June 23, 1942. F. A. HOYT 2,287,176

TELEPHONE COIN COLLECTOR

Filed Feb. 29, 1940 2 Sheets-Sheet 1

FIG. 1

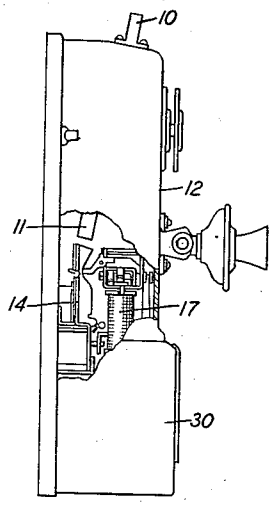



FIG. 2

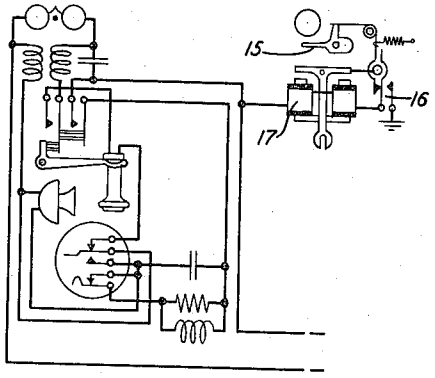



FIG. 3

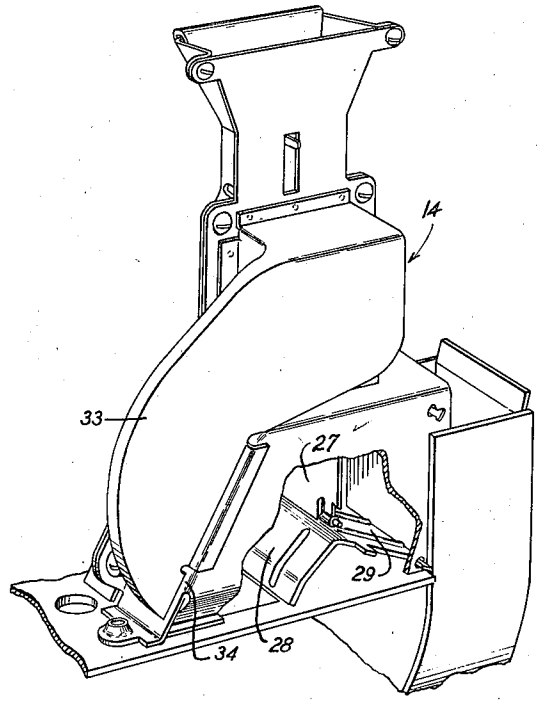
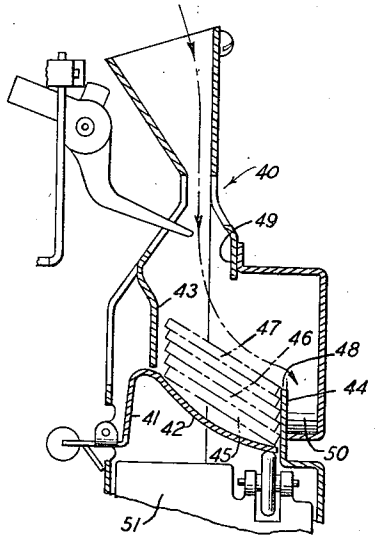



FIG. 8




INVENTOR
F. A. HOYT
BY
P. A. Jackson
ATTORNEY

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FIG. 4

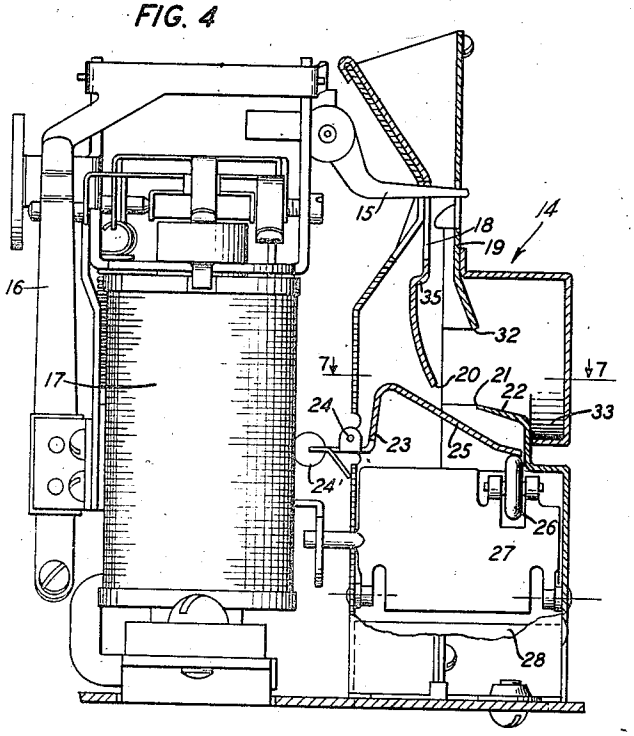



FIG. 7

FIG. 5

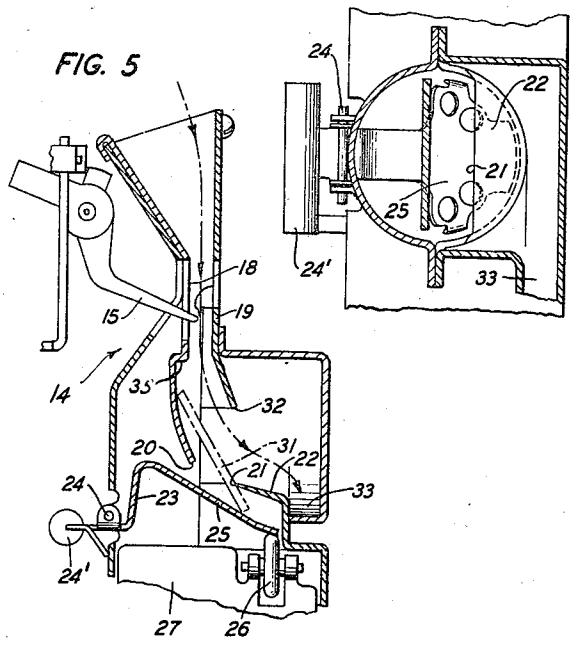
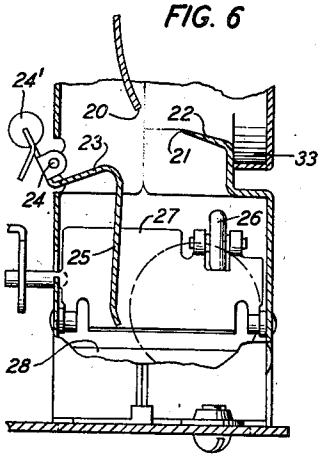



FIG. 6




INVENTOR
F. A. HOYT

BY

P. K. Jackson

ATTORNEY

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# UNITED STATES PATENT OFFICE

2,287,176

## TELEPHONE COIN COLLECTOR

Frederick A. Hoyt, East Orange, N. J., assignor to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York

Application February 29, 1940, Serial No. 321,367

6 Claims. (Cl. 232—57.5)

This invention relates to telephone coin collectors and has for an object the provision of a collector in which certain deposited coins will be held in suspense for subsequent collection or refund while other coins will be collected immediately upon deposit.

Telephone coin collectors as now used commercially are, in general, of two main types. In the prepay type, the deposit of a coin is required before the operator can be signaled or before a number can be dialed; and in this case the deposited money is collected or refunded, dependent upon whether or not the desired connection is established. In the postpay type, no money deposit is required until the desired connection is available or established, whereupon the deposit of a coin is required, which coin is immediately collected without any provision for refund.

The collector of this invention is adapted to be used as a collector of the prepay type for local calls and as a collector which is essentially of the postpay type for toll or long distance calls. For this purpose, the coin hopper for receiving deposited coins is provided with two channels, one a by-pass channel leading directly to the cash box and the other channel leading to a coin trap where a coin may be temporarily held in suspense for subsequent collection or refund, depending upon conditions occurring after coin deposit. The configuration of the coin trap and adjacent walls of the hopper is such that the first coin or coins deposited will be held by the coin trap in an angular position in such a manner that subsequently deposited coins will strike the upper face of the held coin a glancing blow and will be deflected thereby into the by-pass channel leading directly to the cash box.

Referring to the drawings:

Fig. 1 is a general view of a telephone coin collector embodying this invention;

Fig. 2 is a circuit diagram of a coin collector sub-station;

Fig. 3 is a rear view, in perspective, of one form of the coin hopper of this invention;

Fig. 4 is a side view, partly in section, of the coin hopper of Fig. 3 and the associated coin relay;

Fig. 5 is a sectional view of the upper part of the coin hopper of Fig. 4 showing the first deposited coin held on the coin trap;

Fig. 6 is similar to Fig. 5 except that it illustrates the manner in which the initially deposited coin is discharged from the trap for collection or refund;

Fig. 7 is a cross-section of the coin hopper taken in the plane marked 7—7 of Fig. 4; and

Fig. 8 illustrates an alternative form of the invention.

Fig. 1 is a side view of a telephone coin collector of the general type disclosed in the O. F. Forsberg United States Patent 1,043,219, issued November 5, 1912, to which reference may be had for a detailed description of its manner of operation For the purposes of the attached drawings, the collector of the present invention may be assumed to be essentially the same as that disclosed by Forsberg, except for the substitution of a new type of coin hopper for the coin hopper disclosed in the Forsberg patent.

A nickel, dime or quarter deposited in the coin gauge 10 enters the proper channel of the multiple coin chute 11 located in upper housing 12, which chute guides the deposited coin along a path to cause the coin to strike a signaling element, such as a gong or bell, after which the deposited coin drops into the mouth of a coin hopper 14 of the type disclosed in Figs. 3 to 7, inclusive.

As will be noted from Fig. 4, the upper part of the coin hopper 14 is slotted to receive a coin trigger 15 which is operated in the usual manner by the first deposited coin to close contacts 16, to signal the operator of coin deposit and to establish a connection through the windings of coin relay 17 whereby the initially deposited coin may be subsequently collected or refunded. Beginning at a point slightly above the normal position of coin trigger 15, the coin channel in the coin hopper is of narrow width, extending between walls 18 and 19. However, a short distance below coin trigger 15 these walls 18 and 19 are inclined to the right, as seen in Fig. 4, to direct the initially deposited coin through the opening between the bottom edge 20 of wall 18 and the adjacent edge 21 of the shelf 22. Below this opening, between wall 18 and shelf 22, lies a coin trap 23 of special configuration. This coin trap is pivoted in the usual manner on a pin 24 with the usual counterweight 24' but to the right of its pivot the trap is bent sharply upwardly to a point about opposite the lower edge of wall 18, after which the trap has a downwardly sloping surface 25 with the free end of the trap resting on a roller 26 forming a part of the usual trap supporting vane 27.

As in the Forsberg collector and as shown in Fig. 3, the coin hopper below trap 23 has a collect chute 28 and a refund chute 29, the collect chute 28 leading to the cash box in the lower

housing 30, while the refund chute 29 leads to the usual opening in the front wall of the lower housing 30 by means of which any refunded coin may be recovered by the patron. It will be obvious that if the coin relay 17 is operated to swing the vane 27 to the right, as viewed in Fig. 3, the coin on the coin trap 23 will drop into collect chute 28 but if the vane is swung to the left the suspended coin will be discharged from the trap into the refund chute 29.

Due to the configuration of the coin channel above the coin trap, the initially deposited coin is guided by walls, 18, 19 partially through opening 20—21, whereupon the initially deposited coin 31 assumes a position substantially as shown in Fig. 5, with the bottom edge of the coin resting on that part of the coin trap adjacent the free end thereof, with the upper edge of the coin lying against wall 18, and with the upper face of the coin in contact with edge 21 of shelf 22. The forward edge 21 of shelf 22 is spaced sufficiently close to wall 18 to prevent the initially deposited coin 31 from sliding farther towards a position where the coin would be lying flat on the coin trap surface 25. The angular position in which the initially deposited coin is held depends, of course, upon whether the initial coin is a nickel, dime or quarter. The coil 31 shown in Fig. 5 is assumed to be a nickel so that an initially deposited quarter would occupy a position somewhat more vertical, due to its larger diameter, and a deposited dime would occupy a position somewhat more horizontal, due to its smaller diameter.

In any event, it will be seen that the next deposited coin in falling vertically between walls 18 and 19 will strike the upper inclined face of coin 31 and will be deflected thereby into the vertical opening extending upwardly from shelf edge 21 to the bottom edge 32 of wall 19. This opening 21, 32 directs the deflected coin into a by-pass channel 33 which extends between opening 21, 32 and an opening in the inclined wall 34 of the lower part of the coin hopper whereby the deflected coin is guided through channel 33, around the coin trap and directly into the collect chute 28 leading to the cash box.

It will be noted from Figs. 4 and 5 that wall 18 has an offset portion 35 to prevent the possibility that a second deposited coin will strike the upper edge of the first coin and be held in the coin channel above coin 31. It should also be noted that shelf 22 is tapered to a thin edge 21 to prevent the possibility that the second coin will be stopped by this edge and held in a position substantially parallel to the first deposited coin 31.

It will be apparent from the above description that only the initially deposited coin will be held on the coin trap and as long as the initially deposited coin is so held all subsequently deposited coins will strike the upper face of the initially deposited coin and be deflected into by-pass channel 33 and collect chute 28 to cause their immediate collection. Thereafter, and under the control of equipment at the remote central office, the coin relay 17 may be operated to collect or refund coin 31 in a manner previously described. The coin trap 23 and the coin vane 27 are shown in their operated positions in Fig. 6, where the vane occupies a position to deflect the coin released from the trap 23 into collect chute 28.

One of the advantages derived from the above-described arrangement is that the maximum coin load on the coin trap is the weight of a single coin, so that there is no danger that an excessive coin load on the coin trap might be sufficient to prevent the coin relay from operating to collect or refund the deposited coins in the proper manner.

An alternative form of the invention is shown in Fig. 8 where the coin hopper 40 has a coin trap 41 with an inclined surface 42 quite similar to trap 23 of Fig. 4. The guiding wall 18 of Fig. 4 has been replaced by a wall 43 which is spaced farther from the free end of the coin trap than is the case with wall 18; while the horizontal shelf 22 of Fig. 4 is absent and in its place is a vertical wall 44 extending upwardly for a short distance above the free end of the coin trap in its normal position. The distance between walls 43 and 44 is sufficient to permit the initially deposited coin 45 to lie on and substantially parallel to the sloping surface 42 of the trap while a few subsequently deposited coins 46 will be directed to occupy similar positions until the upper surface of the top coin 47 is flush with or slightly above the top edge 48 of wall 44. It will be apparent that any coin deposited after coin 47 will strike the upper face of the inclined coin 47 and be deflected thereby through the opening between the top edge of wall 44 and the bottom edge of wall 49 anud thence into a by-pass channel 50 which, being similar to by-pass channel 33 of Fig. 3, will serve to direct such a deflected coin immediately into the collect chute leading to the cash box. Thereafter, the coin vane 51 may be operated by the associated coin relay in the usual manner to permit coin trap 41 to discharge coins 45, 46 and 47 either into the collect chute or the refund chute, depending upon the direction in which vane 51 is moved from its normal position.

It will be obvious that by raising or lowering the height of wall 44 from that shown in Fig. 8 the total number of coins held above the coin trap before the next deposited coin is deflected into the by-pass channel 50 can be readily made smaller or greater, as may be desired.

The above-described drawings illustrate the preferred embodiments of the invention but the invention is capable of assuming still other forms commensurate with the scope of the appended claims.

What is claimed is:

1. A telephone coin collector comprising a coin hopper having a substantially vertically arranged coin receiving chute, means for directing coins of a plurality of denominations into said chute, a first coin channel and a second coin channel leading from said chute, a pivoted coin trap in said first channel for supporting a coin falling into said first channel, means for guiding a deposited coin onto said trap for support in such a position that the upper face of the deposited coin acts as a deflector to receive the bottom edge of a subsequently deposited coin to laterally deflect the subsequently deposited coin, said guiding means and said first channel above said trap having such a configuration that the bottom edge of said subsequently deposited coin in falling into said first channel initially strikes the upper face of the previously deposited coin at a point substantially remote from the periphery of the said previously deposited coin, said second channel having a coin entrance for receiving said deflected coin.

2. A telephone coin collector comprising a coin hopper, means for directing coins of a plurality of denominations into said hopper, a substantially vertically arranged coin chute in said hopper for receiving at least the first deposited coin, a coin

trap in said chute, a coin channel by-passing said trap and having a coin entrance from said chute located above said trap, and means for holding a deposited coin on said trap in such an inclined position that the bottom edge of a subsequently deposited coin initially contacts a face of the held coin at a point remote from the periphery of the held coin and is laterally deflected, said coin entrance to said channel being arranged to receive said deflected coin.

3. A telephone coin collector comprising a coin hopper having a substantially vertically arranged coin channel defined by opposed side walls, means for directing coins of a plurality of denominations into said hopper, a coin trap in said channel having a coin supporting surface inclined downwardly towards one of said side walls, said one side wall above said trap having a coin outlet, and a second coin channel leading from said outlet for guiding coins around said trap, said opposed side walls above said trap being formed to hold a deposited coin on said trap in a laterally inclined position with the lower edge of the coin adjacent said one side wall, with a portion of said coin in engagement with said one wall at the lower edge of said outlet, and with at least the major portion of the upper surface of the held coin forming effectively an upwardly inclined extension of the side wall below said outlet, said outlet in a direction measured along the vertical axis of said first coin channel being of a height several times the thickness of a standard coin for said hopper.

4. A telephone coin collector comprising a coin hopper having a substantially vertically arranged coin channel and a second coin channel offset from said first channel, means for directing coins of a plurality of denominations into said hopper, a pivoted coin trap in said first channel having a steeply inclined surface for receiving coins falling into said first channel, said first channel having a substantially vertical wall adjacent the lower edge of said surface, said wall having an aperture through which coins from said first channel may enter said second channel, the bottom edge of said aperture being located above the lower edge of said inclined surface a distance equal to the combined thickness of a few standard coins, the remaining walls of said first channel above said trap together with said first wall defining a coin passage of such restricted area as to compel the first few deposited coins to form a coin pile-up with the lower face of the first coin resting on the trap and with the upper face of each coin contacting with the lower face of the next deposited coin until the height of the coin pile-up reaches the bottom edge of said aperture, said first coin channel having such a configuration that the bottom edge of a deposited coin initially strikes the upper face of a previously deposited coin at a point remote from the periphery of the previously deposited coin, said aperture having a height several times the thickness of a standard coin for said hopper.

5. A telephone coin collector comprising a coin hopper having a substantially vertically arranged coin receiving chute, means for directing coins of a plurality of denominations into said hopper, a first coin channel vertically aligned with said chute and having a restricted coin entrance, means in said first channel for holding a first deposited coin in a position substantially closing said entrance with the major portion of said first coin projecting above said entrance, said entrance, said holding means and the chute portion immediately above said entrance being formed to maintain the upper face of the held coin in an angular position for initially receiving the bottom edge of a subsequently deposited coin at a point remote from the periphery of the held coin and for laterally deflecting the said subsequent coin from said entrance, and a second coin channel having a coin entrance for receiving the said deflected coin, the coin entrance to said second channel having a height several times the thickness of a standard coin for said hopper.

6. A telephone coin collector comprising a coin hopper having a substantially vertically arranged coin chute defined by opposed side walls, means for directing coins of a plurality of denominations into said hopper, a coin trap in said chute having a coin supporting surface that is downwardly inclined towards one of said side walls, said one side wall above said trap having a coin outlet, a second coin channel leading from said outlet for guiding coins around said trap, said opposed side walls above said trap being formed to hold a first deposited coin on said trap with the lower edge of the coin resting on said trap adjacent said one side wall, with the upper face of said first coin in engagement with said one wall at the lower edge of said opening, with the upper edge of said first coin in engagement with the other side wall and with the major portion of the upper surface of said coin forming effectively an upwardly inclined extension of the lower edge of said outlet whereby the upper face of the held coin guides a subsequently deposited coin through said outlet, said side walls above said trap having such a configuration that the bottom edge of a deposited coin initially strikes the upper face of a previously deposited coin at a point remote from the periphery of the previously deposited coin, said outlet having a height several times the thickness of a standard coin for said hopper.

FREDERICK A. HOYT.