July 2, 1935. G. C. BIERSTEDT ET AL 2,006,433

COIN COLLECTING APPARATUS

Filed May 26, 1934

FIG. 1

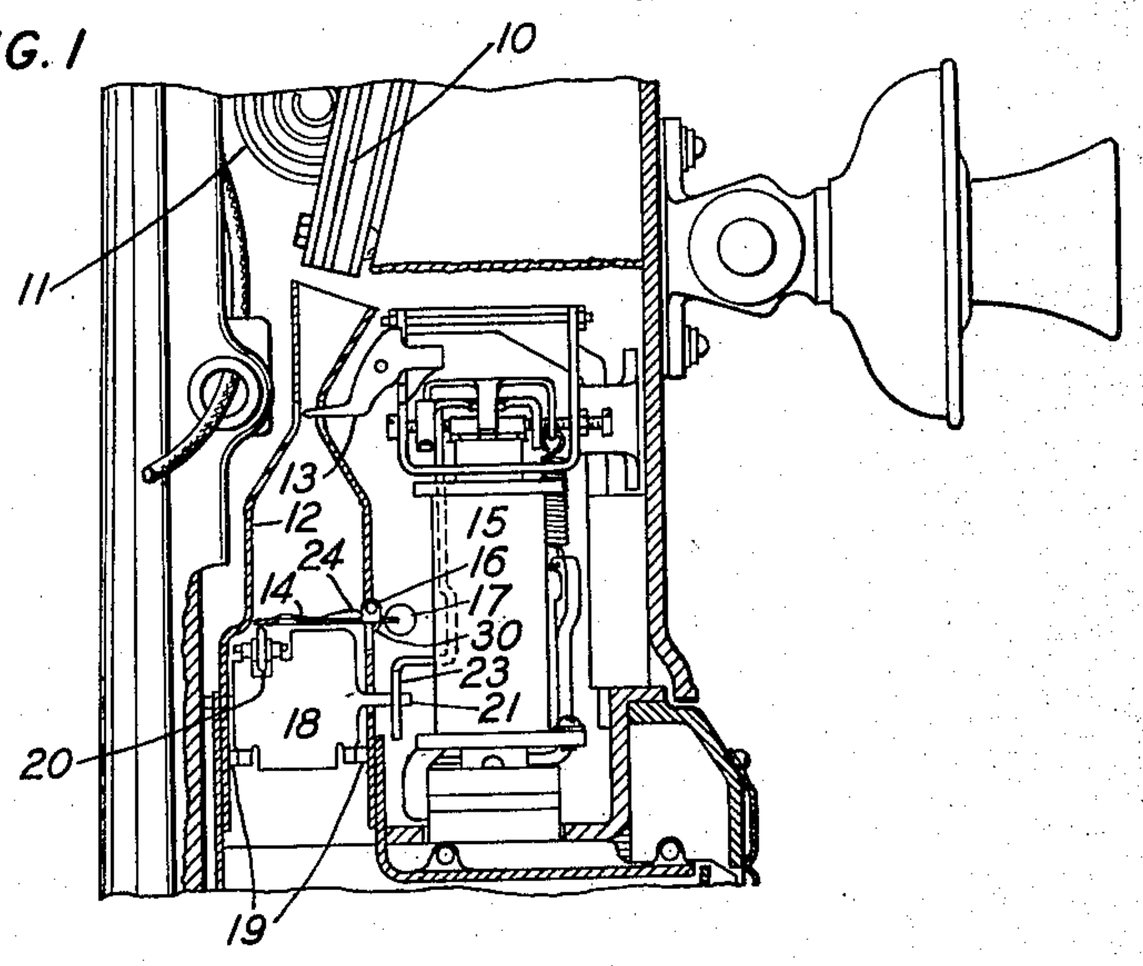


FIG. 3

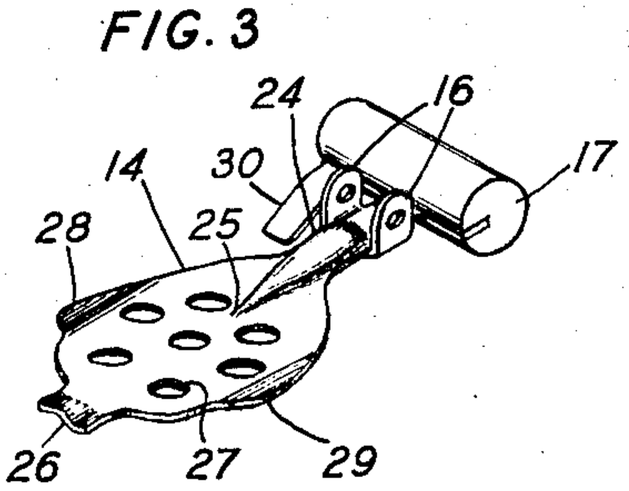


FIG. 2

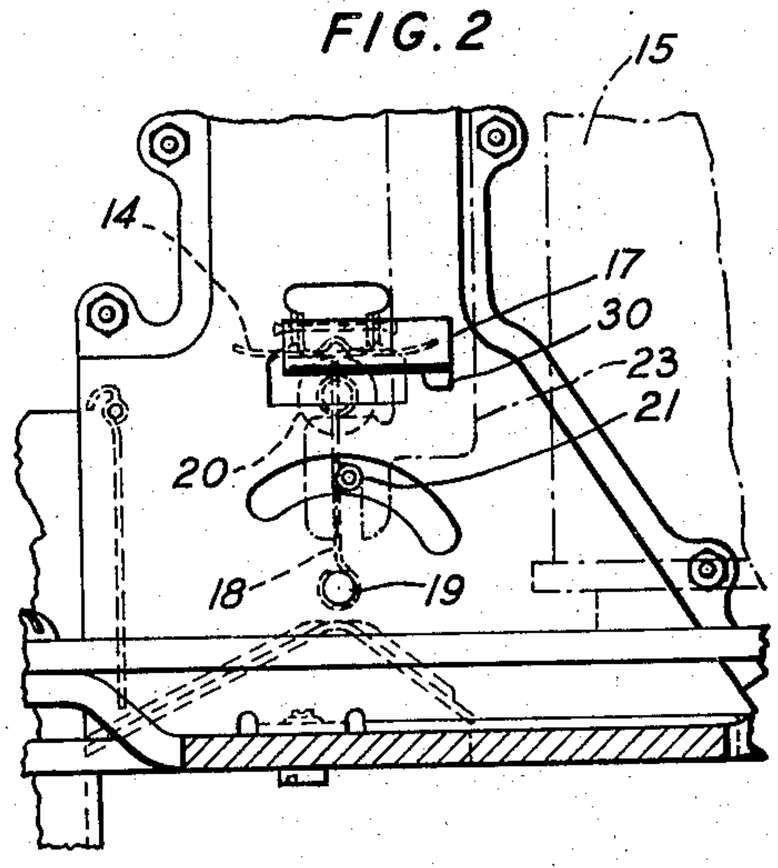


FIG. 4

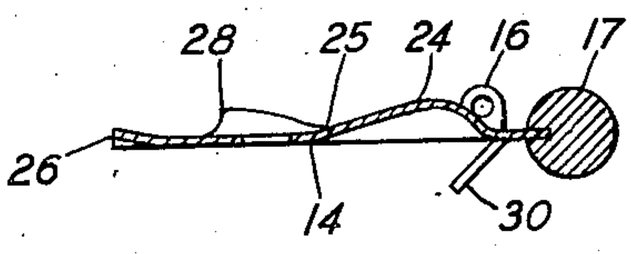
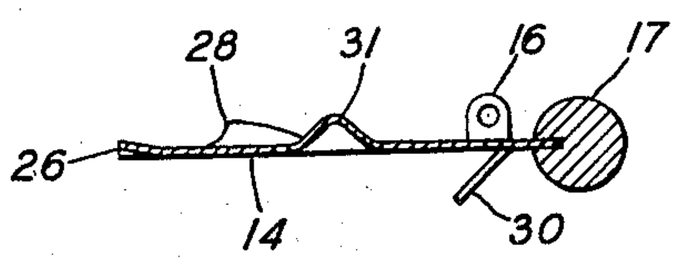


FIG. 5



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Patented July 2, 1935 2,006,433

UNITED STATES PATENT OFFICE

2,006,433

COIN COLLECTING APPARATUS

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Application May 26, 1934, Serial No. 727,610

5 Claims. (Cl. 232—57.5)

This invention relates to coin collection apparatus in which a coin or token is deposited for the use of an instrument or for the purpose of receiving services or supplies from a vending device.

More particularly, the invention relates to telephone apparatus such as that described in the U. S. patent to O. F. Forsberg 1,043,219, issued November 5, 1912 where one or more coins are deposited for the use of a telephone instrument, the deposited coins indicating at a remote central office through the instrumentality of a signal the fact that they have been deposited.

Such apparatus usually includes a coin chute having a pivoted coin trap upon which deposited coins are temporarily held for subsequent collection or refund. The trap is normally held in a substantial horizontal position by a coin deflector vane pivotally mounted beneath the trap and adapted to be controlled by an electromagnet. The movement of the vane by the magnet allows the trap to drop to discharge the coins for collection or refund depending upon the direction in which the vane is moved.

It has been found that trouble is sometimes experienced due to coins remaining on the coin trap after the completion of the collection or refunding operation, frequently putting the coin collector out of service. This difficulty is most likely to occur when the control relay is energized for an unusually short interval or when the trap is corroded or when the trap or the coin is sticky.

An object of this invention is to reduce the tendency of coins to remain upon the upper surface of a coin trap when the trap is tilted downwardly.

In accordance with this invention, more positive discharge of the coins from the coin trap is secured by forming a small knob or projection on the upper surface of the trap to decrease the area of contact between a deposited coin and the trap and furthermore to cause the coin initially to lie on a definite slope. A coin resting on such a knob will, therefore, more readily slide off when the trap is tilted downwardly during the dumping operation. In order to take care of coins which may land on the trap in a vertical position near the hinge side, it is preferable to have the knob so located and so shaped that such coins can not become lodged against the knob but will be compelled to fall or slide over to a favorable position for release when the trap is operated. For this purpose the knob should preferably be located close to the hinge side of the trap. The above described knob has been found particularly advantageous with a trap having a highly buffed chromium plate finish.

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

Fig. 1 is a side elevation of a portion of a telephone coin collector housing with the side wall removed;

Fig. 2 is an enlarged front view partly in section of a portion of the coin hopper containing a coin trap;

Fig. 3 is a view in perspective of one type of coin trap embodying this invention;

Fig. 4 is a sectional view of the trap of Fig. 3; and

Fig. 5 is a sectional view of an alternative form.

For a general description of one type of coin collector in which this invention may be employed, reference may be had to the specification and drawing of the above mentioned Forsberg patent.

Referring to the fragmentary views of a telephone pay station shown in Figs. 1 and 2, the use of such an instrument is usually obtained by depositing a coin or coins in suitable openings in the upper part of the housing after which each coin is guided down a chute 10 to strike a gong or a signal, such as signal 11. The coins on leaving the chute drop into a coin hopper 12 upon a coin trap 14 after actuating a coin trigger 13. As described in the Forsberg patent, this actuation of the coin trigger 13 serves to place the coin collector magnet 15 under the control of the distant central office for the purpose of collecting or refunding deposited coins. The trap 14 extends fully across the hopper and is pivoted to an extension 16 of the outer wall of the hopper and is substantially balanced by an external portion 17. Trap 14 is normally supported in a substantially horizontal position by a coin deflector vane 18 lying normally in a vertical plane and pivoted to the inner walls of the hopper at the points 19. The upper edge of this vane has a roller 20 forming an anti-friction bearing adapted to maintain the trap in a horizontal position against the over-balancing tendency of a coin lying thereon. The coin deflector 18 has a pin 21 above its pivotal point which projects through an elongated slot 22 in the outer side of the hopper and the pin is engaged by an arm 23 of the polarized electromagnet 15. As explained in the Forsberg patent, the operation of the magnet 15 to deflect vane 18 in one direction will permit the trap 14 to drop whereby the deposited coins will

be guided by vane 18 into a collection box, while the operation of the magnet to deflect the vane in the opposite direction will allow the deposited coin to be guided into a refund tray where it will be accessible to the patron.

As previously stated, trouble is occasionally experienced due to money moving too slowly off the coin trap or actually remaining on the trap after the completion of the collecting or refunding operation; and occasionally, coins will fail to slide clear of the trap and become wedged between it and the walls of the hopper, thus putting the instrument out of service. These difficulties are most likely to occur when the relay current is applied for an unusually short interval and when the trap is corroded or when it or the coins are sticky. This is particularly true of dimes which, as well known, are relatively light in weight.

Applicant has found that the failure of the coins to clear the trap promptly can be largely eliminated by employing a trap construction of the type shown in Figs. 3 and 4. Referring more particularly to Fig. 3, the upper surface of the trap is substantially flat over substantially its entire area except for an embossed knob 24 in that part of the trap adjacent its pivoting axis. This knob 24 considered along a center line at right angles to the pivoting axis of the trap has a gradual slope from point 25 to its point of maximum height which may be about one-sixteenth of an inch although its height is not critical, providing it is sufficiently high to give any coin resting thereon a substantial slope. The height should preferably be at least the thickness of a United States five cent piece. If desired, the knob may terminate at a point on the trap within the hopper 12 or as shown, it may extend to a point substantially at or near the pivoting axis. Considered along a line at right angles to said center line the knob 24 is relatively narrow and may have steeper sides than from the point 25 along the center line. With such a trap construction, a deposited coin will tend to come to rest on that part of the trap adjacent the outer end 26 where its weight is most effective in unbalancing the trap; or the coin may lie in an inclined position with one edge resting on knob 24 whereby the coin is given an initial slope so that it will more readily slide off when the trap is tipped downwardly upon the removal of vane 18. To take care of coins which initially may land on the trap in a vertical position near the hinge side, the knob 24 is so located and so shaped that such coins can not become lodged between the knob and the inner hopper wall but will be compelled to fall or slide over to a favorable position for release when the trap is allowed to drop. Another advantage derived from the use of knob 24 is due to the fact that a deposited coin resting in an inclined position on said knob has only a small fraction of its lower face in contact with the upper surface of the coin trap, thereby reducing the frictional resistance which must be overcome in starting the coin in its slide off the trap. It will thus be seen that the use of knob 24 insures a more rapid removal of coins from the trap as soon as the supporting vane 18 is removed.

If desired, the central portion of the trap 14 may be provided with a plurality of holes 27 as in traps of prior types and the free lip 26 of the trap may be slightly curved to accommodate the roller 20 on vane 18. Also, the extreme side edges 28, 29 may be turned up slightly to urge the coin in towards the central portion of the trap out of contact with the hopper walls.

Fig. 4 is a sectional view of the trap of Fig. 3 taken along the center line of the trap. Projection 30 on the lower side of the trap acts as a stop to control the normal position of the trap in the absence of a deposited coin.

Fig. 5 discloses an alternative form of the invention although not quite as satisfactory as the form shown in Fig. 3. In Fig. 5 the knob 31 corresponds in function to knob 24, the only difference being that knob 31 is located in the central portion of the trap.

The above trap construction is preferably given a highly buffed chromium plate finish although a finish of that type is not essential.

It is, of course, to be understood that the above described coin traps are for illustrative purposes since the invention may possess other embodiments without departing in any wise from the spirit of the invention as defined in the appended claims.

What is claimed is:

1. A pivoted coin trap for mounting within a coin chute for actuation by coins deposited thereon, said trap having substantially all of its coin contacting surface substantially flat, and a gently rounded knob projecting from said surface to a height substantially greater than the thickness of a United States ten cent piece, said knob being located close enough to that side wall of said chute adjacent the axis about which said trap is pivoted to prevent deposited coins from being lodged between said side wall and said knob.

2. A pivoted coin trap for mounting within a coin chute for actuation by coins deposited thereon, said trap having substantially all of its coin contacting surface substantially flat, and a smoothly rounded knob projecting from said surface to a height substantially greater than the thickness of a United States ten cent piece, said knob being located remote from the free end of said trap to cause a coin deposited thereon to assume an inclined position with the lowermost part of the inclined coin adjacent said free end of said trap.

3. A pivoted coin trap for mounting within a coin chute for actuation by coins deposited thereon, said trap having substantially all of its coin contacting surface substantially flat, and means projecting from said surface to a height substantially greater than the thickness of a United States ten cent piece for holding a coin on said trap in an inclined position with respect to the major portion of said coin contact surface to facilitate the discharge of coins from said trap when said trap is dropped.

4. A pivoted coin trap in accordance with claim 3 in which said means comprises a knob situated at a point remote from the free end of said trap.

5. A pivoted coin trap having the major portion of its coin contacting surface substantially flat and a knob projecting from said surface to a height substantially greater than the thickness of a United States ten cent piece, said knob being located between the center of said coin contacting surface and the axis about which the trap is pivoted.

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