pawl to hold the trigger in its lowered position. Spring 28 then being unrestrained, forces the other contact springs together to close the circuit.

The arms 35 and 36 of angle piece 29 are provided with bent over portions adapted to contact with restoring arms 22 and 23, respectively, so that if either restoring arm is moved upwardly arms 35 and 36 of the angle piece are also moved upwardly and the upright portion of the angle piece is forced against the contact springs thereby moving extension 33 of spring 28 away from the position of holding the trigger, and trigger 6 is allowed to return to normal position due to the unbalanced weight of portion 37 of the trigger.

A spring 38 coiled about rod 30 has an extension 39 which acts as a stop and cushion for the trigger.

In operation, a deposited coin passing down the hopper 5 forces trigger 6 to its lower position. Spring 28 being no longer restrained by cam 34 forces the contact springs together thereby closing a circuit for giving a signal at the central office that a coin has been deposited, and also preparing a circuit by means of which the energization of coils 9 and 10 may be controlled.

When the operator desires to refund or collect the deposited coin, a button is pressed at the central office to complete the energization circuit and armature 13 is moved either clockwise or counter-clockwise. In either case, one of the restoring arms 22 or 23 is moved upwardly, thereby causing angle piece 29 to force the contact springs against spring 28, thereby moving this spring out of the position of holding the trigger, permitting the trigger to return to normal position and hold spring 28 out of contact

with the other springs. Upon cessation of the energizing current, either restoring spring 24 or 25 acting upon restoring arm 22 or 23, respectively, restores the armature to normal position.

What is claimed is:

1. In a coin controlled apparatus, a coin hopper, a trigger pivoted externally of said hopper but projecting therein, a cam portion on said trigger, an angle piece pivoted coaxially with said trigger, a contact spring pile-up comprising three or more springs, one of which springs is tensioned to force said other springs into contact, said cam portion of said trigger when in its unoperated position adapted to restrain said one spring, said spring when the trigger is in its operated position adapted to maintain said trigger in the operated position and to force said contacts together, an electromagnet, an armature therefor and restoring arms associated with said armature, said restoring arms when in normal unoperated position adapted to hold said angle piece from rotation about its pivot in one direction and when said armature is operated adapted to move said angle piece against said contact springs whereby said one spring is caused to release said trigger, whereupon said trigger restrains said one spring from forcing said other springs into contact.

2. In a coin controlled apparatus, a coin hopper, a trigger adapted to be moved by a deposited coin, a cam portion on said trigger, a contact spring pile-up projecting substantially in a horizontal direction and mounted with the flat portion of said springs substantially vertical, one of said springs being tensioned to move into contact with another of said springs when unrestrained but being normally held in the restrained position by the cam portion of said trigger, and means to restore said one spring to its restrained position after it has been released by the movement of said trigger.

3. Coin controlled apparatus comprising a coin hopper, a trigger adapted to be moved by a coin deposited in said hopper, a cam portion on said trigger, a contact spring pile-up projecting substantially in a horizontal direction and mounted with the flat portions of said springs substantially vertical, one of said springs being tensioned to close electrical contacts of said pile-up when unrestrained but being normally held in a restrained position by the cam portion of said trigger, an electromagnet, an armature therefore pivoted in a substantially horizontal plane, and means actuated by said armature to restore said one spring to its restrained position after said one spring has been released by movement of said trigger.

4. In coin controlled apparatus, a coin hopper, a trigger pivoted externally of said hopper but projecting therein, a cam portion on said trigger, a contact spring pile-up, one spring of said pile-up being tensioned to close electrical contacts of said pile-up, said cam portion of said trigger normally restraining said one spring from closing said contacts, and an angle piece pivoted coaxially with said trigger adapted to act as a stop for the movement of said springs.

5. In coin controlled apparatus, a coin hopper, a trigger pivoted externally of said hopper, but projecting therein for operation by a deposited coin, an angle piece pivoted coaxially with said trigger, a contact spring pile-up, one of the springs of said pile-up being adapted when the trigger is moved by a deposited coin to its op-

erated position to maintain the trigger in that position and to force a second of said springs against said angle piece, an electromagnet, an armature therefor, means associated with said
5 armature adapted upon movement of said armature to move said angle piece and said springs to cause said one spring to release said trigger from its operated position and at the same time permit said trigger to move into a position where
10 said trigger restrains said one spring from closing electrical contacts of said pile-up.

6. In coin controlled apparatus, a coin hopper, a trigger pivoted externally of said hopper, but

projecting therein, a cam portion on said trigger, a contact spring pile-up, one spring of said pile-up being tensioned to close electrical contacts of said pile-up, said cam portion of said trigger normally restraining said one spring, and an angle
5 piece adapted upon movement to move said pile-up against the tension of said first spring when released by said trigger to thereby return said springs to their normal unoperated position in which said trigger restrains said one spring, and
10 to permit said trigger to return to its unoperated position.

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