May 29, 1951 G. M. WILCOX ET AL 2,555,176

COIN COLLECTING AND REGISTERING DEVICE

Filed Dec. 18, 1944 4 Sheets-Sheet 1

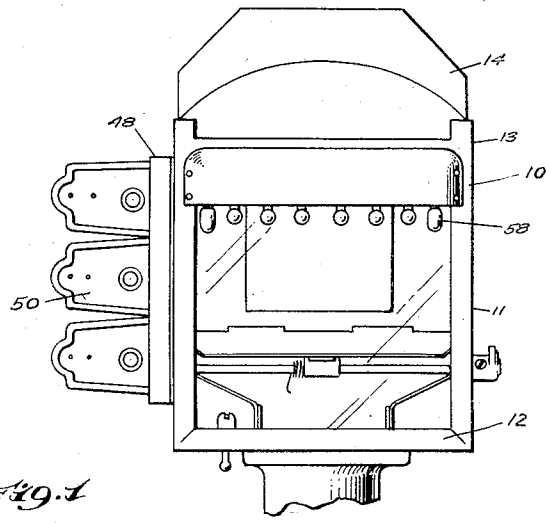


Fig. 1

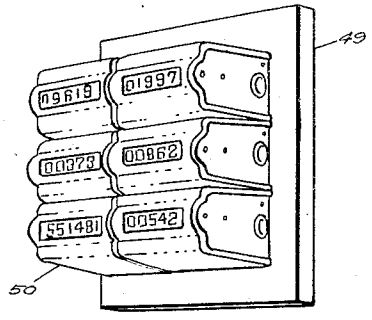


Fig. 3

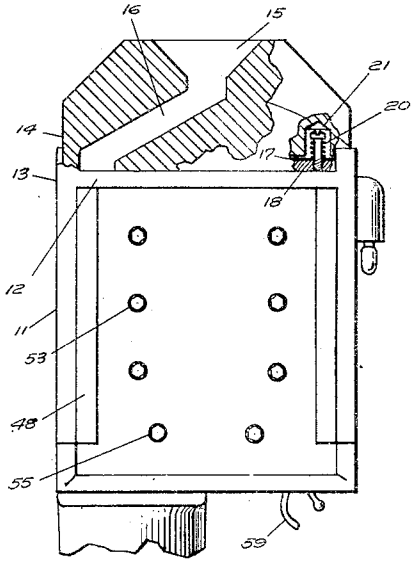


Fig. 2

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COIN COLLECTING AND REGISTERING DEVICE

Filed Dec. 18, 1944 4 Sheets-Sheet 2

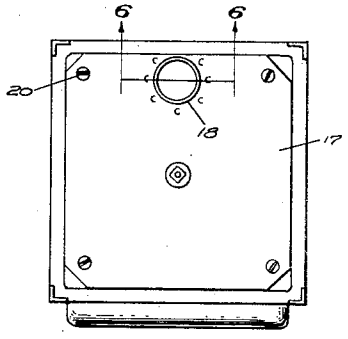


Fig. 4

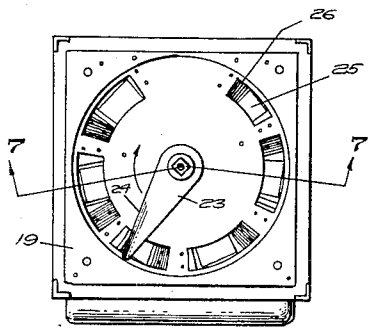


Fig. 5

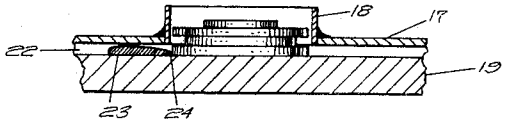


Fig. 6

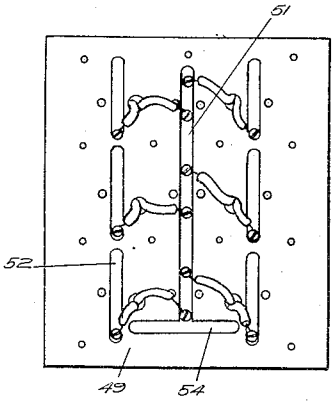


Fig. 8

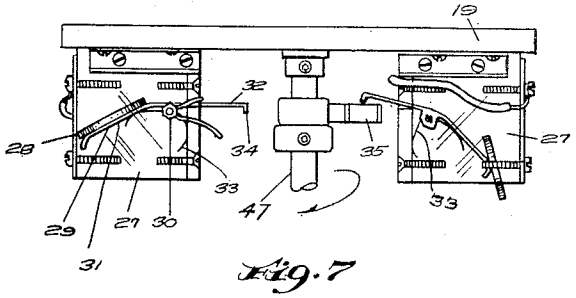


Fig. 7

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COIN COLLECTING AND REGISTERING DEVICE

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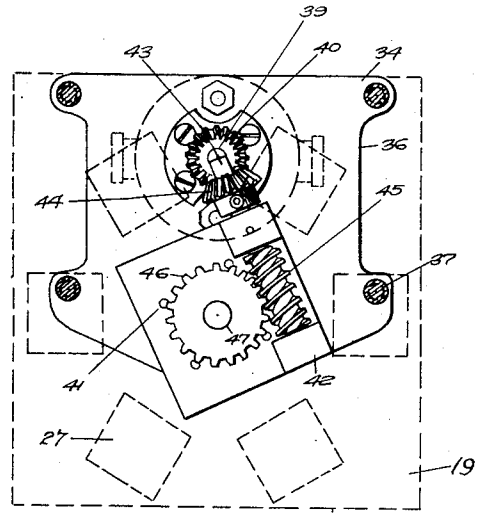


Fig. 9

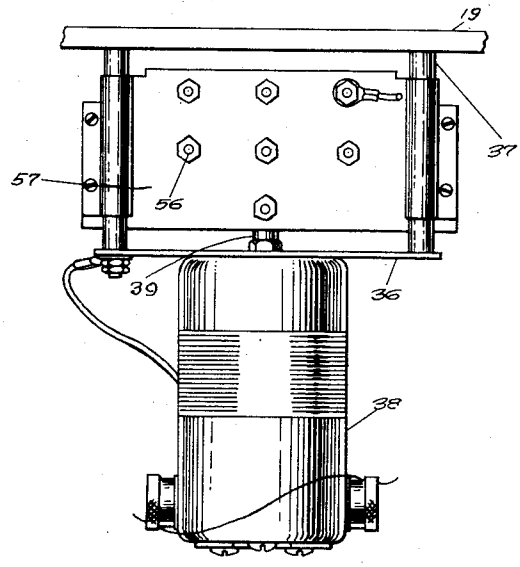


Fig. 10

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COIN COLLECTING AND REGISTERING DEVICE

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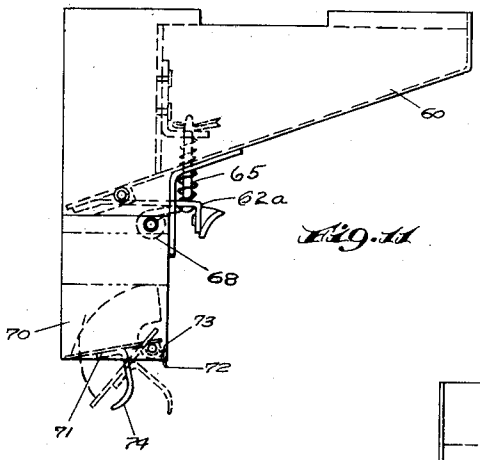


Fig. 11

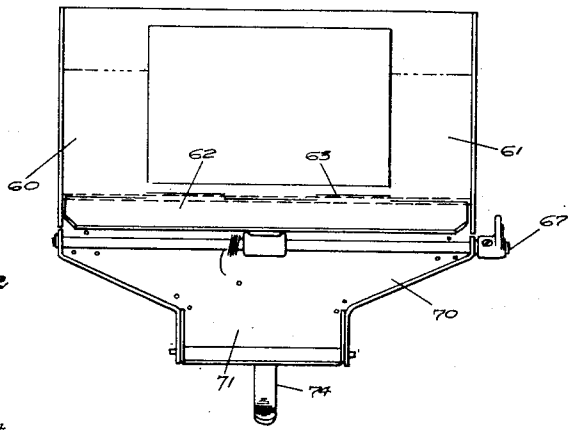


Fig. 12

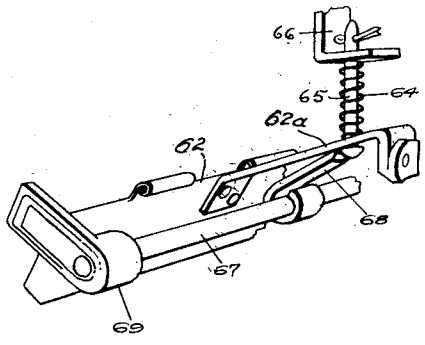


Fig. 13

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UNITED STATES PATENT OFFICE

2,555,176

COIN COLLECTING AND REGISTERING DEVICE

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Application December 18, 1944, Serial No. 568,716

8 Claims. (Cl. 235—32)

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The present invention relates to apparatus for collecting and registering coins, and has reference to a novel construction particularly suitable for bus and trolley use.

The principal object of the invention is to provide an apparatus into which any number of coins of all denominations may be dropped or deposited, the coins being selectively registered and totalized.

Another object of the invention is to provide an apparatus in which deposited coins are selectively registered and then positioned in open view for visual inspection.

Still another object is to provide an apparatus of the type described which includes a removable totalizing counter mechanism, whereby the bus or trolley conductor is responsible for an individually issued counter mechanism.

A further object of the invention is to provide a complementary light system for visually indicating the registry of the individual coins dropped or deposited in the apparatus.

An additional object of the invention is to provide a coin registering apparatus which does not require resetting or other attention on the part of the conductor after a registration has been completed.

With the above and other objects and advantageous features in view, the invention consists of a novel arrangement of parts more fully disclosed in the detailed description following, in conjunction with the accompanying drawings, and more specifically defined in the claims appended thereto.

In the drawings:

Fig. 1 is a front elevation of the novel coin collector and register apparatus;

Fig. 2 is a left side view of Fig. 1, the counter mechanism being removed and parts of the coin hopper being in section;

Fig. 3 is a perspective view of the removable counter mechanism;

Fig. 4 is a plan view of Fig. 2, the coin hopper being removed to expose the selector guide plate;

Fig. 5 is a view similar to Fig. 4, the selector guide plate being removed to expose the selector mechanism;

Fig. 6 is an enlarged section on the line 6—6 of Fig. 4;

Fig. 7 is an enlarged section on the line 7—7 of Fig. 5;

Fig. 8 is a rear view of Fig. 3;

Fig. 9 is an enlarged detail plan view, parts being omitted;

Fig. 10 is an enlarged rear elevation of Fig. 5, parts being omitted;

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Fig. 11 is a side view of the coin receptacle for receiving the registered coins;

Fig. 12 is a top plan view of Fig. 11; and,

Fig. 13 is a detail perspective view of the coin discharge mechanism.

It has been found desirable to provide a coin collector and register which is particularly suitable for bus and trolley use. To this end, we have devised an apparatus which includes a coin hopper into which any number of coins of any denomination may be dropped or deposited, the coins being thereupon transferred to a register device which registers each coin separately, and which preferably has a visual signal for indicating the registration and the value of the individual coins. The registered coins are then deposited in a receptacle where they are fully exposed to view so that the full fare paid is visible at a glance, and are then manually discharged into a collecting compartment from which they may be removed when convenient.

The coin hopper

The coin collector and register is housed in a frame 10, see Fig. 1, which is preferably of box form and includes metal standards 11 and cross bars 12 of angle formation, and side walls of suitable materials set into the standards and cross bars, it being preferred to have the front wall of glass. The standards are extended vertically as indicated by the reference numeral 13 to detachably receive a coin hopper 14 which nests within the extensions 13.

The hopper has a large central and generally conical entrance mouth 15, as shown in Fig. 2, which leads to an angularly positioned coin channel 16, whereby any number of coins of any size may be dropped or deposited into the hopper mouth to pass downwardly in sequence into the channel 16. The hopper thus functions as a coin receiver which stacks the received coins regardless of their size or value, and the angular channel 16 prevents removal of or tampering with the coins therein.

The coin selector mechanism

After the coins have been stacked, they are selectively distributed for registration. As shown in Figs. 4 to 6, a guide plate 17 is positioned below the hopper, the guide plate being preferably of metal and having an upstanding guide channel 18 which is positioned directly under the lower end of the hopper channel 16, whereby the coins dropped or deposited in the hopper mouth become stacked in the guide channel 18. The guide plate 17 is releasably mounted on a

selector plate 19 by means of spring pressed retaining screws 20, see Fig. 2, the hopper having openings or recesses 21 to seat over the upper ends of the retaining screws. The use of spring pressed retaining screws and a metal guide plate permits a slight give if a coin is bent or deformed, the coin in such case raising the metal plate slightly so as not to block the coin movement.

The selector plate 19, see Figs. 5, 6, is recessed or countersunk to provide a space 22 in which a centrally pivoted movable arm 23 may revolve, the arm being bevelled on one side as indicated at 24. The plate 19 has a plurality of coin receiving openings 25 of different and graduated width arranged in an annular path, each opening having a ramp or bevelled entrance slide 26 at its forward end. As the arm 23 rotates in a clockwise direction it contacts the lowermost coin of the stack in the channel 18, see Fig. 6, and pushes it forwardly before it in an annular path until the coin reaches an opening 25 of the same width as the coin, whereupon the coin drops into the opening and the arm continues revolving to engage the next coin and to deposit it in the proper opening. The speed of rotation of the arm is sufficient to keep the coins outwardly over the openings.

The coin which passes downwardly through an opening of the proper width falls into a retention chamber 27, there being one chamber for each opening, see Fig. 9. The chambers 27, see Fig. 7, are preferably made of insulating material, such as suitable plastic, the outer side 28 being of metal to be electrically grounded, and are secured to the under side of the selector plate in any desired manner. A movable partition 29 is hingedly mounted in each chamber on a hinge pin 30 secured in the side walls, and has a forward tongue 31 which functions as a releasable bottom for the chamber and which slants forwardly downwardly towards the metal side 28, but does not touch the metal side, and a rear extension 32 which projects outwardly through a suitable opening in the rear wall of the chamber, a leaf spring 33 being mounted on the hinge pin 30 for releasably retaining the partition in coin holding position. The ends 34 of the rear extensions are bent downwardly to be periodically engaged by a revolving cam 35, as shown in Fig. 7, to swing the partition for releasing a coin deposited thereon.

The coin selector operating mechanism

The mechanism for operating the arm 23 and the cam 35 is shown in Figs. 9 and 10. A support plate 36 is mounted beneath the selector plate by means of four spaced bolts 37, and has a depending electric motor 38 secured thereto, the motor having a rotatable shaft 39 to the upper end of which a bevel gear 40 is keyed. A bearing fixture 41 is attached to the upper surface of the support plate and has two spaced bearings 42 for a worm gear shaft 43, a bevel gear 44 being mounted on the end of the worm gear shaft and meshing with the bevel gear 40 to impart rotation to a worm 45 which is keyed to the worm gear shaft. The worm 45 in turn meshes with a gear 46 which is keyed to a vertical shaft 47, see Fig. 7, having the cam 35 keyed thereto in proper relation to the rear extensions of the movable partitions 29, and also having the movable arm 23 keyed to the upper end thereof. The cam 35 is displaced counterclockwise with respect to the arm 23 to provide the proper time interval between the selecting of a coin, its dropping into a chamber, and the movement of the partition in the chamber to release the coin therefrom.

The coin register mechanism

Referring now to Figs. 1 and 2, a pair of vertical support channels 48 are secured to the front side standards 11 to slidingly receive a backing 49 on which a series of electrically operated registers or counters 50 are mounted. The backing is made of non-conducting material, and each counter is connected by wiring to a central conductor 51, see Fig. 8, and to individual spring strip conductors 52. When the counter backing is slid into position in the channels 48 the spring strip conductors 52 each contact a contact button 53, see Fig. 2, to form the individual counter circuits, and the bar 54, which is attached to the central conductor 51, contacts the buttons 55 to form the motor connections.

Each coin chamber partition 29 is wired to a connection 56, see Fig. 10, which is mounted on a non-conductor plate 57 mounted on two of the holding bolts 37, the connections 56 being in turn connected with the contact buttons 53, the parts being so arranged that when the cam 35 moves the partition to release a coin the circuit is completed by the coin bridging the gap between the partition and the grounding wall 28 of the chamber.

The completing of the circuit causes the proper counter to be actuated; and the lights 58, see Fig. 1, are included in the counter circuits so that a light flashes for each coin registered, the lights being preferably of different colors to indicate different coin values. Power is supplied to the apparatus through suitable wiring 59, see Fig. 2.

The electric circuit is thus from the source of supply, through the grounded frame and the motor shaft, through the revolving cams, through the movable partition, then a deposited coin to the metal side of the chamber, through the counters and the lights, and back to the source of supply, the circuit being complete only when a coin is in the particular chamber designed to receive it.

The coin collecting mechanism

When a coin passes through the hopper, the selector, and the proper coin chamber, it falls into a collection chamber 60 which has two spaced inclined troughs 61, see Figs. 11 and 12, for receiving the coin and guiding it to rest on a front holding plate 62 which is hinged to the collection chamber as indicated at 63. A spring 64 is mounted on a support rod 65, between a fixed arm 66 through which the rod passes, and the rear of the holding plate, to releasably retain the holding plate in coin holding position; a shaft 67 is mounted in the sides of the frame, and has an arm 68 secured thereto which engages the under side of the plate 62 by means of a manually actuatable extension 62*a* directly below the spring 64, the shaft extending outwardly beyond the frame as shown in Fig. 1 and having a finger engageable trip 69 keyed thereto, whereby pressing on the trip turns the shaft and swings the plate to discharge the coins thereon. When the coins are thus discharged they fall into a collector 70 which has a releasable bottom plate 71 mounted to swing on a hinge rod 72, a spring 73 being also mounted on the hinge rod to normally hold the bottom plate in coin retaining position. A finger tab 74 is secured to the under surface of

the bottom plate for manual actuation against the tension of the spring 73 in order to permit release of the retained coins into the conductor's hand.

Although a specific embodiment of the invention has been disclosed, it is obvious that changes in the material, the shape, size and cooperation of the parts, may be made to suit the requirements for different coin collector and register designs, and that different features of the invention may be utilized in other types of coin collecting and registering apparatus, without departing from the spirit or the scope of the invention as defined in the appended claims.

We claim:

1. A selector construction for a coin collector comprising a guide channel adapted to receive coins in stacked relation, a selector plate having a plurality of annularly positioned openings, a retention chamber below each opening, each chamber having a releasable coin retaining plate, a rotatable shaft extending through said selector plate, an arm keyed to the upper end of the shaft and adapted to selectively pass the stacked coins over said openings in sequence until the coin enters an opening of the width corresponding to the coin width, and a cam keyed to said shaft in spaced angular relation to said arm and adapted to release the coin retaining plates subsequent to the entry of the coins into said chambers.

2. In combination, a coin receiving hopper, coin receiving compartments for receiving coins of different sizes, a selector for selectively transferring coins from said hopper to said compartments, a coin collector in communication with said compartments, hingedly mounted coin holding means for holding coins in said compartments, a coin register, and mechanism for periodically swinging the holding means to coin releasing position and actuating the coin register.

3. In combination, a coin receiving hopper, coin receiving compartments for receiving coins of different sizes, a selector for selectively transferring coins from said hopper to said compartments, a coin collector in communication with said compartments, hingedly mounted coin holding means for holding coins in said compartments, a coin register, and mechanism for periodically swinging the holding means to coin releasing position and closing an electric circuit for actuating the coin register.

4. In combination, a coin receiving hopper, coin receiving compartments for receiving coins of different sizes, a selector for selectively transferring coins from said hopper to said compartments, a coin collector in communication with said compartments, hingedly mounted coin holding means for holding coins in said compartments, a coin register, and mechanism for periodically swinging the holding means to coin releasing position and closing an electric circuit through a released coin for actuating the coin register.

5. In combination, a coin receiving hopper, means for stacking the coins deposited in the hopper, coin receiving compartments for receiving coins of different sizes, a selector for selectively transferring coins from said stacking means to said compartments, a coin collector in communication with said compartments, hingedly mounted coin holding means for holding coins in said compartments, a coin register, and mechanism for periodically swinging the holding means to coin releasing position and actuating the coin register.

6. In combination, a coin receiving hopper, means for stacking the coins deposited in the hopper, coin receiving compartments for receiving coins of different sizes, a selector for selectively transferring coins from said stacking means to said compartments, a coin collector in communication with said compartments, hingedly mounted coin holding means for holding coins in said compartments, a coin register, and mechanism for periodically swinging the holding means and closing an electric circuit for actuating the coin register.

7. In combination, a coin receiving hopper, means for stacking the coins deposited in the hopper, coin receiving compartments for receiving coins of different sizes, a selector for selectively transferring coins from said stacking means to said compartments, a coin collector in communication with said compartments, hingedly mounted coin holding means for holding coins in said compartments, a coin register, mechanism for periodically swinging the holding means to coin releasing position and actuating the coin register, said selector including a disk having graduated transfer openings respectively communicating with the coin receiving compartments, and a rotatable device for transferring individual coins from the stacking means over the transfer openings.

8. In combination, a coin receiving hopper, means for stacking the coins deposited in the hopper, coin receiving compartments for receiving coins of different sizes, a selector for selectively transferring coins from said stacking means to said compartments, a coin collector in communication with said compartments, hingedly mounted coin holding means for holding coins in said compartments, a coin register, and mechanism for periodically swinging the holding means to coin releasing position and closing an electric circuit for actuating the coin register, said selector including a disk having graduated transfer openings respectively communicating with the coin receiving compartments, and a rotatable device for transferring individual coins from the stacking means over the transfer openings.

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