H. E. REYNOLDS, DEC'D.

C. E. REYNOLDS, EXECUTRIX.

FARE RECEIVING AND REGISTERING APPARATUS.

APPLICATION FILED DEC. 5, 1916.

1,401,732. Patented Dec. 27, 1921.

3 SHEETS—SHEET 1.

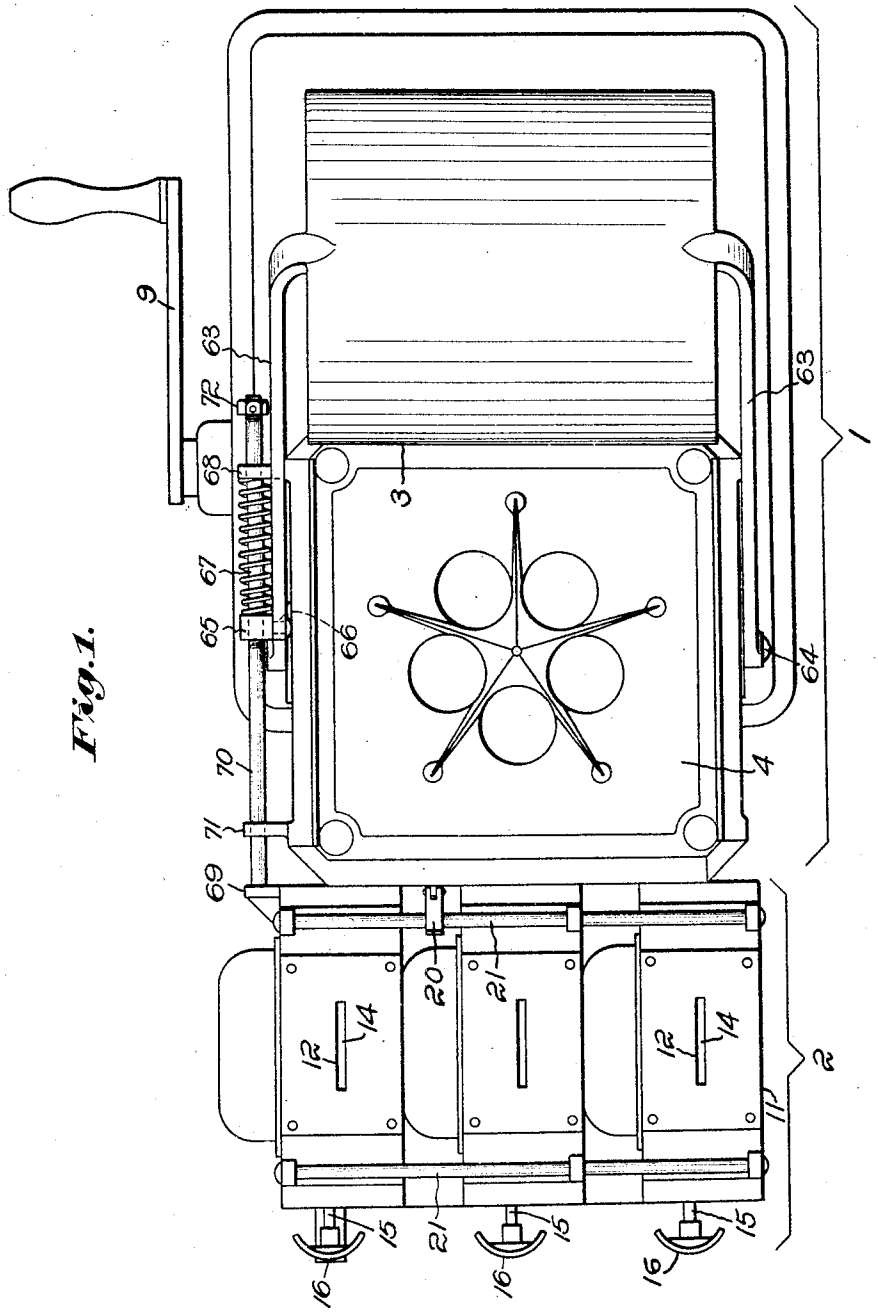


Fig. 1.

Inventor:
Henry E. Reynolds,
by Emery, Booth, Janney & Varney, Attys.

H. E. REYNOLDS, DEC'D.

C. E. REYNOLDS, EXECUTRIX.

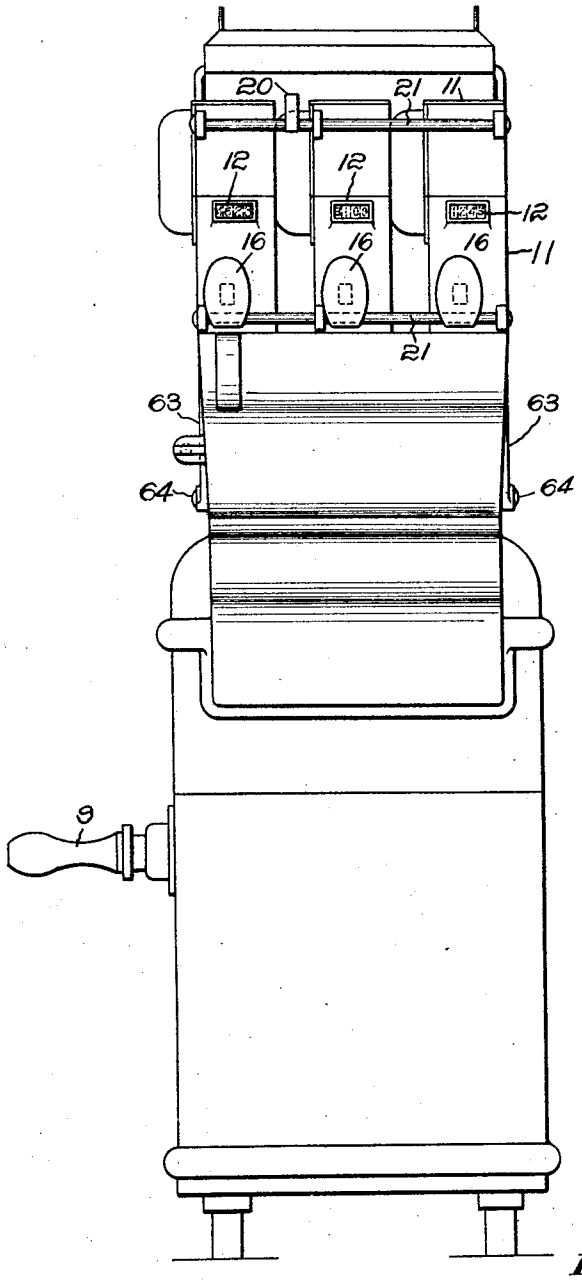
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3 SHEETS—SHEET 2.

Fig. 2.



Inventor:
Henry E. Reynolds,
by Emery, Booth, Janney & Varney.
Attys.

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3 SHEETS—SHEET 3.

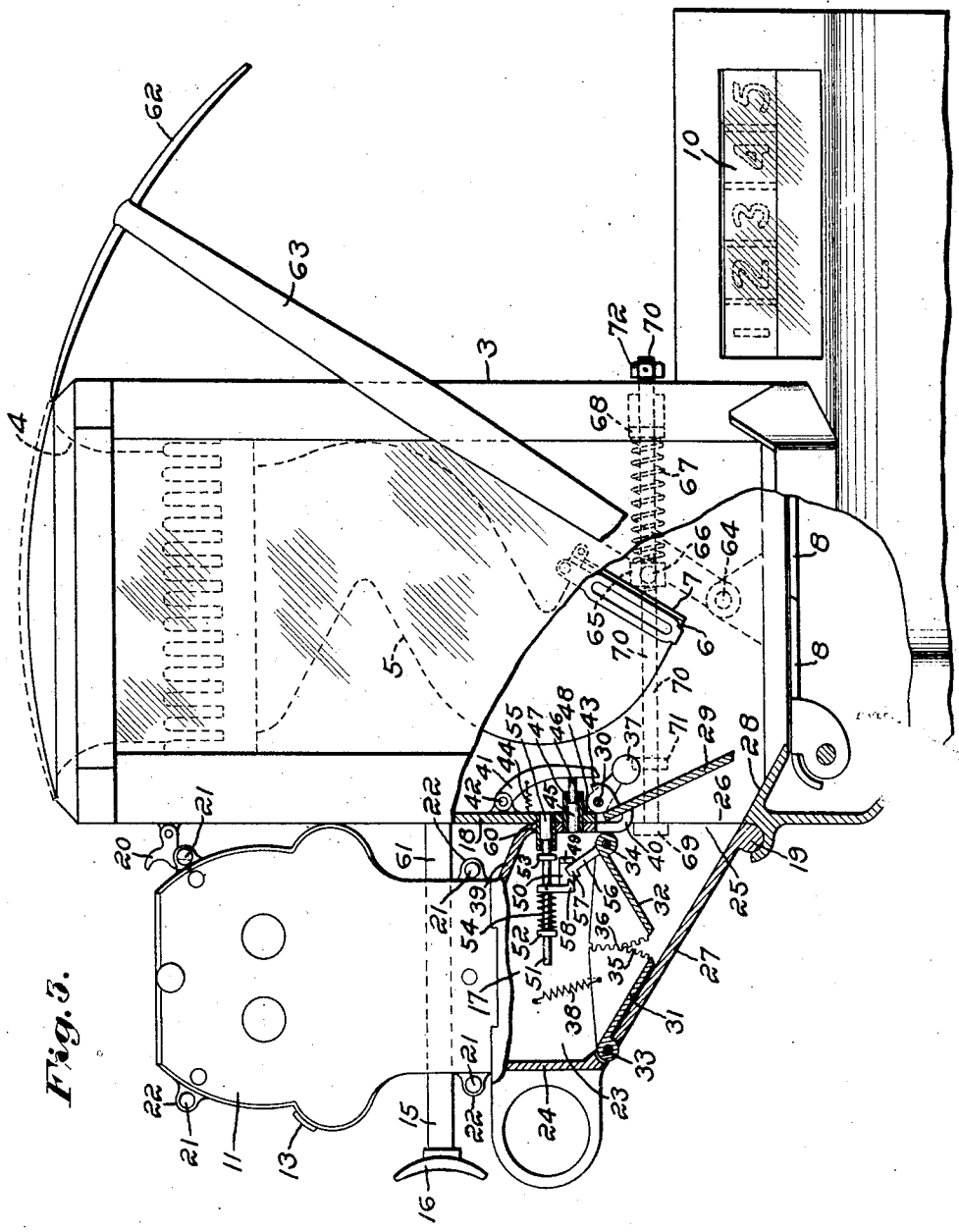


Fig. 3.

Inventor:
Henry E. Reynolds,
by Emery, Booth, Janney & Varney
Attys.

UNITED STATES PATENT OFFICE.

HENRY E. REYNOLDS, OF BRAINTREE, MASSACHUSETTS; CARRIE E. REYNOLDS EXECUTRIX OF SAID HENRY E. REYNOLDS, DECEASED.

FARE RECEIVING AND REGISTERING APPARATUS.

1,401,732. Specification of Letters Patent. Patented Dec. 27, 1921.

Application filed December 5, 1916. Serial No. 135,258.

To all whom it may concern:

Be it known that I, HENRY E. REYNOLDS, a citizen of the United States, and a resident of Braintree, in the county of Norfolk and State of Massachusetts, have invented an Improvement in Fare Receiving and Registering Apparatus, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to fare-receiving and registering apparatus, and is more especially concerned with an apparatus for receiving and registering fares in connection with the operation of railway cars over multi-collection or fare-zone routes where two or more fares are paid for passage from one point to another on the route.

My invention will be best understood by reference to the following description when taken in connection with the accompanying drawings of one specific embodiment thereof, while its scope will be more particularly pointed out in the appended claims.

In the drawings:

Figure 1 is a plan of one form of fare-receiving and recording apparatus embodying my invention;

Fig. 2 is a front elevation of the same on a somewhat reduced scale; and

Fig. 3 is a side elevation of a portion of the machine partly in vertical section.

Referring to the drawings, and to the illustrative embodiment of my invention which I have chosen for purposes of exemplification, I have there shown a fare-receiving and registering apparatus comprising a main fare-receiving and registering machine and a portable primary fare-receiving and registering machine designated generally by the numerals 1 and 2, respectively, in Fig. 1. The main machine is normally stationary, being usually mounted in fixed position adjacent the entrance of the railway car, and usually in a vestibule forming a part of the latter. In some cases, however, cars are provided with two vestibules, one of which is used as an entrance when the car is traveling in one direction, and the other when the car is traveling in the opposite direction. Under such circumstances, the machine is transferred from one vestibule to the other, but in its normal use is stationary, and is so considered herein with reference to its use.

The main fare-receiving and registering machine may be of any suitable or usual and well-known type, but I have herein selected for illustration a common form of machine known as the International money counting fare box, manufactured by the International Register Company. The general characteristics of the main machine herein shown are the same as those of the well-known International money counting fare box, the same comprising generally a fare-receiver 3 provided with a hopper 4, into which the passenger deposits his fare, the latter then gravitating through a tortuous tube 5, having at its lower end a discharge opening 6, normally closed by a spring-pressed cover 7, which opens to allow the coin or coins to emerge, and then closes to prevent the coins from being withdrawn in an upward direction. The coins gravitate onto a pair of hinged trap-doors 8, whereupon the conductor, by the use of a crank 9 swung in one direction opens the trap doors to release the coins into the counting or registering mechanism, after which rotation of the crank in the opposite direction causes the counting or recording mechanism to register the number of fares on a counter or indicator, designated generally by the numeral 10. The further details of the registering mechanism are too well-known to require further description herein.

The portable primary fare-receiving and registering machine 2 may include any suitable or usual and well-known form of machine, but I have selected for illustration herein a common form of portable device known as the Rooke automatic register, which is manufactured by Rooke Automatic Register Company, under United States Letters Patent No. 625,418, dated May 23, 1899, No. 629,471, dated July 25, 1899, and No. 690,079, dated December 31, 1901, the last-mentioned patent showing substantially the commercial form of the machine. The Rooke machine comprises generally a casing or housing 11, which serves as a fare-receiver, and is provided with a fare-receiving opening 12, the casing also serving as a housing for a suitable fare counting or registering mechanism including a counting device or indicator 13. The coin-receiving opening 12

is normally closed and locked against the introduction of coins by a suitable closure 14, which is unlocked and opened by the use of a finger-operated plunger 15, provided with a finger piece 16. After the plunger 15 has been pressed inwardly to permit the introduction of the coin, the latter is carried through the machine and operates its registering mechanism, after which the coin is delivered through a suitable outlet at 17 in the base of the machine. It is unnecessary herein to show or describe the further details of the Rooke machine, since the latter is too well known to require further description.

This portable primary fare-receiving and registering machine, of which the Rooke device typifies a part, is readily attachable to and detachable from the main fare-receiving and registering machine, with the end in view that the portable primary machine may be detached from the stationary main machine, and carried by the conductor throughout the car to receive and register a subsequent fare or fares for a subsequent fare zone or zones, following the depositing and registering of the initial fare in the main machine. Such additional fare or fares having been collected and registered in the primary machine, the latter can then be returned and attached to the main machine and there caused to discharge its fares into the latter, where they may be recorded with the other fares therein. It is desirable under some conditions that, when the primary machine is attached to the main machine, it shall be incapable of receiving fares, and on the other hand, that when it is detached from the main machine, the latter shall be rendered incapable of receiving fares, so that it shall be impossible for any mistake to be made in the deposit of fares in the wrong machine. The use of the primary machine also makes it possible for the various fare zones to be separately classified and registered. so that the company may be kept advised of the proportional income derived from each fare zone. It is also desirable that, when the primary machine is attached to the main machine, provision shall be made for the discharge of fares from one into the other, while, on the other hand, when one is detached from the other, both shall be locked to prevent fares from being extracted therefrom, until such time as the machines have been united and the fares collected in the primary machine registered in the main machine. To these ends, the well-known Rooke and International machines here used by way of illustration are, in accordance with my invention, modified and reconstructed in the manner which I will now describe.

The fare receiver 3 of the main machine 1 is herein provided with a front wall 18, to which the primary portable machine may be attached by suitable means. Herein the means of attachment are in the form of a detachable hinge 19 and a latch 20. By simply releasing the latch 20, the primary portable machine may be swung in an outward direction on its hinge 19, and removed from the main machine. The primary portable machine may comprise one or more fare-receiving and registering units, each with its own fare-receiving compartments and fare-registering mechanism, and herein I have shown three such units grouped together and secured to one another by suitable means, so that they constitute in effect a multiple, portable cash collector or machine, each unit or compartment of which is adapted separately to receive, classify and record the fares of different fare zones. In the present instance, these units are secured to one another by a plurality of rods 21 passing through ears 22 formed on the housings of such units. One of these rods may, and herein does, serve as a convenient coöperating member for a latch 20.

The several units just described may discharge into a common chamber or hopper 23, formed as a part of a housing 24 suitably attached to and forming a base for the units. This housing is herein provided with a discharge opening 25, normally registering with a fare-receiving opening 26, formed in the wall 18 of the main machine, these registering openings providing for the discharge of fares from the primary portable machine into the main machine when the two are juxtapositioned, or secured together as illustrated in Fig. 3. The housing 24 is herein provided with a downwardly inclined bottom wall 27, to facilitate the discharge of the coins from the primary portable machine, while the main machine is herein provided with a similar downwardly inclined wall 28, in effect a prolongation of the wall 27, and serving as a chute down which the fares are delivered onto the trap doors 8.

Normally, the chamber 23 of the primary portable machine is in communication with the interior of the fare receiver 3 of the main machine. As before stated, however, it is desirable that when the primary portable machine is removed from the main machine, the normally communicating parts of both shall be closed and locked. To this end, the opening 26 is provided with a closure 29, in the form of a door hinged at 30, while the chamber 23 is provided with a closure in the form of a pair of doors 31 and 32, pivoted respectively at 33 and 34, and caused to move in unison by means of segmental gears 35 and 36, meshing with each other and carried by the doors 31 and 32 respectively. Suitable means, herein a counterweight 37, constantly tends to move the door 29 to its closed position,

while suitable means, herein a spring 38, constantly tends to move the doors 31 and 32 to their closed position.

As a means for normally holding the door 29 open, the adjacent wall 39 of the primary portable machine is herein provided with automatic opening means shown as a laterally projecting lug 40, which engages said door near its hinge.

When this lug is removed by taking away the primary portable machine, the mere act of removing the latter causes suitable means to lock the door 29 automatically, and to hold said door locked until again unlocked by the application of the primary portable machine to the main machine. Any suitable means may be employed for this purpose, but herein the main machine is provided with a pawl 41, fulcrumed at 42 within the fare receiver 3, and adapted to engage a tooth 43 formed on or secured to the door 29. A suitable spring 44 constantly tends to pull the pawl into position to engage the tooth 43, thereby to lock the door 29 closed. This pawl, however, is normally held out of engagement with the tooth by suitable means carried by the primary portable machine, the latter being herein provided for that purpose with locking and unlocking means in the form of a pin 45, constituting a species of key normally engaging a similar pin 46 carried by the pawl. The locking and unlocking means may be provided with suitable protecting means, herein exemplified by a sleeve 47 secured to the wall 39, and surrounding and projecting outwardly beyond the outer end of the pin 45. When the primary portable machine is applied to the main machine, this sleeve is adapted to enter an aperture 48 in the adjacent wall 18 of the main machine. The surrounding portion of this wall serves as a protecting means for the locking and unlocking pin 46, when the primary portable machine is removed from the main machine.

The doors 31 and 32 may be held normally open against the tension of the spring 38 and the action of gravity by any suitable means, herein a movable lug 49 carried by a generally U-shaped member 50, the latter being secured to and carried by a rod 51, sliding in suitable bearings 52 and 53 supported on the casing 24. A suitable spring 54 herein encircling the rod 51 bears at one end against the bearing 52, which constitutes a fixed abutment therefor, and at its other end against the member 50, and this constantly tends to move said rod in an outward direction. This tendency may be normally resisted by any suitable means, herein a pin 55 secured to the adjacent wall 18 of the main machine, and having its outer end abutting against the outer end of the rod 51. When the primary portable machine is detached from the main machine, the spring 54, being no longer resisted by the pin 55, moves the rod 51 and lug 49 carried thereby toward the right. The lug 49 engages an arm 56 secured to the door 32, and this controls the action of both doors. When, therefore, the lug 49 moves toward the right, Fig. 3, the arm 56 will follow said lug, and the doors 31 and 32 will be closed by the action of the spring 38. Any suitable means may be provided for automatically locking said doors in their closed position, but in the present instance, I employ a lug 57 carried by the arm 56 and coöperating with a suitable latch 58 carried by the member 50, the arrangement being such that when the latter moves toward the right under the influence of the spring 54, the lug 57 will be carried in an upward direction by the closing of the doors into interlocking engagement with the latch 58. Thus, it is apparent that by the mere act of removing the primary portable machine, the doors 31 and 32 are automatically closed and locked, and remain locked until unlocked and opened by the application of the primary portable machine to the main machine. When this occurs, the pin 55 serves as a key or unlocking means to move the rod 51 in an inward direction, thus first unlocking the doors 31 and 32 by the action of the latch 58, and then opening them by the action of the lug 49. The key or unlocking device 55 may be provided with any suitable protecting means, herein a sleeve 59 secured to the wall 18 and encircling and projecting outwardly beyond the end of said key. This sleeve herein normally projects through an orifice 60 in the adjacent wall of the casing 24 of the primary portable machine, the surrounding portion of said wall constituting a protecting means for the outer end of the pin 51, which forms a part of the unlocking means.

It is now apparent that, in the selected embodiment shown, when the primary portable machine is removed from the main machine, the mere act of detaching one from the other serves automatically to cause the doors 29, 31 and 32, automatically to close and lock, and that, on the other hand, when the primary portable machine is again applied to the main machine, the mere act of attaching the one to the other serves automatically to unlock and then open said doors, to place them in readiness for the discharge of fares from the primary portable machine into the main machine.

Any suitable means may be provided for preventing the introduction of fares into the fare-receiving openings 12 of the primary portable machine, when the latter is attached to the main machine. In the Rooke device, which is selected for illustration, the closure 14 for the coin-receiving opening 12 is operated by the plunger 15,

so that when the finger piece is moved in an inward direction, the closure is unlocked and opened. The plunger 15 is herein extended at 61 beyond the casing 10, and normally engages the face of the walls 18 of the main machine, so that the latter locks the plunger, and hence prevents the introduction of fares into the primary portable machine, until the latter has been removed from the main machine.

It is desirable that when the primary portable machine is removed from the main machine, the latter shall be closed against the introduction of fares into the hopper 4, and to that end, the latter is herein provided with a suitable closure, for example 62, normally open as shown in Fig. 3, but adapted automatically to close the hopper by the mere act of removing the primary portable machine from the main machine. This may be accomplished in any suitable way, but herein the closure 62 is carried by a pair of arms 63, embracing the fare-receiver 3, and mounted on pivots 64. One of the arms 63 herein carries a block 65, which is pivoted at 66 to said arm, and constitutes a movable abutment for one end of a spring 67, the other end of which bears against a fixed abutment 68 on the fare receiver 2. This spring constantly tends to move the closure 62 from the position shown in full lines in Fig. 3 to the position indicated by dotted lines therein. This tendency is normally resisted by suitable means, herein an abutment 69, which is carried by the primary portable machine and engages the outer end of a rod 70 suitably connected to said closure. Herein, the rod 70 is secured to the block 65, and is guided in suitable guides. One of these guides is herein the abutment 68 already referred to, while the other is in the form of an ear 71 on the fare receiver 3. When the primary portable machine is detached, the removal of the resistance presented by the lug 69 to the action of the spring 67 permits the latter to carry the closure 62 into position across the hopper 4, and to hold said closure in such position until the primary portable machine is again applied to the main machine, whereupon the lug 69 reëngages the outer end of the rod 70 and acts in an obvious manner to move the closure into the position shown in Fig. 3. Any suitable means may be provided for limiting the outward motion of the rod 70 under the influence of the spring 67, but herein said rod is provided with an abutment in the form of a nut 72, threaded onto said rod and adapted to engage the abutment 68.

The general operation of the machine hereinbefore specifically described is as follows: Normally, the primary portable fare-receiving and registering machine is attached to the main stationary fare-receiving and registering machine, and the latter is in condition to receive initial fares to be deposited therein by the passengers as they enter the car. These fares are registered or recorded in the main machine in the usual and well-known manner. When the car reaches and passes the first fare limit, the conductor unlocks and detaches the portable machine from the stationary machine. By this mere act of removal, the doors 29, 31 and 32, are automatically closed and locked, the closure 62 is carried into position over the hopper 4, and the plunger 15 is freed, so that it can be operated by the conductor. The conductor then carries the portable machine about the car, presenting it to each passenger. As he does so, he prepares one or more of the fare-receiving openings 12 for the reception of fares by pressing the proper plunger or plungers 15 in an inward direction. The passenger deposits the proper fare or fares in the opening or openings 12, preferably it being understood that the number of fares which he will deposit will depend upon the distance which he is to travel to his destination. For example, if he is apt to pass through two fare zones, he deposits fares in two of the openings 12, which are preferably properly designated in accordance with the zones, so that the fares for each zone are separately classified. The fare or fares thus deposited by the passenger, in passing into the portable machine, are properly registered and discharged into the chamber 23, where they rest upon the then closed and locked doors 31 and 32. The conductor then repeats this operation with respect to each passenger, and having collected all of the fares, returns to his station at the vestibule, where he applies the portable machine to the main machine. The mere act of applying one to the other again unlocks and opens the doors 31 and 32, thus permitting the fares to be discharged into the stationary machine, where they may be registered for the second time. As already stated, the mere act of applying the portable machine to the stationary machine also serves automatically to open the closure 62 of the hopper 4 for the reception of fares, and at the same time, the extended terminal portions of the plungers 15 are brought into such relation with the wall 18 as to prevent said plungers from being operated to open the closures 14 until the portable machine is again removed from the stationary machine. Thus it is apparent that the conductor has no opportunity whatever to handle any of the fares until after they have been recorded, and furthermore, that there is no opportunity for a mistake to be made by the passenger depositing his fare into the wrong receptacle, since the apparatus is entirely automatic in its action.

While I have herein shown and described one specific embodiment of my invention for illustrative purposes, and have disclosed and discussed in detail the construction and arrangement incidental to one specific applica-

tion thereof, it is to be understood that the invention is limited neither to the mere details or relative arrangement of parts, nor to its specific embodiment herein shown, but that extensive deviations from the illustrated form or embodiment of the invention may be made, without departing from the principles thereof.

Having thus described my invention, what I claim and desire by Letters Patent to secure is:—

1. In a fare-collecting and registering apparatus, the combination of a main fare-receiving and registering machine and a portable primary fare-receiver each having an opening leading into the other for the discharge of previously collected fares from the primary fare-receiver to the main fare-receiving and registering machine, closures for said openings, locking means for said closures, means on said main fare-receiving and registering machine to operate the locking means of the closure of said primary fare-receiver, and means on said supplemental fare-receiver to operate the locking means of the closure of said fare-receiving and registering machine.

2. In a fare-collecting and registering apparatus, the combination of a main fare-receiving and registering machine and a portable primary fare-receiver each having an opening leading into the other for the discharge of previously collected fares from the primary fare receiver to the main fare-receiving and registering machine, closures for said openings, locking means for said closures, means on said main fare-receiving and registering machine automatically to operate the locking means of the closure of said primary fare-receiver by the mere attachment and detachment of one to and from the other, and means on said primary fare-receiver automatically to operate the locking means of the closure of said main fare-receiving and registering machine by the mere attachment and detachment of one to and from the other.

3. In a fare-collecting and registering apparatus, the combination of a main fare-receiving and registering machine and a portable primary fare-receiver each having an opening for communication with the other for the discharge of fares from the primary receiver into the main machine, closures for said openings, locking means for said closures, and protecting means for said locking means.

4. In a fare-collecting and registering apparatus, the combination of a main fare-receiving and registering machine, a portable primary fare-receiver initially to receive fares, means providing for the attachment of said primary fare-receiver to said main machine and its detachment therefrom, and means to prevent said primary fare-receiver from receiving fares while it is attached to said main machine.

5. In a fare-collecting and registering apparatus, the combination of a primary fare receiver initially to receive fares, a main fare-receiving and registering machine, means providing for the discharge of fares from said primary receiver into said main machine, and means to prevent said primary fare-receiver from receiving fares when in position for such discharge.

6. In a fare-collecting and registering apparatus, the combination of a main fare-receiving and registering machine, a portable primary fare-receiver having a fare-receiving opening and a closure for said opening, means providing for the attachment of said portable primary fare-receiver to said main machine and its detachment therefrom, and means to lock said closure in its closed position and prevent it from being unlocked while said portable primary fare-receiver is attached to said main machine.

7. In a fare-collecting apparatus, the combination of two fare-receivers, one attachable to and detachable from the other, and means operated by the attachment of one to the other to prevent the introduction of fares into the other.

8. In a fare-collecting apparatus, the combination of two fare-receivers one attachable to and detachable from the other, and means operated by the attachment of one to the other to prevent the introduction of fares into the one and to permit the introduction of fares into the other.

9. In a fare-collecting apparatus, the combination of two fare-receivers one attachable to and detachable from the other, and means operated by the detachment of one from the other to permit the introduction of fares into the one and to prevent the introduction of fares into the other.

10. The combination of standing and presentable primary fare collectors, the primary constructed to be applied to and discharged into the former for the collection of fares and for the discharge of such fares into said standing fare-receiver, said units having coöperating means governed by the application of said presentable primary unit to or its removal from said standing fare receiver for controlling the operation of said standing fare receiver and said presentable primary fare-receiving units.

In testimony whereof, I have signed my name to this specification.

HENRY E. REYNOLDS.

Certificate of Correction.

It is hereby certified that in Letters Patent No. 1,401,732, granted December 27, 1921, upon the application of Henry E. Reynolds, of Braintree, Massachusetts, for an improvement in "Fare Receiving and Registering Apparatus," an error appears in the printed specification requiring correction as follows: Page 5, strike out lines 108-119, comprising present claim 10, and insert the following as claim 10:

10. The combination of standing and presentable primary fare collectors, the primary portable collector being constructed to be applied to and discharged into the former.;

and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 7th day of March, A. D., 1922.

[SEAL.]

WM. A. KINNAN,

Acting Commissioner of Patents.