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2,032,517

COIN COLLECTING DEVICE

Filed Jan. 31, 1935

FIG. 1

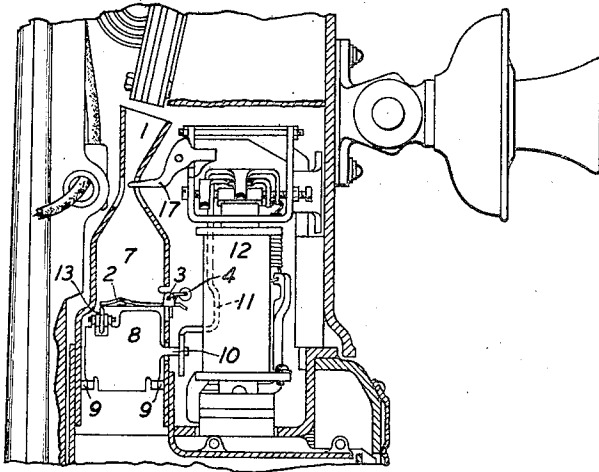


FIG. 3

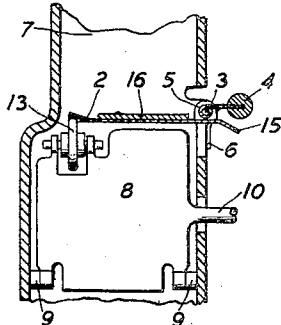


FIG. 4

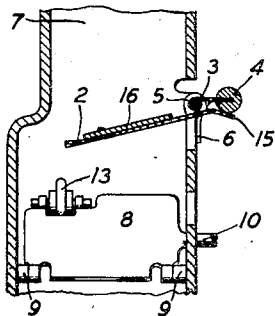


FIG. 2

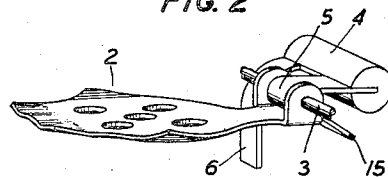


FIG. 5

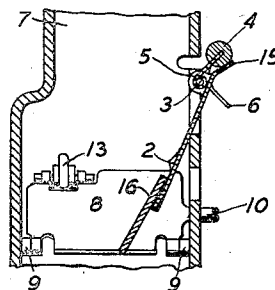
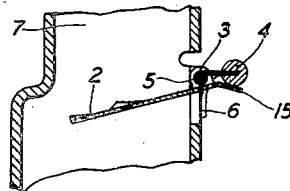


FIG. 6



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## UNITED STATES PATENT OFFICE

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## COIN COLLECTING DEVICE

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3 Claims. (Cl. 232—57.5)

This invention relates to coin collecting apparatus, particularly such apparatus for use at a telephone pay station.

As applied to telephone pay stations, the present invention is particularly adapted for that type of coin collecting apparatus wherein the calling party tentatively deposits a coin or coins as indicated by the central office operator, who subsequently makes the proper disposition thereof, that is, either refunds or collects the coins, depending upon whether or not the desired connection is obtained. In such apparatus, it is usual to have the coins temporarily deposited upon a trap located within the main coin chute and normally supported by a deflector vane adapted to be actuated by a magnet to allow the trap to discharge the coin either into a collect chute or a refund chute, depending upon the direction of movement of the supporting vane. It is also customary, as shown in O. F. Forsberg Patent 1,043,219, issued November 5, 1912, to provide the pivoted coin trap with a slight overbalancing counterweight to restore the trap to its normal position after the coins have been discharged from the trap.

An object of this invention is to provide an improved apparatus for temporarily retaining the coins within a coin chute whereby they may be later collected or refunded.

As applied to the type of coin collector disclosed in the above-mentioned Forsberg patent, this invention provides a pivoted coin trap having a counterweight which is effective only for certain positions of the trap and ineffective in other positions. Preferably, the counterweight is effective only after the coin trap has fallen a substantial distance from its normal horizontal position, thus allowing the trap, when the supporting vane is removed, to drop through a considerable angle due to its own weight before the counterweight becomes effective. Of course, if a coin rests on the trap the action is more positive. In the preferred arrangement, the counterweight is hinged independently of the trap and the trap is permitted to fall freely through a definite angle before a lug on the trap engages the counterweight. Preferably, the counterweight slightly overbalances the trap so that as soon as the coins are discharged from the trap, the counterweight initiates the upward movement of the trap, which upward movement will be completed when the coin relay allows the deflecting vane to return to its normal vertical position under the trap.

As described in the above-mentioned Forsberg

patent, it is customary in a telephone coin collector to have the deposited coin strike a trigger before reaching the coin trap, the actuation of the trigger serving to close a switch to place the coin relay of the telephone collector under the control of a central office operator and at the same time causing a signal to be given at the central office to indicate that a coin has been deposited. When current is applied by the central office operator to energize the coin relay, the relay in operating removes the supporting vane for the coin trap and at the same time restores the coin trigger to normal, thereby removing the coin relay from the control of the central office operator. The length of time that the energizing circuit for the coin relay is closed is, of course, under the control of the central office operator. If, as occasionally happens, the coin relay is deenergized after an energization period long enough to restore the trigger to normal, but too short to permit the coin trap to discharge its coins, the trap with its coins still on it will be returned to its normal horizontal position and the telephone collector circuit will be conditioned for another call with the coins deposited for the first call still lying on the coin trap. In such an instance, the central office operator will have no means of knowing that the energization of the coin relay failed to clear the coin trap of the deposited coin. Hence, in order that there may be substantially no range of brief circuit closure for the coin relay during which this condition can occur, it is desirable that the coin trap discharge its coins and return to normal in a length of time not substantially greater than the length of time required for the coin trigger to be restored to normal. Preferably, the coin trap of this invention is so constructed that the time of operation of the coin trap is of the same order as that of the coin trigger.

The above-described arrangement is also particularly advantageous in insuring the prompt discharge from the trap of a lightweight coin which might lie so near the pivoting axis of the trap as to fail to be discharged when the deflecting vane is removed in those collectors where the trap is counterbalanced for all positions. As pointed out above, the coin trap of this invention is not dependent upon the weight of a coin for initiating its downward movement but will fall freely due to its own weight for a substantial distance, thereby acquiring considerable momentum before engaging the counterweight.

Other objects and advantages of this invention

will be apparent from the following description and the accompanying drawing, in which—

Fig. 1 shows, in partial section, part of a prepayment telephone;

Fig. 2 shows the details of the trap of the invention;

Fig. 3 shows a coin on the trap with the supporting vane in normal supporting position;

Fig. 4 shows the position of the trap at the instant the counterweight is brought into action;

Fig. 5 shows the trap at its maximum point of downward movement with the coin being discharged therefrom; and

Fig. 6 shows the trap at that point in its return movement when the counterweight ceases to function.

This invention applies to a detail of the general prepayment telephone disclosed in O. F. Forsberg Patent 1,043,219, November 5, 1912, noted previously, and reference may be had thereto for a complete description of the apparatus, only a small portion of which is involved in this invention.

As described in the Forsberg patent, a coin having been deposited on the coin receiving plate (not shown), traverses certain passages (also not shown) and is discharged into the coin-directing device 1, which is substantially funnel-shaped at its upper end. Through the narrow portion of the coin-directing device 1 there projects a trigger 17. This trigger, when moved downwardly, is retained in its tipped position clear of the chute and by its movement closes a circuit to notify the operator at the central office that a call is to be made. The retaining device and switch are not shown in detail since they do not enter into the present invention. For their operation, reference may be had to the aforementioned Forsberg patent.

Below the narrow portion of the coin-directing device 1 there is a coin chute 7 and trap 2 which is hinged to rod 3 by extensions of the outer wall of chute 7. A counterweight 4 is also supported by an extension piece 5 hinged about rod 3. A second extension 6 from counterweight 4 is bent in a manner to contact the side of the chute to thereby act as a stop for the counterweight.

The trap 2 is supported in its horizontal position by a vane or coin deflector 8 pivoted at 9, 9. This vane is provided with a projecting piece 10 which extends through an arcuate slot in the side of the chute and is engaged by lever 11 fastened to the armature of a polarized relay indicated generally at 12. The armature of the relay moves in a direction corresponding to the direction of the actuating current to move vane 8 in one direction or the other depending upon whether the coin is to be returned or retained. A roller 13 is attached to one corner of the vane to facilitate its return and the replacement and support of trap 2.

The operation of the relay armature to cause the proper disposition of the coins also releases trigger 17 and switch so that the entire mechanism is restored to normal and is no longer under the control of the central office operator until another coin is deposited.

Assume that a coin has been deposited, signal given, connections made, and the call completed. At this time, the coin 16 will rest upon the coin trap 2 as shown in Fig. 3 with the coin deflector vane supporting the trap. The operator at the central office then operates a key or push-button to close a circuit thereby energizing the coin relay 12 in a direction to collect the coin or coins.

The relay, upon operating, causes lever 11 to move vane 8 from its supporting position to some position such as that shown in Fig. 4. The coin trap, being unsupported, falls freely to the approximate position shown in Fig. 4. At this point in its travel, lug or extension 15 of the trap contacts with the counterweight. It will be noted that the trap has moved through an angle of approximately 15 degrees before the counterweight is brought into action. This angle, however, is not critical and may vary somewhat either way from the value noted.

Not having to move the counterweight 4 from rest and against gravity, the initial trap movement is more rapid than if this weight were fixed to the trap. Also, when lug 15 of the trap comes into contact with the counterweight, there is a slight jar or vibration given to the trap which aids in loosening the coin from the trap if for any reason it would tend to adhere thereto or if it were situated near the hinge where movement of the coin from the trap might be retarded.

The momentum of the coin and trap overcomes the weight of counterweight 4 and the movement of the trap carries it to some such position as that shown in Fig. 5. At approximately this position, the coin is discharged from the trap as indicated. Since the coin is discharged the counterweight becomes effective to move the trap in the opposite direction and such action continues until the trap has reached approximately the position shown in Fig. 6.

At this point in the counterweight travel, extension 6 thereof comes into contact with the side of the chute and the counterweight is restrained from further movement. At substantially this instant, the armature of relay 12 is moving lever 11, and thereby vane 8, to its normal position. Vane 8 in its movement forces trap 2 through the medium of roller 13 to its normal horizontal position. As noted before, action of relay 12 restores trigger 17 to its normal position. The collector apparatus is then prepared for another similar operation.

The construction described herein, that is, with the counterweight not permanently attached to the trap, permits the speed of the trap movement to be so increased that the coin or coins are discharged therefrom before vane 8 on its return movement forces the trap back to its normal position.

It is desired to point out that whereas the above description has been directed to the use of a counterweight for starting the trap return, other suitable means may be substituted for the counterweight to act in a similar manner.

What is claimed is:

1. A coin collector comprising a coin chute, a pivoted coin trap in said chute, means for supporting said trap, means for removing said supporting means, said trap being unbalanced and tending to drop when said supporting means is removed, and a counterweight for said trap engaged by said trap only after said trap has fallen through a definite angle from its normal supporting position.

2. A coin collector comprising a coin chute, a pivoted coin trap in said chute, means for supporting said trap, a magnet for removing said supporting means, said trap being unbalanced about its pivot to permit said trap to fall freely a substantial distance due to its own weight when said supporting means is removed, and a counterweight for said trap pivoted independently of said

trap and engaged by said trap only after said trap has fallen through a definite angle from its normal supported position, said counterweight when engaged by said trap slightly over-balancing  
5 said trap tending to cause an upward movement of said trap.

3. A coin collector comprising a coin chute, a pivoted trap door in said chute for temporarily retaining coins deposited in said chute, a coin  
10 deflecting vane pivoted at its lower end and normally supporting said door, means for removing said vane as a support for said door and subsequently restoring said vane to its supporting posi-

tion, said door being unbalanced whereby said door due to its own weight falls freely for a certain distance when said vane is removed, and a counterweight for said door pivoted independent-  
5 ly of said door and engaged by said door after said door has dropped said certain distance, said counterweight substantially balancing said door for movement of said door beyond said certain distance, said door being free of said counter-  
10 weight in the latter part of its upward movement in regaining its normal position under actuation by said vane.

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