

April 3, 1951

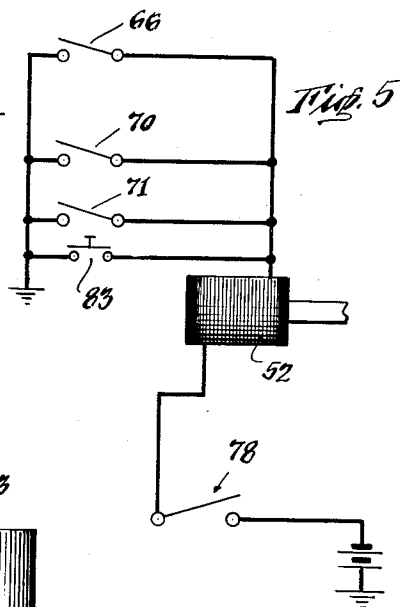
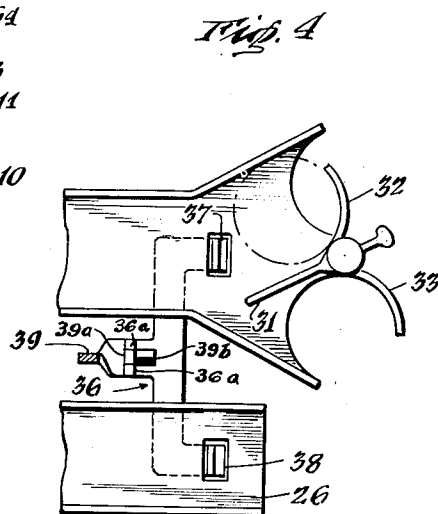
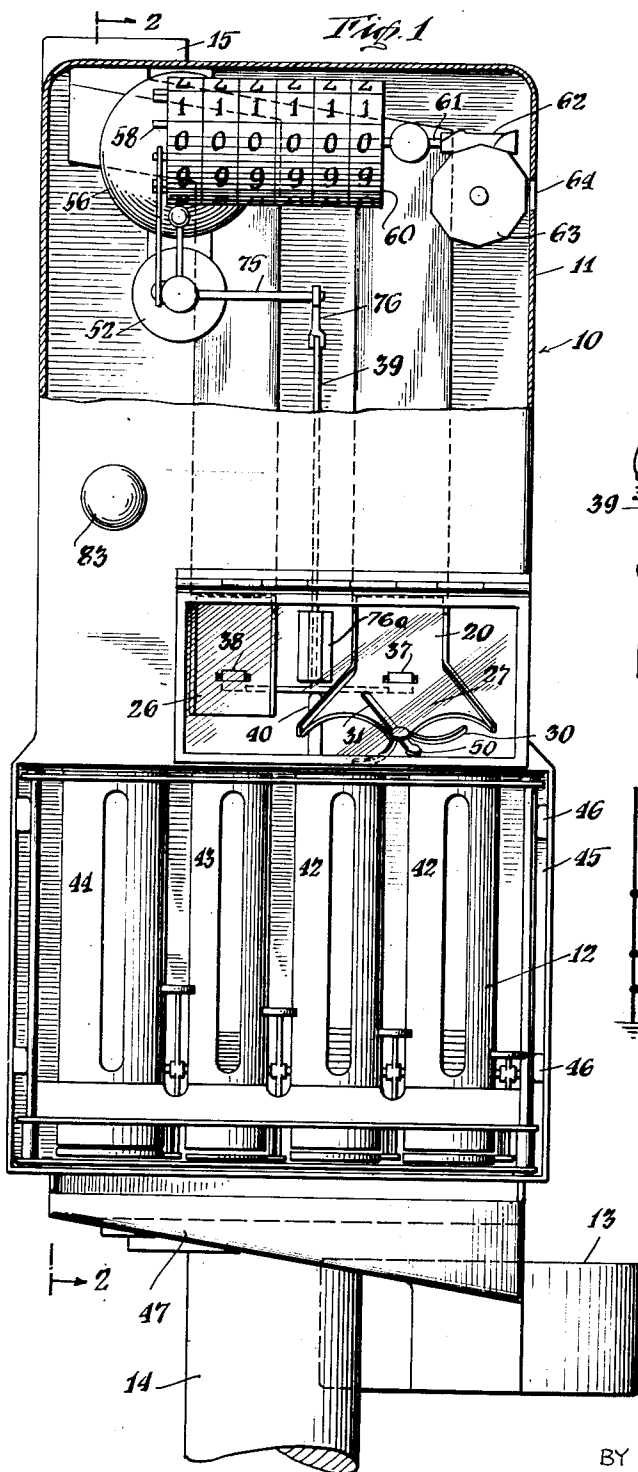
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2,547,102

COLLECTION AND DISPENSING MEANS FOR COINS OR THE LIKE

Filed Feb. 2, 1946

3 Sheets-Sheet 1



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3 Sheets-Sheet 2

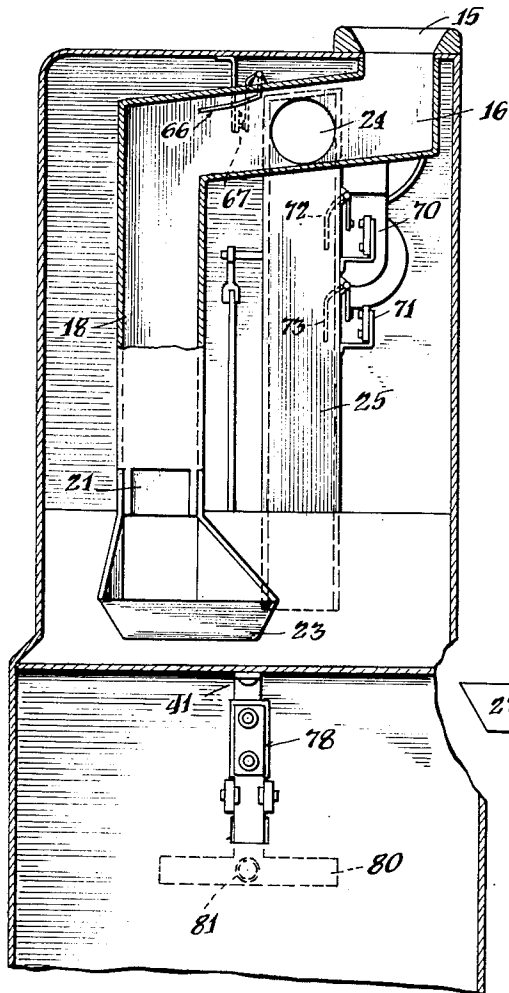
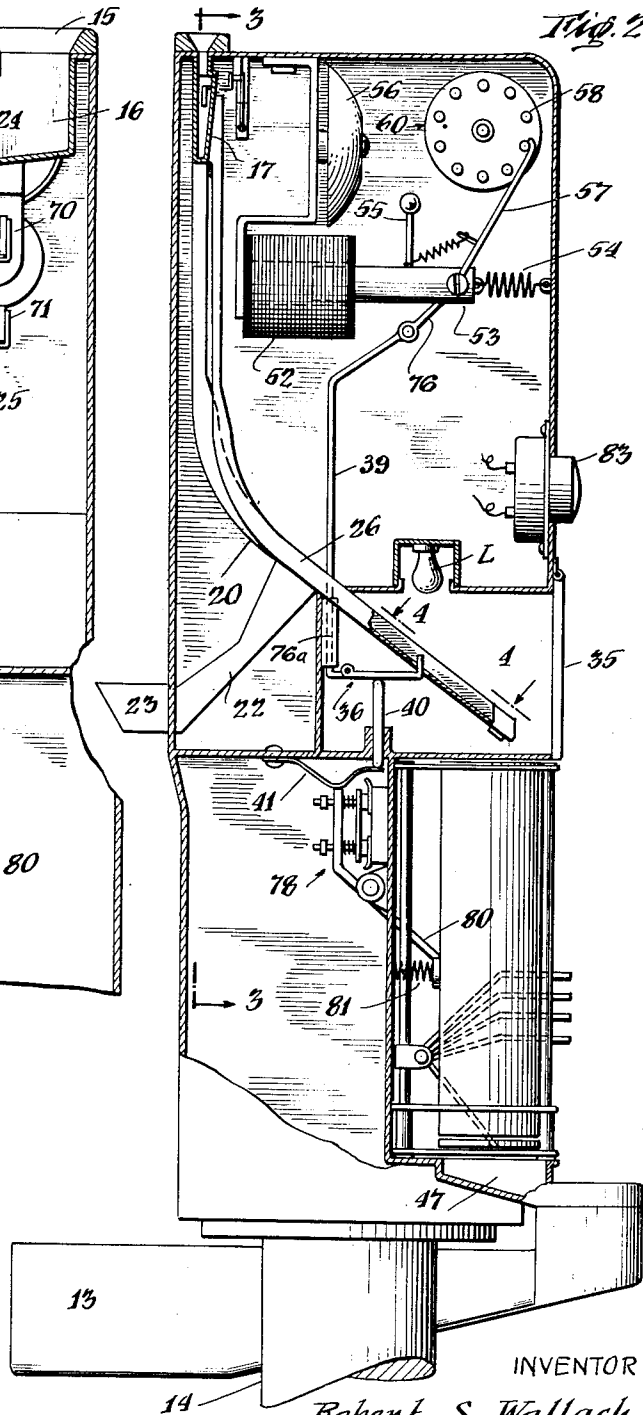


Fig. 3



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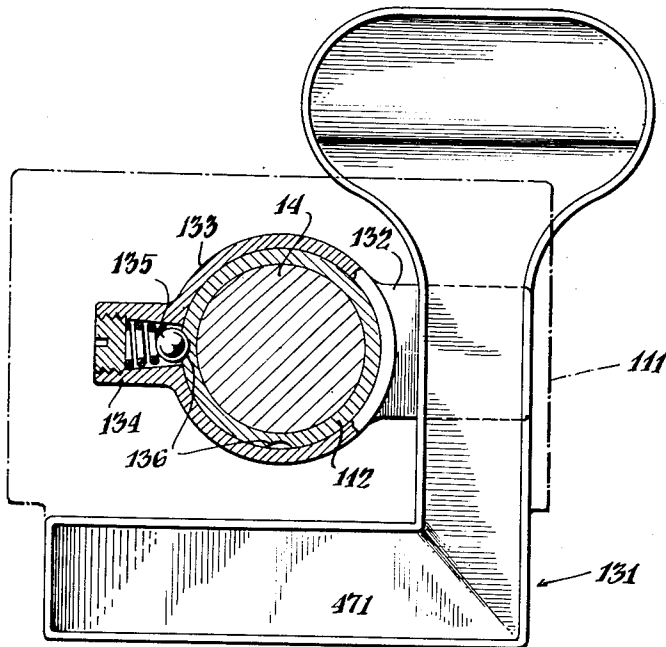


Fig. 6

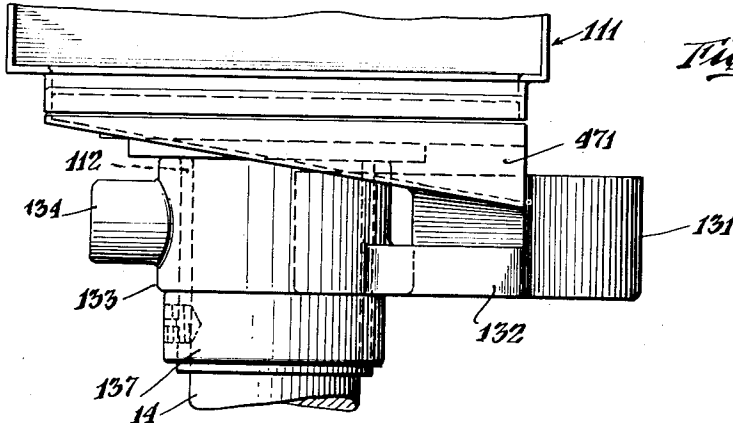


Fig. 7

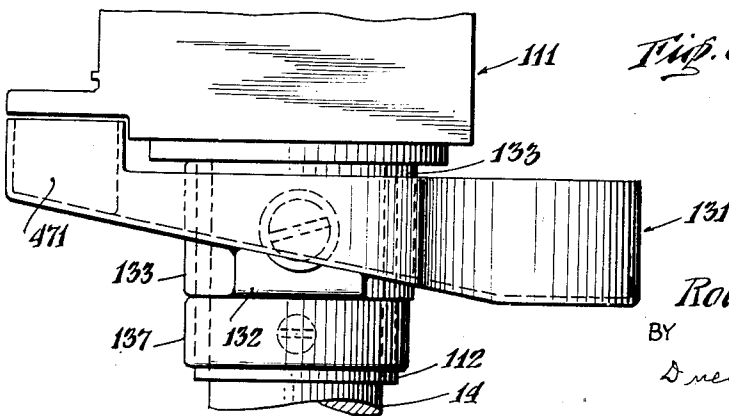


Fig. 8

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COLLECTION AND DISPENSING MEANS FOR
COINS OR THE LIKE

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4 Claims. (Cl. 235—32)

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This invention relates to an improved fare collection means.

In particular, the invention relates to a fare collector and change maker such as employed in street cars, busses or other installations where the patron pays an admission fee by the deposit of a coin or token.

In conventional installations where a patron presents to the driver or attendant a coin which must be changed, the attendant takes the coin, manipulates his change maker, and then picks up the coins ejected therefrom and hands them to the patron. During rush periods in a bus or street car, for example, the necessity for the driver physically to handle the change slows up the flow of patrons into the vehicle and requires the operator to divert his attention from the road ahead. Pursuant to the present invention, the driver accepts the coin to be changed and manipulates his change maker, and the coins ejecting therefrom fall into a receptacle which is convenient to the patron, who himself picks up the coins and deposits the necessary fare. The driver therefore may manipulate the change maker without having to observe the coins ejected therefrom or to pick them up to hand to the patron.

The change maker is removably housed within the fare collector; as the fare passes through the box it records and passes directly into the change maker. The fare collector accommodates either five cent or ten cent pieces or equivalent tokens, and the same are properly distributed to the appropriate compartments of the change maker. In one embodiment of the invention, removal of the change maker from the fare collector, as by a driver who has left the bus unattended for a period, interrupts the fare registry circuit, and coins which may be deposited by passengers entering the bus will drop through the collector into the discharge cup without being recorded. The passenger may do either one of two things: he may pick the coin out of the receptacle and wait for the driver to pass through the bus collecting from individual passengers after he returns, or the passenger may permit the fare to remain in the receptacle. By electrically disconnecting the registry circuit upon the removal of the change maker, no fares are recorded when deposited in the collector and hence there is no likelihood of confusion arising from a double registry if the passenger retrieves his fare and awaits its subsequent collection by the driver.

In such an installation, the driver, upon his

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return, will collect such fares as he finds in the receptacle and may collect the balance from the other passengers seated in the bus. The driver may himself record the total number of fares collected, by the operation of a suitable push button switch or the like which energizes the fare registry mechanism.

It is to be understood, of course, that if desired the apparatus may be so constituted that the fares deposited in an unattended fare collector may register, thus eliminating the necessity of the manual operation of the registry mechanism by the driver.

It is a principal object of the invention to provide a combination fare collector and change maker in which change, when made, falls into a receptacle convenient to the boarding passenger, to eliminate the necessity for the driver to handle the change.

It is another object of the invention to provide a combined fare collector and change maker wherein the deposited fares are registered and pass into appropriate pockets or receptacles in the change maker.

It is still another object of the invention to provide a combined fare collector and change maker wherein the most frequently proffered coins, such as five cent pieces, are divided equally between a pair of receptacles in the change maker as the said coins pass through the fare collector.

It is another object of the invention to provide a device as aforesaid in which fares deposited by the patron will register only when the change maker is in operative position.

It is a still further object of the invention to provide apparatus of the type described, which has a supplemental registry actuating means whereby the driver can register fares represented by coins which he collects personally from passengers who had previously boarded the bus during a period wherein the change maker had been removed from the fare collector.

It is a further object of the invention to provide a combined fare collector and change maker which is of simple construction and which will operate accurately over long periods of time, with minimum of maintenance requirements.

It is still another object of the invention to provide a coin collection and dispensing means having a pivotally or swingably mounted receptacle or chute into which coins normally drop when discharged from the dispenser, but which may be swung into inoperative position so that the driver or attendant may place his

hand beneath the dispenser to receive the coins therefrom.

Other features and advantages will hereinafter be described.

In the accompanying drawings:

Fig. 1 is a front or driver's-side elevation of a combined fare collector and change maker embodying the present invention, a portion of the front panel of the change maker having been removed to reveal underlying structures;

Fig. 2 is an end elevation of the device taken on lines 2—2 of Fig. 1;

Fig. 3 is a rear or "passenger's-side" elevation of a portion of the apparatus, taken along lines 3—3 of Fig. 2, the change maker having been removed;

Fig. 4 is a plan view of the coin distributing mechanism and coin retention mechanism, looking in the direction of the arrows of 4—4 of Fig. 2;

Fig. 5 is a schematic wiring diagram for the coin register system;

Fig. 6 is a plan view, in section, showing a means of rotatably mounting the coin receiving receptacle to permit the same to be swung into inoperative position;

Fig. 7 is a front elevation of the apparatus embodying the rotatably mounted coin receptacle; and

Fig. 8 is a side elevation thereof.

Referring to the drawings, the numeral 10, Fig. 1, represents the apparatus in its entirety, and said apparatus includes the coin receiving and registering section 11, the change maker 12, and the change receiving receptacle 13, the apparatus being removably mounted on a suitable support 14. The fare collector includes a coin receiving slot 15 which enters into a sloping passage 16 having a wall 17 (see Fig. 2), which causes the coins to lean as they pass downwardly along said passage.

Coin collection mechanism

The slot 15 will receive either five cent or ten cent pieces, or, alternatively, different size tokens which respectively represent one or two fares. The passage 16 is of sufficient width and height to accommodate the larger of the coins or tokens which the apparatus is intended to receive, and said larger coins will roll along the passage into a vertical drop 18 which leads to a sloping chute 20. Adjacent the upper end of said chute 20 is an aperture 21 in its lower wall, through which aperture pennies which may have been placed in the slot 15 in error will fall for passage along a communicating trough 22 into an external cup 23. It will be understood that the aperture 21 is too small to permit nickels to drop there-through.

Near the mouth of the passage 16, the sloping wall 17 is provided with an aperture 24 which is slightly larger in diameter than the dime or the lesser dimensioned of the coins or tokens which the collector is to receive and hence dimes fall through the opening 24 into a drop 25 which communicates with a sloping chute 26. Nickels will roll past the aperture 24, and hence, nickels, dimes and pennies are distinguished and separated by the coin receiving mechanism.

Referring now briefly to Figs. 1 and 2 it will be noted that the nickel chute 18 terminates in a branching distributor section 27 and that the passage of coins through said distributor section is controlled by a pivotally mounted distributor

30 which comprises a diverter arm 31 and coin striker arms 32, 33.

The dime chute 26 is not provided with such distributor, although this could be added thereto, if desired.

The distributor 27 and the end of the dime chute 26 are so located in the apparatus as to face the driver and enter a chamber provided with a window 35, preferably hingedly mounted so that access to the chamber may be had as desired. Said chamber may be electrically illuminated as by a small electric lamp L.

It is desirable that a coin which has been deposited does not pass immediately into the change maker 12, to give the driver the opportunity to inspect the coin and detect counterfeits or slugs. Accordingly, there is provided a catch mechanism 36 which has branching stop members 37, 38 which project upwardly through slots 20 in the rear walls of the chutes 20 and 26 to form means for holding the pins in sight beneath the window 35.

The catch 36 is pivotally secured to a push rod 39 as by cooperating hinge members 36a, 39a. A rigid lug of projection 39b extends forwardly to overlie the surface of the catch 36 so that the catch may rotate downwardly as seen in Fig. 2, but not upwardly. The catch is normally supported in horizontal position by a freely vertically movable pin 40 which rests upon a very light cantilever spring 41 secured to the casing of the unit, as shown. The said spring is itself biased to rotate clockwise of its point of securement, but is held in pin-supporting position so long as the change maker is in position, as later described. By means later described, the deposit of the next fare in the slot 15 will release the catch mechanism to permit the trapped coin to pass into the change maker or other receptacle and to catch the said next-deposited coin as the same reaches the lower portion of the respective coin chute.

The change maker 12 is illustrated as being of conventional type having a pair of receptacles 42 for nickels, a single receptacle 43 for dimes, and a single receptacle 44 for twenty-five cent pieces into which the driver may manually place such coins. The change maker is removably housed within a pocket or compartment 45 and may be held therein by any suitable detent means such as schematically illustrated at 46. The change maker has the conventional lever actuated mechanism including the finger pieces 12a, 12b, 12c, 12d to be manually actuated by the driver to permit one coin at a time to pass from the receptacle into the channel 47 which communicates with the cup 13.

It will be noted that the two nickel reservoirs are respectively beneath the branches of the distributor section 27, and the dime chute 26 is immediately above the dime receptacle 43. As a nickel is released by the stop 37, it will be deflected by the arms 31 to the right of Fig. 1 and will engage the stop 32 which will pivot under the weight of the nickel and rotate clockwise, permitting the coin to drop into the right hand nickel reservoir. The weighted pendulum 50 introduces sufficient inertia to throw the diverter arm 31 over to the opposite position, and the next coin released by the stop 37 will be deposited into the other nickel receptacle. Hence, the coins are divided between the two nickel receptacles, which are more or less evenly filled.

It will be noted that the cup 13 is at the side of the apparatus opposite to the change maker;

hence the coins ejected therefrom pass to the cup at a location convenient to the passenger, who himself removes them and deposits the necessary fare. The driver does not handle the change.

Registry mechanism

Means are provided to register each fare according to the coin deposited. A five cent piece or single-fare token will actuate a trip register and a totalizer by advancing the same one digit; a two-fare piece will advance the same two digits. A bell or the like will sound once for a one-fare coin and twice for a two-fare coin.

The registry mechanism is controlled by a master solenoid 52 having an armature 53 spring biased as by the spring 54. The armature has mounted thereon a striker 55 in operative relationship to a suitably positioned bell or the like 56. Also pivotally carried by the plunger 53 is an actuating arm 57 which engages with one of a plurality of drive pins 58 on the totalizer 60. The totalizer is of conventional construction and need not be particularly described. The totalizer shaft 61 terminates in a worm or other actuator 62 which in turn rotates the trip register 63, the digits of which are disposed immediately beyond a window aperture 64 in the side of the fare collector. Suitably supported in the collector housing, and having a pivoted actuating arm 65 extending into the passage 16 beyond the aperture 24, is a switch 66 the said arm of which is struck and rotated by the five cent piece as it rolls along the passage. As will be observed, arm 66 is spaced from the base of chute 16 a distance such that only coins having a diameter equal to that of a five cent piece will actuate it. In other words, coins of smaller diameter will pass down through the chute and in such passage will clear arm 66. The rotation of the switch arm in a clockwise direction causes a momentary connection to be made at the switch elements 67, and assuming the change maker 12 to be in position, a circuit is completed which energizes the solenoid 52 to draw the armature 53 inwardly. During this action, the arm 57 rotates the totalizer 58 one digit and also causes the trip register to advance one digit. Near the end of its travel the striker 55 hits the bell to sound the audible signal.

As appears in Fig. 3, there are two switches, respectively 70, 71, the actuating arms 72, 73 of which are in operative relationship in the dime drop 25, and as the dime or similar coin drops through, it successively strikes and actuates the said switch arms, which close their associated normally open switches. Each switch 70, 71 is in parallel in the solenoid circuit, as shown in Fig. 5, and hence a dime or two-fare token will actuate the solenoid 52 twice to advance the totalizer and trip register a total of two digits. Also, of course, the bell 56 will be sounded for each actuation of the solenoid.

The vertical arm 39 of the catch mechanism 36 is linked to the armature by a bar 75 and pivoted counterlink 76. The said arm 39 is guided for vertical movement in a suitable slideway 76a, and hence as the armature 53 moves to the left upon energization of the solenoid, the arm 39 is moved downwardly whereby the catch 35 presses downwardly on its supporting pin 40 to deflect the light spring 41 and move the stops 37, 38 beneath the level of the coin chutes. Hence, if a coin had been held at the bottom of the respective chutes, such coin is released and will drop into the change maker. Before the coin which has actuated the solenoid has reached the lower part of its respective chute, the stop members will have returned

to operative position and the said coin will be caught thereby.

It is frequent that a bus or car will be left unattended by the driver at the terminal; the driver upon leaving, will remove the change maker from the apparatus. However, passengers frequently board the bus during the absence of the driver and deposit their fares. It is desirable that fares deposited during the absence of the driver drop completely through the unit into the cup 13, without being recorded or caught by the catch members 37, or 38. The passenger may then leave the fare in the cup or may retrieve it and await the return of the driver, who as is usual practice, will pass through the bus or car collecting fares from those who are seated therein.

Accordingly, there is provided a pivotally mounted master switch 78 which has an arm 80 which the rear portion of the change maker engages and urges rearwardly against resistance of spring 81 when the same is in operative position. With the change maker in position, the arm 80 swings the switch 78 into closed circuit position; when the change maker is removed, the spring 81 rotates the arm counterclockwise to open the circuit. Therefore, when the change maker is not in position, no coin register will be operated.

The upper end of the switch 78 presses against the underside of spring 41, rotating said spring counterclockwise of Fig. 2 and lifting its free end to a position where it will support pin 40 in such position as to maintain the catch 36 in operative position. When the change maker is removed the spring 41, no longer supported by switch 78, rotates clockwise, dropping the pin 40 to permit the freely pivoted catch 36 to drop to a position where its fingers 37, 38 are below the surface of the coin chutes. Without the coin changer in position, therefore, coins deposited in the collector will fall freely through into the cup 13 as aforesaid; and any coin held beneath the window 35 will, upon removal of the change maker, drop into the cup for removal by the driver.

For the convenience of the driver in recording the number of fares which he has collected under the circumstances above set forth, there is provided push button switch 83 mounted in the casing convenient to the driver. The said switch is a fourth switch in parallel in the solenoid circuit and the driver may press the switch once for each fare which he has collected, thereby maintaining the accuracy of the totalizer.

Another embodiment of the invention contemplates the rotatable mounting of the change receiving chute to permit the same to be swung out of position with respect to the change dispenser, thus enabling the driver, when he desires, to dispense the coins into his own hand for transfer to the passenger.

As shown in Figs. 6, 7, and 8, the coin receiving and registering section has been designated 111, and is formed with a downwardly extending collar 112. The coin receiving chute 131 is formed with an inwardly extending support member 132 terminating in a collar 133 which fits rotatably about the collar 112. In a neck 134 there is affixed a ball-spring detent 135 to resiliently hold the receptacle 131 in either of two positions. To this end, the collar 112 has ball-receiving pockets 136 into which the ball detent is urged by the illustrated spring.

As clearly appears in Figs. 7 and 8, the collar 112 is sufficiently long to receive, at its lowermost end, a collar 137 or the like which serves as a supporting base for the coin receptacle 131.

After the unit has been completely assembled, it is placed upon the supporting position or standard 14, as is conventional practice.

Figs. 6, 7 and 8 represent the coin dispenser in what is probably its normal position; that is, with the channel 471 in position to receive coins ejected from the dispenser. If, however, the driver prefers personally to make change and to hand the same to the passenger, he may manually swing the coin receptacle 131 about the neck 112 through a ninety degree angle counterclockwise of Fig. 6, thus affording him the opportunity of placing his hand in the space normally occupied by the collection chute 471 so that he may dispense coins into his hand.

In the specification and accompanying claims, it is to be understood that the term "coins" is to include tokens or any other essentially circular or rollable device; and that the term "change maker" includes any device comprising reservoirs or pockets into which the collected or deposited coins eventually pass. Conventionally, a change maker comprises a coin receptacle having means whereby one or more coins may be discharged by manipulation of levers or the like, and it is to be understood that the invention is not limited to the type of change maker shown.

Although the invention has been described by making a fully detailed reference to the certain presently preferred embodiments, such detail of description is to be understood in an instructive rather than a limiting sense, many changes being possible within the scope of the claims hereto appended.

I claim:

1. In a combined coin collection and coin dispenser means, a casing, a coin dispenser removably contained within said casing; chute means for conveying a coin from an entrance through said casing and into said coin dispenser; reciprocable stop means within said chute means to arrest the passage of a coin therethrough, said stop means including a catch member freely pivoted to drop out of the path of said coin; means actuated by the entry of a coin into said chute means to bodily move said catch means downwardly out of operative position without pivotal movement of said catch member; means for resiliently holding said catch member against pivotal movement so long as said coin dispenser is positioned within said casing; and means effective upon removal of said coin dispenser for permitting said catch means to pivot downwardly out of operative position with respect to said chute means.

2. A coin collector and dispenser comprising a casing having coin-receiving means; a chute communicating with said receiving means and forming a conduit through which coins drop; means for arresting the passage of a coin through the chute; means for registering the number of coins deposited within said receiving means; solenoid means for actuating said register and said coin arresting means; switch means for energizing said solenoid means as a coin passes through said chute; a coin dispenser removably disposed within said casing and arranged to receive coins passing through said chute; and means for interrupting said solenoid circuit and for rendering said coin arresting means inoperative when said coin dispenser is removed from the casing; said means including a pin for normally holding said coin-arresting means in operative position, a light spring mount for said pin nor-

mally biased to move said pin out of holding position, and a normally open pivotally mounted switch in said solenoid circuit and rotated into closed circuit position by engagement by said coin dispenser upon insertion thereof into the casing; said switch also upon rotation into closed circuit position engaging the spring mount to move the said pin into position whereby the coin arresting means is in operative position.

3. A coin collector and dispenser, comprising a housing having an entrance for the reception of coins; a chute communicating with said entrance and through which a coin will drop by gravity; a coin dispenser removably positioned within said housing and having a reservoir pocket beneath the discharge end of said chute to receive coins dropping therefrom; a cup beneath said coin dispenser into which coins released by said dispenser may fall, said cup also being in the line of fall of a coin discharging from said chute; a catch disposed within said housing and having a finger projecting into said chute adjacent the discharge end thereof to prevent a coin from passing out of said chute; resilient means operated by engagement of a wall of said coin dispenser therewith for maintaining said finger normally within said chute and permitting said finger to drop beneath said chute upon removal of said dispenser from said housing, whereby in the latter circumstance a coin will freely drop through said chute into said cup; a solenoid having an armature mechanically connected to said catch and effective upon movement to reciprocate said catch to move the finger thereof beneath the chute and release any coin previously held thereby, said armature on return movement restoring said finger to normal position within said chute; and switch means in the energizing circuit of said solenoid, said switch means being effective upon being struck by a coin passing through said chute to momentarily energize said solenoid.

4. A coin collector and dispenser, including a housing having a coin entrance for the reception of coins of at least two different diameters; a passage extending from said entrance; chutes communicating with said passage for receiving coins of respectively different diameters, said passage having means for diverting coins to the proper chutes according to the diameter thereof; a coin dispenser removably disposed within said housing and having coin receiving pockets aligned with the respective chutes to receive coins passing therefrom; a catch reciprocally mounted within said housing and having stop fingers normally projecting into said chutes adjacent the discharge ends thereof to arrest the passage of a coin therethrough; coin actuated electric switch means in the path of coin travel through said chutes; a counter mechanism for totalling the number of coins passing through the respective chutes; a solenoid in circuit with said respective switch means, said solenoid having a movable armature connected to said counter mechanism to actuate the same upon closure of any switch means; a linkage connecting said armature with said catch for moving said catch downwardly to remove the fingers thereof out of engagement with any coin previously retained thereby to permit such coin to pass into a pocket of said coin dispenser and a switch for opening the circuits through said solenoid upon removal of said coin dispenser from said housing.

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