

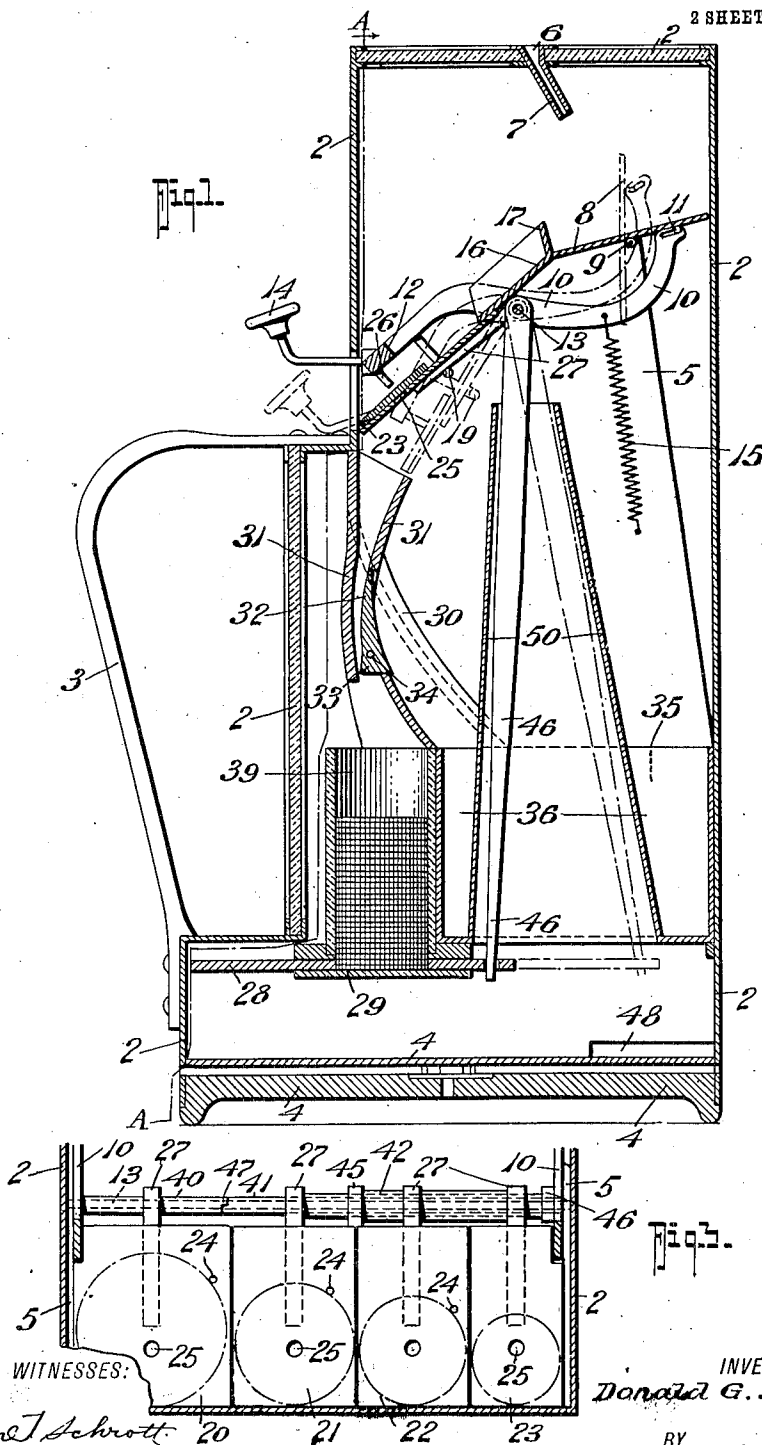
No. 851,303.

PATENTED APR. 23, 1907.

D. G. McKENZIE.
CHANGE GIVING FARE BOX.

APPLICATION FILED JAN. 9, 1907.

2 SHEETS—SHEET 1.



WITNESSES:
John T. Schrott.
F. L. Gibson.

INVENTOR
Donald G. McKenzie.

BY
Fred G. Peterman
ATTORNEY

No. 851,303.

PATENTED APR. 23, 1907.

D. G. McKENZIE.
CHANGE GIVING FARE BOX.
APPLICATION FILED JAN. 9, 1907.

2 SHEETS—SHEET 2.

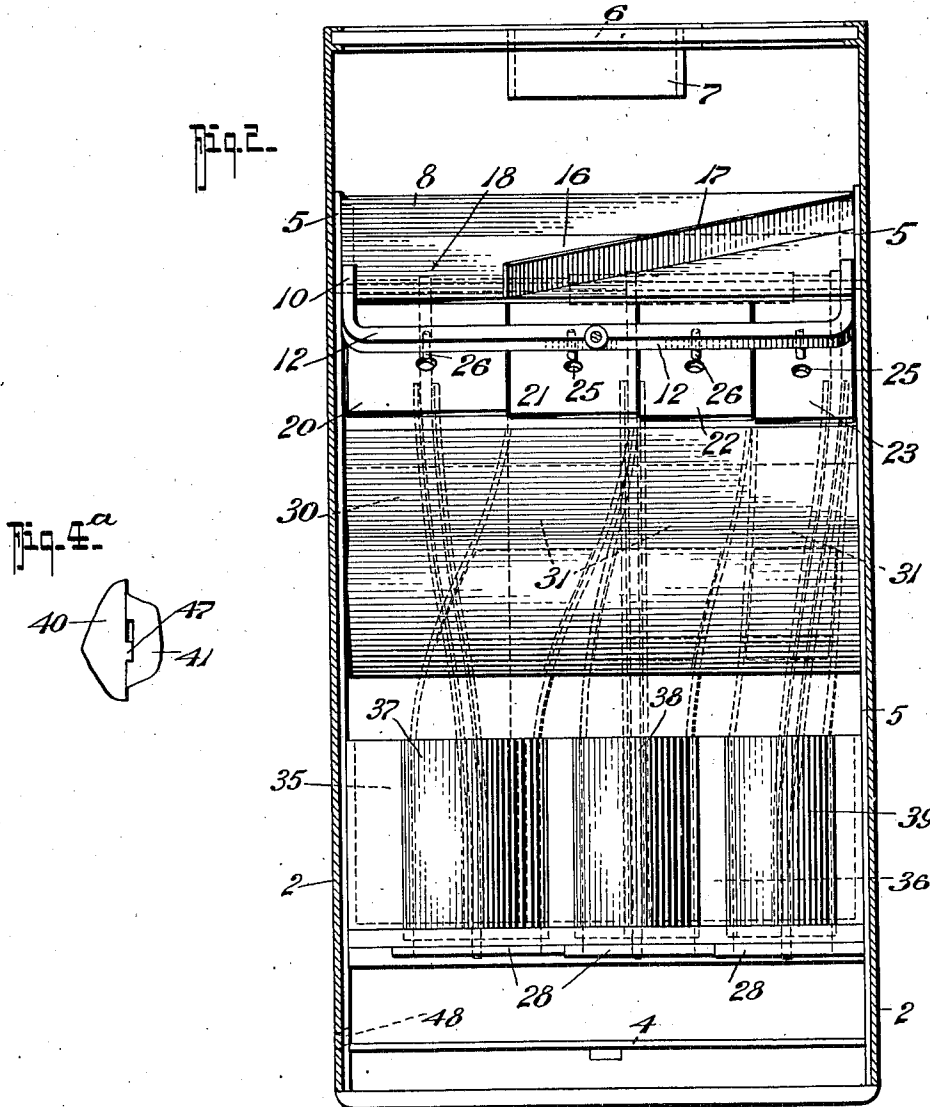
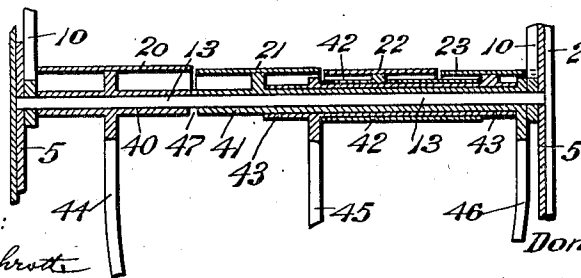


Fig. 4.



WITNESSES:

John T. Schmitt
H. C. Gibson.

INVENTOR

Donald G. McKenzie

BY

Fred G. Dutcher
ATTORNEY

UNITED STATES PATENT OFFICE.

DONALD G. McKENZIE, OF VANCOUVER, BRITISH COLUMBIA, CANADA.

CHANGE-GIVING FARE-BOX.

No. 851,303.

Specification of Letters Patent.

Patented April 23, 1907.

Application filed January 9, 1907. Serial No. 351,464.

To all whom it may concern:

Be it known that I, DONALD G. McKENZIE, a citizen of the Dominion of Canada, residing at Vancouver, in the Province of British Columbia, Canada, have invented a new and useful Improvement in Change-Giving Fare-Boxes, of which the following is a specification.

This invention relates to a change giving fare-box for street-car conductors use and is of that class which is carried in the hand of the conductor and presented to the passengers that they may themselves deposit within it their fare ticket or the cash equivalent. Fare-boxes of this class at present in use are merely receptacles for the fare tickets or their cash equivalent and where the unit of money presented by the passenger is in excess of the fare to be paid, the conductor is required to furnish the change. This box is designed to automatically deliver the correct change for the fare to be paid from the coin deposited within it. The capacity of the box being for purposes of convenience limited to the ordinary units of currency.

The invention is fully described in the following specification reference being made to the drawings by which it is accompanied, in which:

Figure 1, is a vertical section through a box designed for United States currency from fifty cents to five cents. Fig. 2, is a section of the same, on the line A—A on Fig. 1. Fig. 3, a plan of the cash selecting plates, and Fig. 4, a vertical section showing the bearing sleeves of the selecting plates and the levers therefrom which operate the coin slides of the magazine, Fig. 4^a being a development of the clutch connection.

In these drawings 2 represents the external casing of the fare-box, 3 being the handle by which it is carried by the conductor and presented to the passengers. The casing 2 is removably secured by means of a suitable lock to a base 4 which forms the bottom of the box. Secured to this base 4 are light side frames 5 and to these side frames 5 the several parts of the internal mechanism etc. are attached in such a manner that when the outer casing 2 is removed such parts are entirely exposed and accessible.

The top and back of the casing 2 is preferably made of glass so as to afford a view of the interior. In the top is a slit 6 through which the cash or ticket is passed by the passenger into the box, a chute 7 delivering it

toward the front where it falls upon a receiving plate 8 mounted on pivots 9 in the side frames 5. This chute 7 also prevents the cash within being shaken out through the slit. In its normal position the plate 8 is inclined slightly upward toward the front so as to be approximately horizontal when the box is held in the hand and inclined forward to reveal the slit 6 to a passenger on presentation for the deposit of a fare.

The tilting of the plate is effected by a lever or levers 10 on each side which are connected at 11 to the plate 8 forward of the axis of its movement. The levers 10 are pivotally mounted on a light shaft 13 extending between the side frames 5 which shaft also serves to carry other operative parts to be described later. The backward ends of the levers 10 are connected by a bar 12 extending between them, and in the middle of this bar is removably attached a thumb key 14 projecting through an elongated aperture in the back of the outer casing 2 immediately over the handle 3 so as to be readily operated by the thumb of the hand holding the box. The depression of the thumb key 14 will thus tilt the plate 8 by elevating its front edge as indicated by dot and dash lines in Fig. 1. The plate 8 is maintained in its normal position by a spring 15 connected to one of the levers 10 and to the adjacent side frame or other fixed part.

Extending across the width of the box and sloping downward toward the back, covering the shaft 13 is a plate 16 having an upwardly projecting directing lip 17 sloping from the upper edge of 16 at one side to the lower edge toward the other but terminating at such a distance from the adjacent side frame 5 to leave a space 18 which will allow the maximum diameter of coin, which the box is designed to accommodate, to pass.

Mounted so as to be freely movable on the shaft 13 are sleeves 40, 41, 42, 43 having spurs or levers 27 projecting from them to which are secured selecting plates 20, 21, 22, 23, sloping downward to the back of the box. The number of the plates corresponds to the number of the denominations of coins which the box is designed to receive, and the width of the several plates corresponds to the diameter of their respective coins, the plates being arranged in the order of the diameter of the coins from the largest, 20 adjacent to the space 18 to the smallest 23 at the other side. As represented in the drawing, four

plates 20, 21, 22, 23, are shown to accommodate respectively fifty cent and twenty-five cent pieces, five cent nickels and ten cent pieces. The lower sides of these plates 20, 21, 22, 23, or the underside of the spurs 27 on which they are fastened, normally rest upon a bar 19 secured to and extending between the levers 10.

Upwardly projecting from each plate 20, 21, 22, 23, is a check pin 24 to engage the upper edge, toward the smaller sizes, of the coin for which each plate is designed, so that a coin will pass from the side of the larger size plates toward the smaller size ones and be stopped by the check pin 24 centrally on the width of the plate for which it has been designed. Each plate is stepped below the one of higher value or more properly of larger size immediately preceding it, as shown in Fig. 2. This facilitates the movement of the coins onto their respective plates and checks any tendency to shake back. In each selecting plate, approximately under the center of a coin resting on it, is an aperture 25 and downwardly projecting from the back bar 12 of the levers 10 are pins 26 the lower ends of which are clear of a coin on the plate. Thus when the lever back bar 12 is depressed by the thumb key 14 the pins 26 will, if no coin is resting on the selecting plates, pass through the apertures 25 without depressing the plates, but if a coin rests on any plate that plate will be depressed by the pin 26 engaging the upper surface of the coin.

It will be observed that the same movement which depresses a selecting plate on which a coin rests also carries down the bar 19 on which the plates normally rest, but the bar begins to move before the plate because the lower end of the pin 26 is clear of the upper face of the coin and must come into contact with that coin before it can move the plate, the plate being sustained in the interim by the friction of other mechanism connected to them, to be described later. Therefore when the thumb is removed from its key and the lever bar 12 is lifted under the influence of its spring 15 the pin 26 lifts off the coin on the plate before the bar 19 engages the underside of the plate spur 27 to restore it to its normal position, and in this interval of freedom the coin slides downward off the plate and is delivered into a chute 30 beneath. As the coin of highest denomination does not again require to be delivered in change the plate 20 delivers into a division 35 of a cash box situated beneath but clear of the bottom of the chute. The other plates deliver through the chutes 31 into cylindrical coin magazines 37, 38, 39, until such magazines are full, when the last coin delivered being unable to fall into its magazine, operates by the retention of its upper edge within the chute a light switch 32 which diverts the

coin into a general division 36 of the cash box. The coin switch 32 is weighted in relation to its pivot to normally deliver into the magazine but the lower end 33 below the pivot 34 projects in the path of the chute to be engaged by a coin therein.

At the base of each coin magazine is a coin slide 28 having an aperture 29 corresponding with the bore of the magazine, and the thickness of the slide is such that it will withdraw one or more coins according to what is necessary to make up the required change, thus with the machine illustrated the slide of the twenty-five cent and the five cent nickel magazine deliver only one coin as no more than one is ever required to make up change for a single fare of five cents from a maximum payment of fifty cents; but the coin slide of the ten cent magazine is thick enough to deliver two ten cent pieces on each withdrawal as never less than that number is required from it, under the conditions named above.

The coin slides are operated to withdraw the required coin or coins from the several magazines 37, 38, or 39, by levers 44, 45, and 46, connected to certain of the sleeves 40, 41 and 43 by which the coin selecting plates are mounted on the shaft 13. These levers are connected to the sleeves in the machine under consideration in the following particular manner:

The lever 44 of the coin slide of the twenty-five cent magazine 37 is secured to the sleeve 40 of the fifty cent selecting plate 20, but as a payment of fifty cents to cover a five cent fare requires in addition to the twenty-five cent piece the delivery of two ten cent pieces from the magazine 39 on the extreme opposite side of the machine, the lever 46 which operates the coin slide of the ten cent magazine 39 is secured to a sleeve 41 which extends across, and the adjacent edges of the sleeves 40 and 41 are provided with a clutch engagement 47 (see Fig. 4^A) that will allow 40 to operate 41 but will permit the sleeve 41 to be moved without operating 40.

To the sleeve 41 is secured the twenty-five cent selecting plate 21, as when payment of twenty-five cents is made for a single five cent fare, twenty cents, two ten cent pieces, is always required as change. The ten cent selecting plate 23 which, as the size of the ten cent piece is less than that of the five cent nickel, must be beyond the ten cent plate to the right, is secured to a sleeve 43 which is mounted so as to be movable on the sleeve 41, and the lever 45 which operates the coin slide of the five cent magazine 38, is secured to this sleeve, so that when a ten cent payment is made on a five cent fare a nickel is released as change from its magazine 38. As a payment of five cents does not require change, that payment may be delivered direct into the cash box from the receiving plate 8, but as such pieces are required for

change in the magazine, the five cent nickel selecting plate is secured to a sleeve 42 mounted on the sleeve 43, but no coin slide lever is attached to it. As the cash box 35, 36 is required to separate the upper part of the fare-box into which the coin is deposited and, where necessary, selected and distributed from the lower part into which the change is delivered from the coin magazines by the coin slides, each coin slide lever may be provided with a casing 50 carried up to where the movement is slight, so as to preclude the possibility of coins passing from the upper to the lower part of the box through the space necessary for the movement of the levers.

In the operation of the device the fare-box is presented to a passenger who deposits the fare ticket or coin in the top slit 6. If the money paid is only sufficient to cover the amount of the fare or fares or if a ticket is placed in the slit the conductor depresses the thumb key 14 and the coin or ticket falls from the receiving plate 8 into the general cash box 36. If however the coin is one from which change is required the box is tilted backward to throw the coin through the passage 18 onto the selecting plates, and is then tilted downward to the right to permit the coin to slide over the plates until stopped by the check pin 24 on the plate corresponding to its value. The thumb key 14 is then depressed when the selecting plate on which the coin rests is pressed downward, by the pin 26 of that plate, the other pins passing through the apertures 25 of their respective plates, and the magazine coin slide necessary to give the required change from the coin deposited less one fare, in this case five cents, is withdrawn by one of the levers 44, 45, or 46 which change drops from the slide into the bottom of the box whence it is delivered through the delivery slit 48 into the hand of the operator or of the passenger. On release of the thumb key the pin 26 is lifted from the face of the coin on the selecting plate by the action of the spring 15 restoring the mechanism, and the coin falls through the chute 30 or 31 as the case may be into either the division 35 of the cash box or the coin magazine 37, 38, or 39 according to its value.

It will be observed that although this device has been described as applicable for certain of the lower coins of U. S. currency it is equally applicable with modifications as to size and manner of connecting the selecting plates to the coin slide levers, etc. to any other coins; for example in applying it to Canadian requirements where the five cent piece is of silver and therefore smaller than the ten cent piece there will be no necessity for a five cent selecting plate but as that coin is required for change in the magazine it will pass over the other plates and drop over the

further edge of the ten cent plate into the five cent magazine beneath. I do not desire therefore to be confined to the particular arrangement described, of the selecting plates and magazines, and the means whereby the several selecting plates operate the coin slide of the magazines as such will be arranged to suit the particular requirements of the currency which the fare box is designed to accommodate.

Having now particularly described my invention and the manner of its operation and use, I hereby declare that what I claim as new and desire to be protected in by Letters Patent is:

1. A change giving fare-box comprising a casing having a coin receiving aperture and a coin delivery aperture, cylindrical coin magazines in the lower part of the casing above the bottom thereof, a coin withdrawing slide for each magazine, coin selecting plates toward the upper part of the box arranged according to their width from the wider on one side to the narrower on the other side, means for pivotally mounting said plates toward one end, said pivotally mounting means including a common axis or shaft susceptible of a limited pivotal depression, means for depressing the plate on which a coin rests to deliver the coin into its respective magazine, said depressing means including means for temporarily retaining the coin on the depressed plate, and means cooperating with said depressing means of certain of the selecting plates for withdrawing a coin or coins from certain of the magazines.

2. A change giving fare-box comprising a casing, a receiving plate within the casing, means for tilting the same, a series of coin selecting plates hinged adjacent thereto, the width of said plates being adapted respectively to the several sizes of coins the casing is designed to accommodate and arranged according to the size of the coin from the larger on the one side to the smaller on the other, coin magazines cooperating with said selecting plates, a check on each plate that will stop a coin on the plate for which it is designed while allowing a coin of smaller size to pass, means for depressing the plate on which a coin rests, means for delivering the coin into its magazine, means cooperating with certain of the coin selecting plates for withdrawing a coin or coins from certain of the magazines, to make up the required change from the coin selecting plate.

3. A change giving fare-box comprising an outer locked casing having a coin receiving aperture in the upper part of the casing and a coin delivery aperture from the bottom, a series of cylindrical coin magazines within the casing and clear of the bottom of the casing, a coin withdrawing slide in the bottom of each magazine, a cash or ticket receiving box situated above the coin slides of the maga-

zines, a receiving plate toward the upper part of the casing, means for tilting such plate to deliver a coin or coins direct into the general cash or ticket box, a series of independently pivotally mounted coin selecting plates extending across the casing and sloping downward from about the level of the back edge of the receiving plate toward the back of the casing, a check pin on each plate that will stop a coin on the plate for which it is designed, a bar across the plates depressible toward them, means for depressing said bar said bar having a downwardly projecting pin over each plate that will when the bar is depressed pass through an aperture in the plate beneath but that will if a coin occupies the plate press the plate down, means for withdrawing certain of the magazine coin slides when certain of the selecting plates are depressed and means for restoring the mechanism to its normal position.

4. A change giving fare-box, comprising a locked casing having a coin receiving aperture toward the upper part and a change delivering aperture toward the bottom, a series of cylindrical coin magazines situated toward the lower part of the casing but clear of the bottom an apertured coin withdrawing slide for each magazine normally in alignment with the bore of the magazine, a coin receiving plate toward the upper part of the casing, a series of coin selecting plates adjacent but partitioned from the receiving plate except at one side said selecting plates adapted in width to the diameter of the several coins the box is designed to accommodate and independently hinged toward one edge, a bar pivotally mounted toward the axis on which the said plates move said bar having a series of pins downwardly projecting toward the plates, means for holding said pins normally clear of a coin on the plates, said plates having apertures corresponding to the position of the pins, a rod secured to the frame of the pivotally mounted bar and extending beneath the coin selecting plates upon which rod the selecting plates normally rest, means for depressing the pivotally mounted bar, a key external to the box forming a part of said depressing means, levers secured to certain of the coin selecting plates the free ends of which levers are in en-

gagement with the magazine coin slides to withdraw such slides when the external key is depressed, and a coin occupies certain of the selecting plates, means for delivering coins from certain of the selecting plates to a cash box situated alongside of the magazines, and means for delivering coins from certain other of the selecting plates to the coin magazines.

5. A change giving fare-box comprising a locked casing having a coin receiving aperture toward the upper part and a change delivery aperture toward the bottom, a receiving plate and means for tilting the same, coin selecting plates consisting of a series of pivotally mounted plates stepped one below the other from the wider on one side to the narrower on the other, means for depressing one of said plates on which a coin may rest, a series of coin magazines beneath, means for delivering a coin from any one of said plates into a corresponding coin magazine beneath, and means for delivering a coin from the plates into a general cash receptacle when the magazine to which it should otherwise deliver is full, and means for withdrawing a coin or coins from the magazines as the plates are depressed.

6. A change giving fare-box comprising a casing having coin receiving and change delivery apertures, a receiving plate, means for tilting the receiving plate, coin selecting plates within the casing, means for depressing one of said plates on which a coin may rest, a series of coin magazines beneath said plates, means for delivering a coin from any one of said plates to a corresponding coin magazine beneath, means for delivering a coin from the plates into a general cash receptacle at times, means for withdrawing a coin or coins from the magazines, said means being cooperative with the plates as they are being depressed, substantially as shown and described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

DONALD G. McKENZIE.

Witnesses:

ROWLAND BRITAIN,
CLIVE S. CARMAN.