V. WHITAKER.

STREET CAR FARE BOX.

APPLICATION FILED SEPT. 13, 1912.

1,072,891.

Patented Sept. 9, 1913.

3 SHEETS—SHEET 1.

Fig. 1.

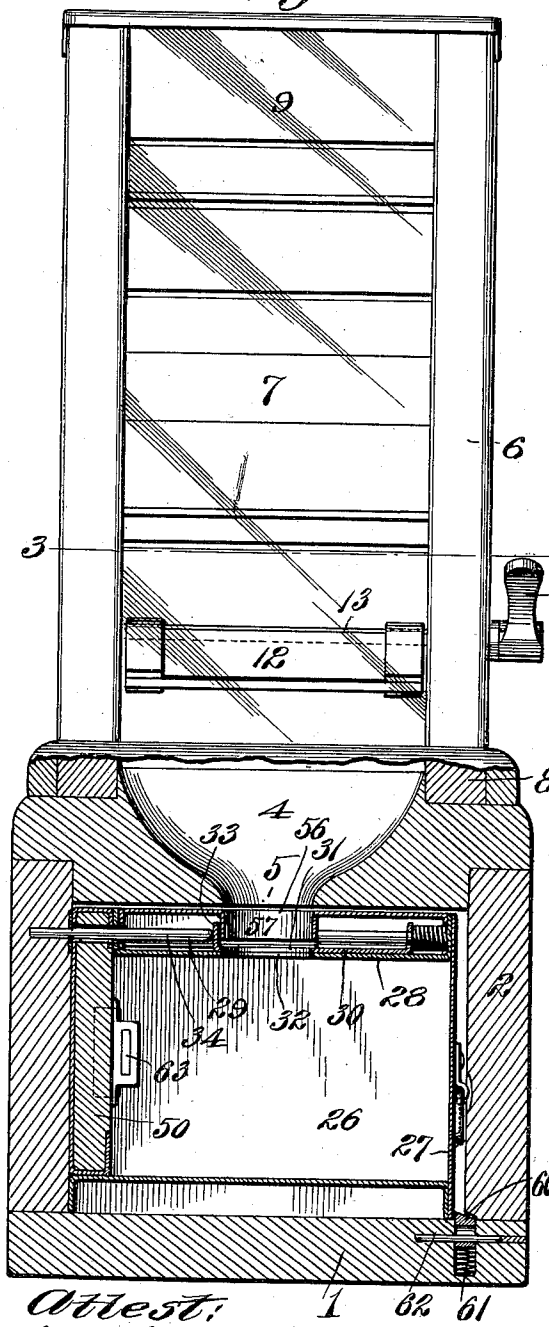
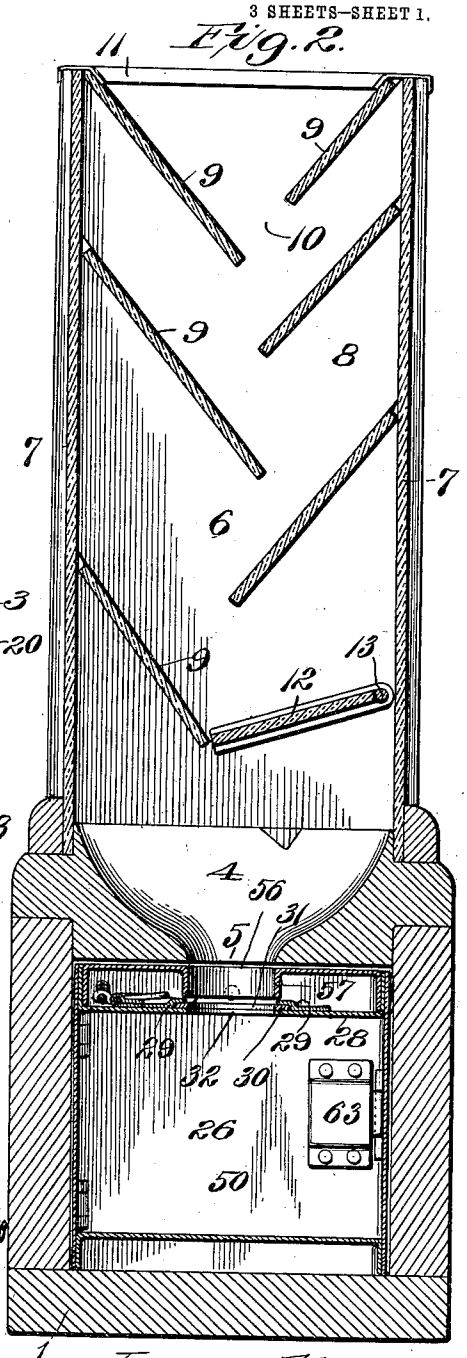


Fig. 2.



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COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

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3 SHEETS—SHEET 2.

Fig. 3.

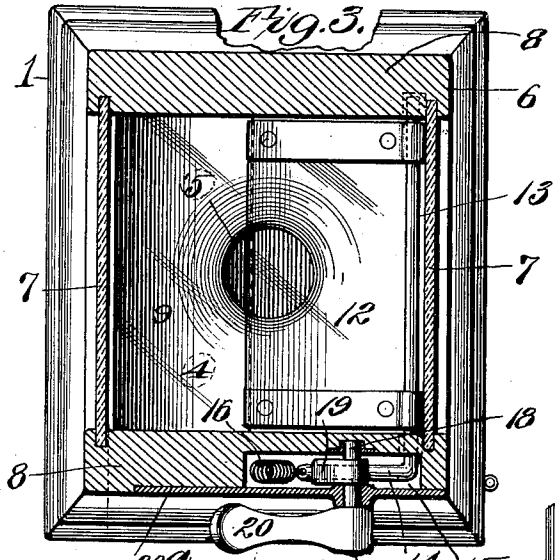


Fig. 4.

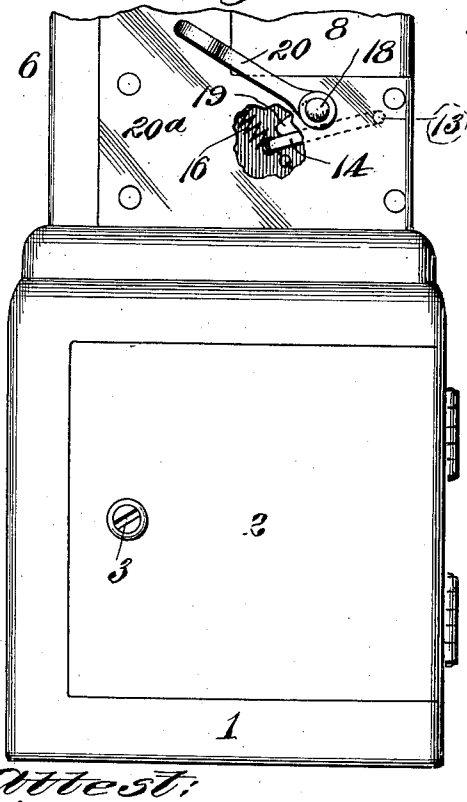
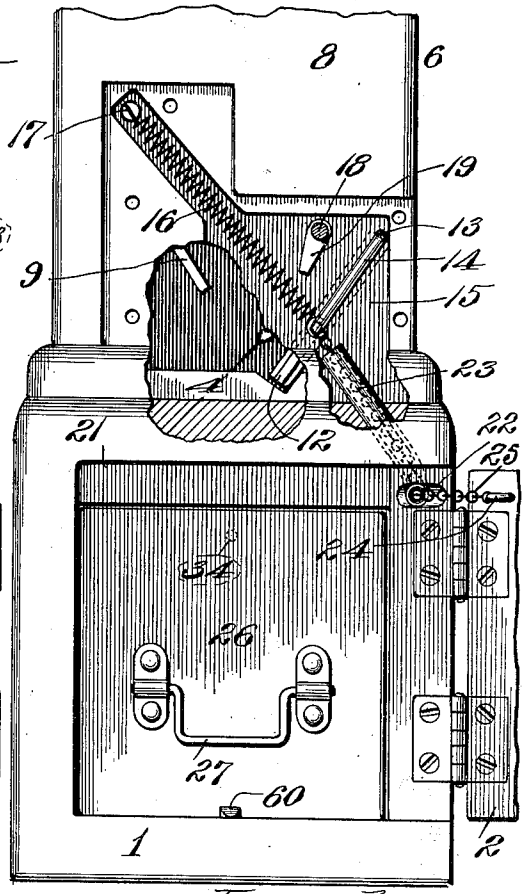


Fig. 5.



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3 SHEETS—SHEET 3.

Fig. 6.

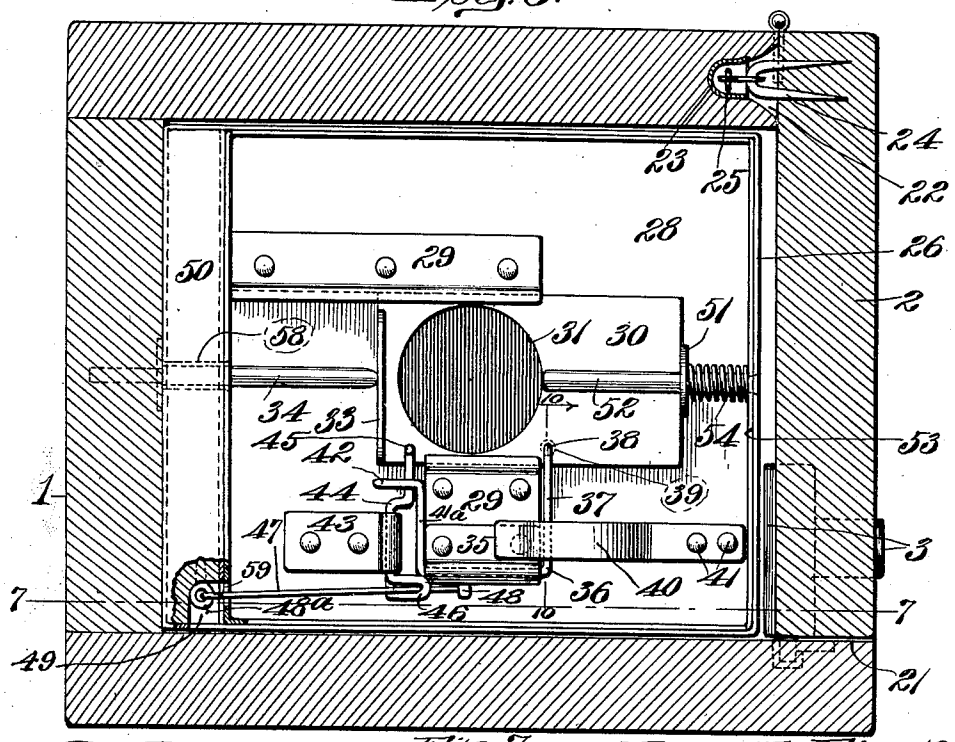


Fig. 7.

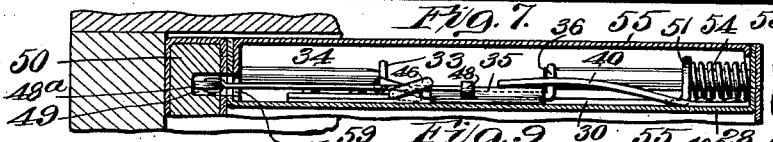


Fig. 10.

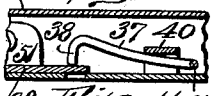


Fig. 9.

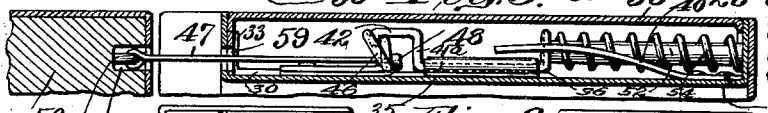


Fig. 11.

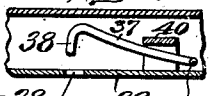
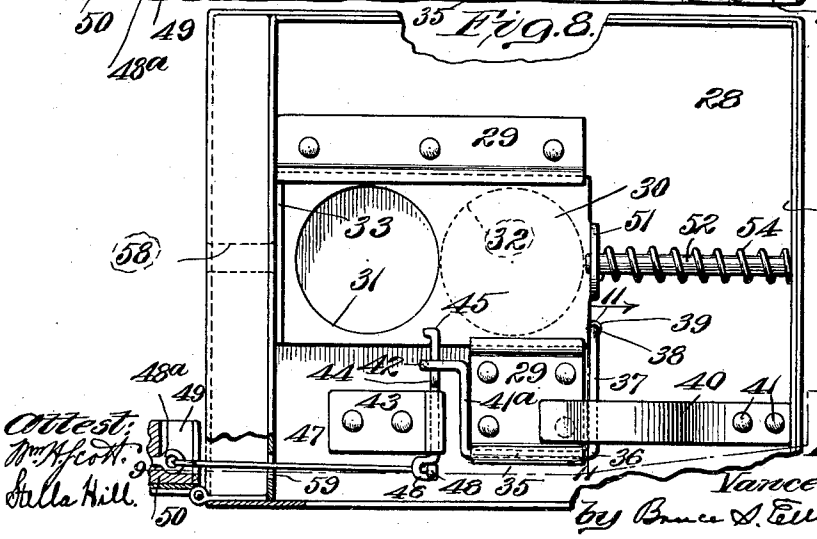


Fig. 8.



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UNITED STATES PATENT OFFICE.

VANCE WHITAKER, OF ST. LOUIS, MISSOURI.

STREET-CAR FARE-BOX.

1,072,891. Specification of Letters Patent. Patented Sept. 9, 1913.

Application filed September 13, 1912. Serial No. 720,139.

To all whom it may concern:

Be it known that I, VANCE WHITAKER, a citizen of the United States, residing in the city of St. Louis and State of Missouri, have invented new and useful Improvements in Street-Car Fare-Boxes, of which the following is a specification.

This invention relates to fare boxes for the cars of street railways.

My improved fare box is of the type in general use on the cars of St. Louis, and perhaps on the cars of other cities, and comprises, generally, an upper portion in which the fares are deposited, which is provided with a series of glass slides arranged in the form of baffles, so that while coins or tickets can readily pass by them and eventually be deposited in the cash box, it is practically impossible for any one, by inserting a wire or other device through the top, to remove deposited coins or tickets. At the bottom of the fare box a casing is provided which is closed by a door having a lock, and in this casing is placed the cash box for receiving the deposited coins, said cash box also having a lock. Quite a number of keys are provided for the outer door of the fare box, as the exigencies of the service require that a number of persons be intrusted with these keys. Only a few keys, however, are made for the cash box, as these cash boxes, when removed from the fare boxes, are taken into the office and opened by the treasurer, or other officer, who alone is intrusted with the key to the cash boxes. Heretofore dishonest conductors have found it possible, either to obtain a key to the fare box by connivance with someone intrusted with such key, or else by having a duplicate key made. As these fare boxes are now constructed, one or more of the baffle plates are moved by a lever or similar device so that the deposited fare does not pass into the cash box until such levers are manipulated. Under these circumstances, and provided with a key to the fare box, the conductor can open the fare box and remove the cash box, and then, by inserting his hand in place of the cash box, and turning the plate supporting the coins, cause them to be deposited in his hand, after which he reinserts the cash box and closes the door of the fare box.

My invention has for its general object to provide a fare box which cannot be opened, or tampered with, by an unauthorized person without the fact that he has done so becoming known, and provides a double protection for the fare box, in that the outer door cannot be opened without depositing in the cash box all the coins that may be held in the upper part of the fare box; and, secondly, should the conductor open the door of the fare box and remove the cash box it will be impossible for him to return the cash box, unless he has also a key to the cash box, and therefore the fact that the fare box has been opened will become apparent as soon as an authorized person visits the car at the end of a trip for the purpose of removing the cash box. In fact, unless the conductor attempting to rifle the box has succeeded in obtaining a key to the cash box he cannot possibly remove any money from any part of the fare box unless by breaking the same. The chance of a conductor obtaining one of the genuine keys to the cash box is so remote that it may be disregarded, because it would involve complicity with an officer of the company. On the other hand, it will be impossible for the conductor to remove the cash box to get an impression of the lock for the purpose of making a false key without the fact that the cash box has been removed becoming known. This latter result is accomplished through the medium of mechanism carried by the cash box which automatically sets itself on the removal of the cash box from its casing, so that it cannot again be inserted in the casing until the door of the cash box has been opened.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 shows the upper part of the fare box in front elevation, and the lower part, or casing, containing the cash box, in transverse section; Fig. 2 is a central cross sectional view of the device; Fig. 3 is a horizontal sectional view on the line 3—3 of Fig. 1; Fig. 4 is a view in side elevation of the lower part of the fare box, part of the casing being broken away to illustrate the mechanism for manipulating the lower coin-supporting plate; Fig. 5 is a view similar to Fig. 4, showing the door of the fare box opened, and a cover plate on the side of the casing removed to illustrate the mechanism for lowering the coin-supporting plate to deposit the coins in the cash box when the door of the fare box is opened; Fig. 6 is a horizontal sectional view, on an enlarged

scale, showing in plan view the top of the cash box; Fig. 7 is a section on the line 7—7 of Fig. 6; Fig. 8 is a top plan view of the cash box in the position of the parts as they appear after the door of the cash box has been opened; Fig. 9 is a sectional view on the line 9—9 of Fig. 8; Fig. 10 is a sectional view on the line 10—10 of Fig. 6; and Fig. 11 is a sectional view on the line 11—11 of Fig. 8.

Referring now to the drawings, 1 indicates the base of the machine, which is in the form of a casing, provided with a hinged door 2 adapted to be secured by a lock 3. The top of the casing 1 is made relatively thick, and is provided with a cup-shaped recess 4, which terminates in a reduced orifice 5 which is located immediately above an opening in the cash box to be later referred to. Mounted on the top of the casing 1 is a rectangular superstructure 6, which is provided at its front and back with glass plates 7, the sides 8 being of wood, metal, or any other suitable material. Extending between the side plates 8, and arranged in the manner shown in Fig. 2, are a series of baffle plates 9 which are of the usual construction, except that I make the space 10 between the two upper plates sufficiently wide to permit a coin of the highest denomination that will ordinarily be used, viz., a quarter dollar, to pass through while on edge. In this type of fare box this space is usually much narrower, and it frequently occurs that a coin will stop on the upper plates and will be appropriated by a dishonest conductor. The superstructure, or upper casing 6, is, of course, open at its top, as indicated at 11, so that coins and tickets may be inserted by the passengers as they enter the car. Coöperating with the lower baffle plate 9 is a coin-supporting plate 12 which is fixedly secured on a rock shaft 13, pivotally mounted at opposite ends in the sides 8. At one side of the box the rock shaft 13 is bent at right angles to itself to provide a lever-arm 14 which works in a recess 15 provided in the side plate 8. Secured to the outer end of the lever-arm 14 of the rock shaft is one end of a coil spring 16, the other end of which is secured in the upper end of an extension of the recess 15, as indicated at 17. Pivotally mounted in the walls of the recess 15 is a short shaft 18 having secured thereon a crank arm 19 working within the recess 15, and a push lever 20 located on the outside of the casing. The crank arm 19 is adapted to engage the lever-arm 14 of the rock shaft when the push lever 20 is depressed, and this movement turns the supporting plate 12 downward to allow the coins thereon to fall into the recess 4 in the top of the casing 1. The spring 16 returns the plate 12 to normal position when the push lever is released. In such position its outer edge lies closely adjacent to the lower end of the bottom baffle plate 9 to prevent fares from falling off of the supporting plate. A plate 20^a is removably secured on the side of the casing 6 covering the parts mounted in the recess 15, and forming one of the walls of said recess, and consequently one of the bearings for the shaft 18. The side of the casing 1 is recessed, as indicated at 21, to enable the door 2, when closed, to lie flush with the outer face of the casing, and opening into this recess 21 is a smaller recess 22 located near the top of the casing, into which projects the bent end of a guide tube 23. At the top of the door 2 of the casing 1, and near the inner edge thereof, there is provided a staple 24 to which is connected one end of a chain 25, which chain passes through the tube 23, and has its other end connected to the outer end of the lever-arm 14 of the rock shaft 13. The recess 22 provides a space for the reception of the staple 24 when the door is closed. When the door is opened the pull on the chain 25 draws down the lever-arm 14, and thereby throws the plate 12 downward, as indicated more clearly in Fig. 5, so that any fares resting on said plate will slide off of the same into the recess 4, and thence through the opening 5 into the cash box. As will be readily seen, the connection of the chain with the supporting-plate 12 is concealed from view, and one not knowing the construction will be unaware of the fact that the coins supported on the plate 12 will be discharged when the door 2 is opened. But whether he knows it or not, the result must inevitably follow, as there is no possible way, short of destroying the integrity of the structure, by which the door 2 can be opened without discharging the fares from the supporting-plate 12 into the cash box. The supporting-plate 12 is, of course, provided for the purpose of allowing the conductor to inspect the fare dropped in by the passengers to see that the correct amount has been deposited. After such inspection he then depresses the push lever 20 and lets the fares drop into the cash box.

I will next describe the construction by which I provide for preventing the reinsertion of the cash box after it has once been removed until the door thereof has been opened:

The numeral 26 indicates the cash box, which is preferably provided on its rear face with a swinging handle 27 to permit of its being readily withdrawn from the receptacle 1. The top 28 of the cash box is located in a plane below the upper edges of its side walls whereby a space is provided for the mechanism now to be described. Secured on the top plate 28 are two parallel guide members 29 slidably

mounted between which is a plate 30 provided near its outer end with a circular opening 31, which is of the same size as an opening 32 formed in the center of the top 28, and the size of these openings being preferably great enough to permit a half dollar to pass through the same. The outer end of the slide plate 30 is bent upward at right angles to provide a flange 33, which normally engages the outer end of a fixed pin 34, which is secured in the side wall of the casing opposite to that in which the door 2 is mounted. One of the guide plates 29 has its outer edge portion bent over upon itself, as indicated at 35, to provide a bearing for a bail 36, which is pivotally mounted therein, and has one arm 37 bent downward at its outer end to provide a projection 38 which is adapted to pass into an aperture 39 formed in the top plate 28. The arm 37 is normally pressed downward by the free end of a leaf-spring 40 secured at its other end to the top 28, as indicated at 41. The bail 36 has a second arm 41^a extending parallel to the arm 37, and bent outward at right angles to itself to provide an arm 42. Pivotally mounted in the end of a plate 43, secured on the top 28, is a trip lever 44 which, at its inner end, is bent inward and then outward at right angles to itself to form a crank arm 45 which projects under the arm 42 of the bail 36. The opposite end of the trip lever 44 is also bent upon itself to form a lever-arm 46, which likewise provides an eye through which works a rod 47 having on its outer end a stop 48 for engaging the lever-arm 46, and its other end being secured in a screw eye 48^a, the end of which is concealed in a recess 49 provided in the inner edge of the door 50 of the cash box. The plate 30, at its end opposite to that containing the flange 33, is provided with an upstanding lug 51 through which extends a guide pin 52 secured on the rear wall 53 of the cash box, and between this rear wall and the lug 51, and encircling the guide pin 52, is a coil spring 54 which normally tends to push the plate 30 outward, or to the position it is shown to occupy in Fig. 8. The numeral 55 indicates a cover plate which is firmly secured, as by solder, to the side walls of the cash box above the top plate 28, and with said top plate incloses the mechanism mounted on the top of the cash box, and likewise conceals the same from view. The cover plate 55 is provided with a central aperture 56 which, when the cash box is in position in the casing 1, is in alinement with the opening 5 in the top of said casing, and also with the openings 31 and 32 in the plate 30 and top 28, respectively. The opening 56 is surrounded by a depending annular flange 57 which extends downward almost to the surface of the plate 30, so that it is impossible for any one, by looking through the aperture 56, to discover how the mechanism mounted on top of the cash box works, as all of this mechanism is located to one side or the other of the flange 57. The front wall of the cash box, near the top thereof, which includes the flanged edge of the cover plate 55, is provided with an aperture 58 (see Figs. 1 and 6) to permit the pin 34 to pass into the space above the top of the cash box and engage the flange 33 of the push plate 30, and a similar aperture 59 (see Figs. 7 and 9) is provided in the side wall of the cash box above the top 28, through which the rod 47 extends. The cash box 26 is held in position in the casing 1 by means of a catch 60 mounted at the bottom of the base 1, and normally pressed upward by means of a spring 61, and being limited in its upward movement, while at the same time retained in its recess by means of a pin 62.

The parts being in the position shown in Figs. 1, 2 and 6, that is, with the cash box in the casing, and the door 2 of the casing locked, the operations involved in removing and inserting the cash box will now be described, first premising that in such position the plate 30 will be pressed inward by the pin 34 so that the spring 54 will be compressed, and the projection 38 of the arm 37 will rest upon the plate 30 and be prevented from passing into the aperture 39.

The operator inserts a key in the lock 3 and opens the door 2. This movement of the door, through the mechanism previously described, draws down the supporting-plate 12 and discharges any fares thereon into the recess 4, whence it immediately falls through the openings 5 and 56 into the cash box 26. This operation insures that no fares shall be left in the casing 6 to be subsequently appropriated by a dishonest conductor after the cash box has been removed. The door 2 being opened, the operator presses the catch 60 downward with his finger and grasping the handle 27, pulls the cash box out of the casing. As the cash box is pulled outward the pin 34 ceases to restrain the plate 30, and consequently the spring 54 presses said plate outward until the flange 33 engages the side wall of the box, at which time the projection 38 of the arm 37 will ride off of the front end of the plate, which will likewise have uncovered the aperture 39, so that said projection will be forced into said aperture by the spring 40. The door 50 of the cash box is provided with a lock 63. After the cash box is removed from its casing it is carried by the operator to the treasurer or other officer of the company, and he unlocks the door 50 and opens the same for the purpose of removing the money and other fares contained in the same. As the door 50 is opened the rod 47 is pulled outward and

the engagement of the stop 48 on the end of said rod with the eye or lever-arm 46 turns the trip lever 44 so that its crank arm 45 engages the under side of the arm 42 of the bail 36 and raises the same, thereby lifting the projection 38 out of the aperture 39, so that the plate will be free to pass under said projection in the return movement of the parts. The arm 42 is bent downward at its outer end, as will be readily understood, to limit the outward movement of the arm 45, and as the lever-arm 46 is carried slightly beyond a dead center by the movement of the rod 47 the parts will remain in the position to which they have been moved by said rod when the door 50 is again closed. When this has been done and the cash box is again inserted in the casing, the pin 34 passing through the aperture 58 engages the flange 33 and pushes the plate 30 inward against the resistance of the spring 54, and in this movement the flange 33 engages the end of the arm 42 and turns the trip lever 44 until the parts thereof are moved inward beyond the dead center, when the power of the spring 40 suddenly acts and completes the throw of the trip lever and presses the projection 38 down upon the plate 30. Now, when the cash box is again removed from the casing, the coil spring 54 will push the plate 30 outward until its inner end passes from over the projection 38 when the latter will spring into the aperture 39. We will assume that the cash box has been removed by an unauthorized person, who next attempts to replace it in the casing. It will be apparent that this cannot be done, for as the door 50 has not been opened to raise the arm 37 the projection 38 will still rest in front of the plate 30 and be in engagement with the wall of the aperture 39, and as the box is inserted the pin 34 will engage the flange 33 and prevent the cash box from being pushed all the way into the casing, as the plate 30 cannot yield. Even if the person who had unlawfully removed the cash box should discover the presence of the pin 34 and break it off so that he could insert the cash box, still, after such insertion, the aperture 32 would be covered by the plate 30 and no fares could pass into the box, and, under any circumstances, the fact that the fare box had been tampered with would at once be discovered at the end of the trip when the proper official opened the fare box to remove the cash box, or certainly at the end of the next trip as the fare box would necessarily be empty. As a matter of fact, however, there is nothing to indicate the presence of the pin 34, and even though the conductor, in trifling with the box, should discover its presence he would scarcely dare to remove it as the question of his detection would be certain at the expiration of the second trip at the outside.

It will be seen that the construction is exceedingly simple, and in practice, the operating mechanism being compactly arranged, besides being concealed from view, its presence would scarcely be suspected by one unacquainted with the construction, and there is nothing to give any hint as to the manner in which it is operated. Furthermore, the operative movements are so simple and direct, involving such slight wear on the parts, that there is very little likelihood of any of the mechanism getting out of order or wearing out even after long continued use.

It will be observed that when the cash box is in position in the casing its door is at the rear of the casing so that it is necessary to remove the cash box from the casing before its door can be opened.

I claim:

1. In a street car fare-box, in combination with a casing having a closable opening, a cash-box insertible in said casing and having a movable closure in its rear side and provided in its top with an opening, a slide-plate having an opening designed to register in one position of the plate with said opening, a stop in the casing adapted to engage said plate and to remove it to and hold it in the latter position when the cash-box is in the casing, means for moving said plate to cover the opening in the top of the cash-box when the latter is withdrawn from the casing, automatic mechanism acting to lock said plate in the latter position, mechanism operable by the closure of the cash-box, on opening the same, to release the locking mechanism, said plate being adapted to be moved by the stop on the casing to uncover the opening in the top of the cash-box upon its reinsertion in the casing after being opened, and means adapted to be engaged by said plate in its latter movement to re-set the locking mechanism.

2. In a street car fare-box, in combination with a casing having a closable opening, a cash-box insertible in said casing and having a movable closure in its rear side and being provided with an opening in its top, a spring-pressed slide-plate mounted on the top of the cash-box and provided with an aperture adapted to aline with the aperture in the cash-box, a stop in the casing adapted to engage said plate and to move it from its normal to the alining position described, said plate being movable by its spring to cover the aperture in the cash-box when the latter is drawn out of the casing, automatic mechanism acting to lock the plate in the latter position, mechanism operable by the closure of the cash-box, on opening the same, to release the locking mechanism, said plate being adapted to be engaged by the stop on the casing upon inserting the cash-box in the casing after opening the cash-box and to be moved to bring the said apertures in reg-

istry, and means adapted to be engaged by the plate in its latter movement for re-setting the locking mechanism.

3. In a street car fare-box, in combination with a casing having a closable opening and provided on its interior with a fixed pin, a cash-box insertible in said casing and having a movable closure and being provided in its top with an opening, the top of the casing being located below the plane of the upper edges of its side walls, the rear wall of the cash-box above its top being provided with an aperture for receiving said pin, a spring-pressed slide-plate mounted on the top of the cash-box and having an upstanding flange at one end and adapted to be engaged by the pin of the casing, said plate having an aperture adapted to be brought into alinement with the aperture in the top of the cash-box by engagement of the flange of the plate with said pin after the cash-box is inserted in the casing, and being moved by its spring to cover the aperture in the top of the cash-box and to have its flange cover the opening in the rear wall thereof upon withdrawal of the cash-box from the casing, automatic mechanism operating to lock the plate in the latter position, mechanism operable by the closure of the cash-box on opening the same to release the locking mechanism, and means adapted to be engaged by the plate when pressed back by said pin for re-setting the locking mechanism.

4. In a street car fare-box, in combination with a casing having a closable opening, a cash-box insertible in said casing and having a movable closure and being provided with an opening in its top, a spring-pressed plate slidably mounted on said top and having an opening adapted to register with that in the top, a fixed pin in the casing adapted to engage said plate and to move it to the latter position as the cash-box is inserted in the casing, a spring-pressed bail having a downward projection normally resting on the top of said plate, the top of the cash-box being provided with an aperture immediately under said projection, a pivoted trip lever, a second arm on said bail adapted to be engaged by said trip lever to raise the same, a rod secured at one end to the closure of the cash-box and operably connected with said trip lever, whereby, upon opening the door of the cash-box, the said trip lever will be turned to raise said bail, said plate, upon its movement to the registering position stated, being adapted to engage the trip lever to release said bail whereby, when the plate is pressed inward by its spring by removal of the cash-box from its casing, its end will pass from under the projection on the bail and allow the same to spring into the aperture of the casing whereby to lock the plate against further movement until the door of the cash-box has been opened.

5. In a street car fare-box, in combination with a casing containing a cash receptacle and above the same being provided with a movable support for temporarily holding the deposited fares, a door on said casing, and means operated by the door on opening the same for actuating said movable support to discharge the fares thereon into the cash-box.

6. In a street car fare-box, in combination with a casing containing a cash-box and above the same being provided with a pivoted fare-supporting plate, a push-lever for operating said plate at will, a door to said casing, and means operatively connecting said door and said supporting-plate whereby upon opening the door of the casing the plate will be turned to discharge the fares thereon into the cash-box.

In testimony whereof, I have hereunto set my hand in presence of two subscribing witnesses.

VANCE WHITAKER.

Witnesses:
BRUCE S. ELLIOTT,
STELLA HILL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."