Feb. 25, 1936. J. M. MELICK 2,032,218

COIN COLLECTOR APPARATUS

Filed Feb. 21, 1935

FIG. 1

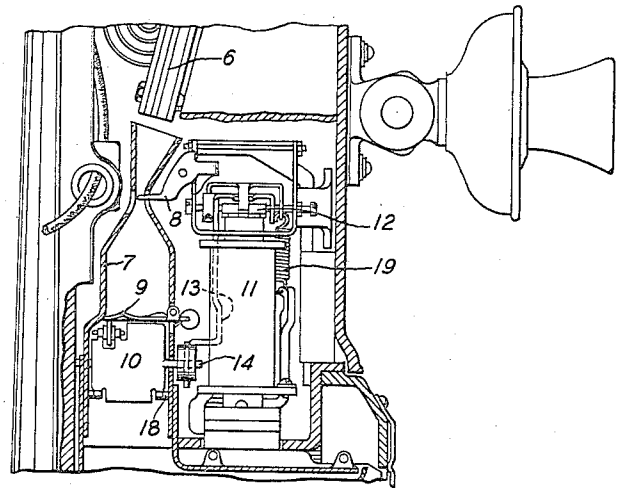


FIG. 2

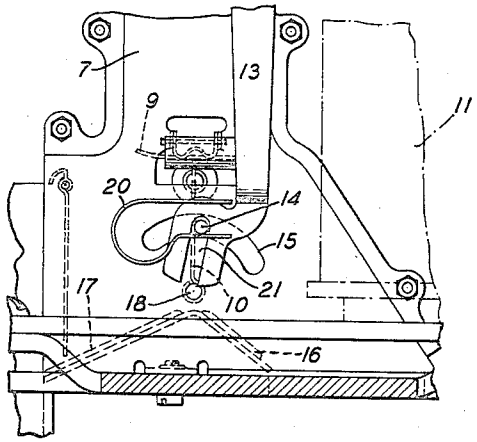


FIG. 3

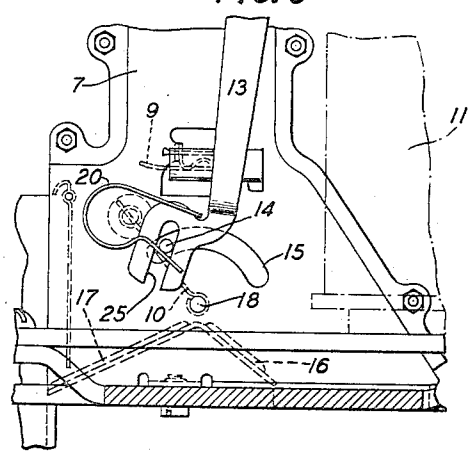


FIG. 4

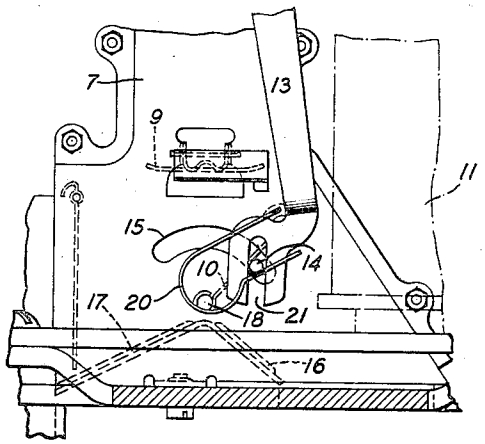
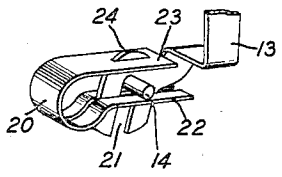


FIG. 5



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COIN COLLECTOR APPARATUS

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7 Claims. (Cl. 232—57.5)

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

As applied to telephone coin collectors the present invention is particularly adapted for that type of coin collector wherein the calling party tentatively deposits a coin, which coin is subsequently refunded or collected depending upon whether the desired connection is obtained. In such apparatus as disclosed, for example, in O. F. Forsberg U. S. Patent 1,043,219 of November 5, 1912, it is usual to temporarily retain the deposited coin upon a trap-door normally held in a coin supporting position by a pivoted vane adapted to be actuated by an electromagnet to release the trap-door to discharge the coin into a refund chute or collect chute depending upon the direction the vane is moved. The electromagnet may have an operating lever which at one end engages a pin on the vane to produce clockwise or counterclockwise movement of the vane when current is applied to energize the electromagnet. Spring means operating on the opposite end of this lever provides a restoring force for bringing the operating lever and the vane to their normal positions when the electromagnet is deenergized.

An object of the present invention is to provide improved means for restoring the pivoted vane to its normal position after it has been actuated by the operating lever of the coin magnet.

In accordance with the preferred form of this invention the end of the operating arm adjacent the vane carries a light spring member which engages the pin on the vane in such a manner that the spring is flexed by the movement of the vane from its normal supporting position to provide pressure tending to restore the vane to its normal position when the coin magnet has been deenergized. This is particularly advantageous in preventing sticking of the vane in its operated position when the restoring force exerted by the operating lever has only a small component in the direction the operated vane must be initially moved. With the spring member of this invention as described above practically all the pressure exerted by the spring will be applied in such a direction as to be available for turning the vane from its operated position.

This invention will be better understood by reference to the following detailed description taken in connection with the accompanying drawing in which

Fig. 1 shows a fragmentary portion of a telephone coin collector showing a side view of the coin vane and spring restoring means therefor;

Fig. 2 is an enlarged end view of the coin vane and associated apparatus with the coin vane in a vertical position;

Fig. 3 is similar to Fig. 2 except that the coin vane is shown in its maximum counter-clockwise position for coin collection;

Fig. 4 is similar to Fig. 2 except that the coin vane is shown in its maximum clockwise position for coin refunding; and

Fig. 5 is an enlarged view of the biasing spring for the coin vane.

Fig. 1 illustrates a fragmentary portion of a coin collector of the general type disclosed in the above-mentioned Forsberg patent to which reference is made for a detailed understanding thereof. As explained in the Forsberg patent a deposited coin after passing through a coin chute 6 drops into a coin hopper 7, actuates a coin trigger 8 and comes to rest upon a coin trap 9 which is normally supported across the hopper by a pivoted vane 10. The actuation of the trigger 8 by the deposited coin serves to close a contact to place a polarized electromagnet 11 under the control of the telephone operator. The pivoted armature 12 of the electromagnet has an extension arm 13 the lower end of which is slotted to receive a pin 14 attached to the vane 10 and projecting through an arcuate slot 15 in the front wall of the hopper. When the electromagnet is energized with current flowing in one direction the extension 13 moves vane 10 counter-clockwise to the position of Fig. 3 which allows the coin trap to drop and discharge the deposited coins into a collect chute 16. When the electromagnet is energized by current flowing in the opposite direction the extension 13 moves vane 10 clockwise to the position of Fig. 4 to allow coins on the trap to be deflected into a refund chute 17. The vane 10 is pivoted along an axis 18 considerably below pin 14.

After the application of current to electromagnet 11 has caused arm 13 and vane 10 to assume, say, the position of Fig. 3, and the current flow has ceased, some other force is necessary to cause arm 13 and vane 10 to move to restore vane 10 to its vertical position as in Fig. 2. Heretofore, this restoring force has been supplied by two coiled springs 19 (only one shown in Fig. 1) connected between the framework and extensions of armature 12 whereby one of the springs exerts a restoring force when the vane 10 is in its counter-clockwise position as in Fig. 3 and the

other spring exerts a restoring force when the vane 10 is in its clockwise position of Fig. 4.

Occasionally, however, in the operation of a coin relay as above described there is a tendency for the relay to stick in its operated position due to the fact that in the operated position Fig. 4, for example, the restoring force exerted by the fork 13 due to spring 19 is almost at right angles to the direction pin 14 must be moved initially from its operated position. That is, in Fig. 4 the restoring force on the fork 13 due to spring 19 tends to move the fork roughly in a horizontal plane while the pin 14 must be moved initially in almost a vertical direction. Hence only a small component of the force exerted by spring 19 is available for turning the vane back to its original position, with the result previously mentioned that the relay occasionally sticks in its operated position.

This invention proposes to overcome this difficulty by providing a restoring force in a direction more nearly coinciding with the initial direction the vane pin 14 must be moved from its operated position. This is accomplished in the preferred embodiment of this invention by a spring 20 which when the vane is in its operated position of Fig. 3 or Fig. 4 will exert a force tending to pull the stem 14 up into the slot 21 of the fork. The spring 20 is shown U-shaped (Fig. 5) with one end 22 slotted to receive the lower end of the fork and the other end 23 slotted to fit over the curved top 24 of the fork to hold the spring in place. This supporting arrangement allows the spring 20 to pivot somewhat about portion 24 of the fork when the vane 10 is moved from its vertical position to either of its operated positions as will be apparent by a comparison of Fig. 2 with Figs. 3 and 4.

When the vane 10 is in its vertical position the stem 14 is in the upper portion of slot 21 as shown in Figs. 2 and 5 with spring 20 pressing upwardly against stem 14. The movement of the vane to either of its operated positions of Figs. 3 or 4 causes stem 14 to be considerably lowered in the slot 21 thereby spreading the ends 22, 23 of the spring so that as soon as the electromagnet 11 is deenergized, spring 20 will tend to assume its normal position by moving pin 14 up the slot of the fork. It will be apparent that most of the restoring force supplied by spring 20 is effective for initiating the return of vane 10 to its vertical position thereby eliminating the danger that the relay 11 may get stuck in its operated position.

The particular form of spring 20 shown in the drawing has an additional advantage in aiding the return of the vane 10 to its normal vertical position in that the spring tends to force the pin 14 away from the outer edge of the slot, thereby reducing considerably the friction which would otherwise be encountered between the pin 14 and the outer side wall of slot 21 when force is applied tending to restore the vane from either of its operated positions to its vertical position. Thus, in Fig. 3 it will be seen that the force exerted by spring 20 on pin 14 is in such a direction as to force pin 14 away from side wall 25 of slot 21.

While only one embodiment of this invention has been illustrated in the drawing it is to be understood that alternative forms are contemplated commensurate with the scope of the appended claims.

It is to be understood that spring 20 is not intended as a substitute for springs 19 but supplements their action; that is, it is preferred to use spring 20 in conjunction with springs 19. In general it has not been found entirely satisfactory to apply all of the restoring force for extension 13 at its end adjacent the vane 10.

What is claimed is:

1. A coin collector comprising a coin chute, a pivoted vane within said chute, a pin projecting from said vane, a lever engaging said pin, means for operating said lever to deflect said vane from its normal position and spring means mounted on said lever and engaging said pin for supplying a force tending to restore said vane to its normal position.

2. A coin collector comprising a coin chute, a pivoted vane within said chute, a lever having a slot, a pin on said vane projecting into said slot, means for operating said lever to deflect said vane from its normal position and spring means contacting with said pin and carried by said lever for supplying a force tending to restore said vane.

3. A coin collector comprising a coin chute, a pivoted vane within said chute, an extension on said vane, a lever engaging said extension, means for operating said lever to deflect said vane from its normal position and spring means contacting with said extension and arranged to apply increased pressure against said extension as said vane is deflected from its normal position by said lever.

4. A coin collector comprising a coin chute, a vane within said chute normally located in a substantially vertical plane and pivoted near its lower end, a pin on said vane projecting externally of said chute through an opening in said chute, a lever pivoted above said vane, the lower end of said lever having an elongated slot, said pin projecting into said slot, means for operating said lever to deflect said vane from its normal position, thereby moving said pin along said slot and spring means contacting with said pin and exerting pressure tending to thrust said pin upwardly in said slot when said vane is in a deflected position.

5. A coin collector comprising a coin chute, a pivoted vane within said chute, an extension projecting from said vane, a lever engaging said extension, electrical means for operating said lever to deflect said vane from its normal position, and spring means contacting with said extension for supplying a force tending to restore said vane to its normal position.

6. A coin collector comprising a coin chute, a pivoted vane within said chute lying normally in a substantially vertical plane, a lever, means carried by said vane for engaging said lever, means for operating said lever to deflect said vane from its normal position, and spring means for applying increasing upward pressure against said first means as said vane is deflected from its normal position by said lever.

7. A coin collector comprising a coin chute, a pivoted vane within said chute normally lying in a substantially vertical plane, a lever having a substantially vertically arranged slot, means carried by said vane and positioned within said slot, means for operating said lever to deflect said vane from its normal position, and spring means engaging said first means for supplying a force tending to restore said vane to its normal position.

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