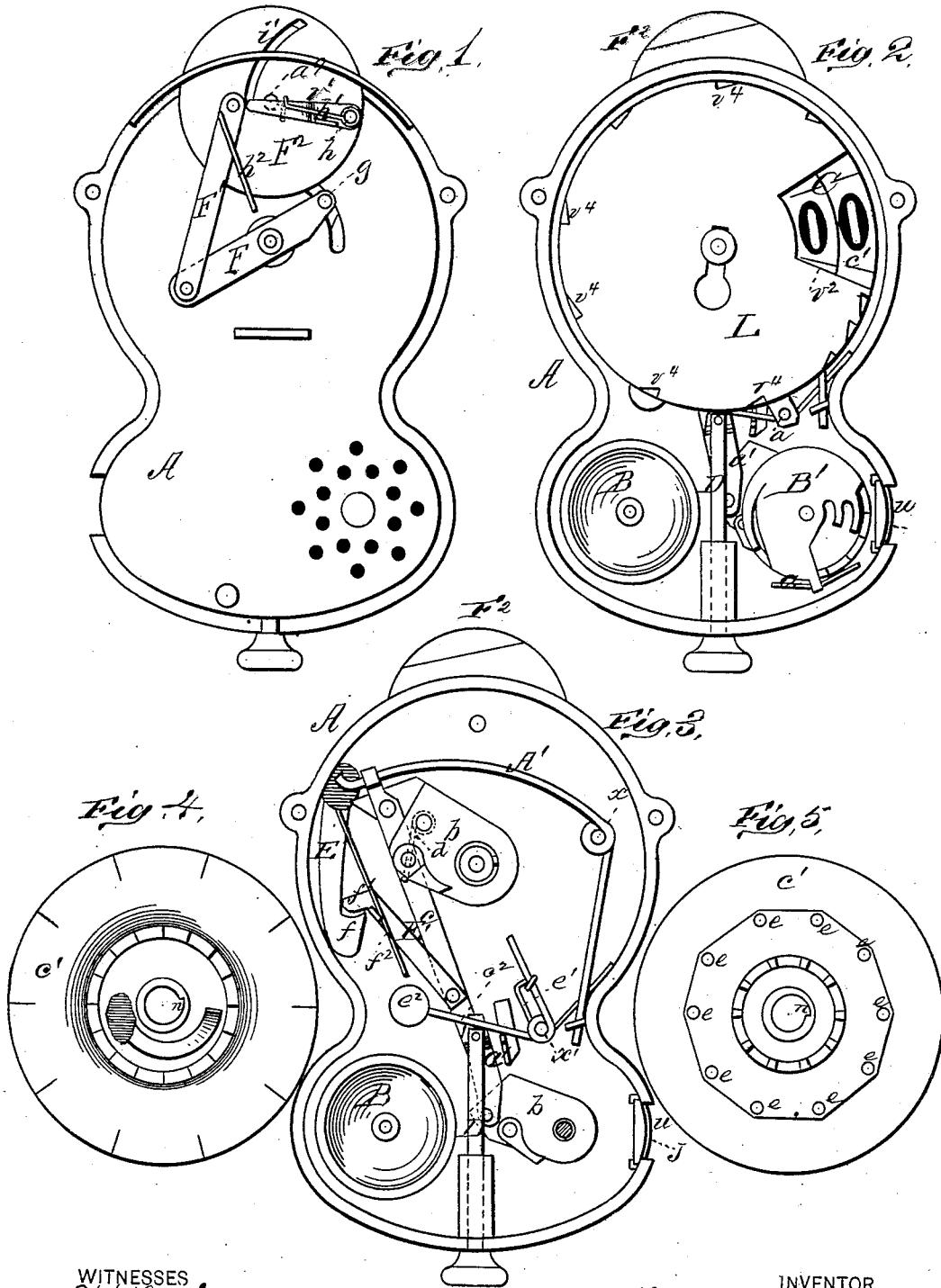


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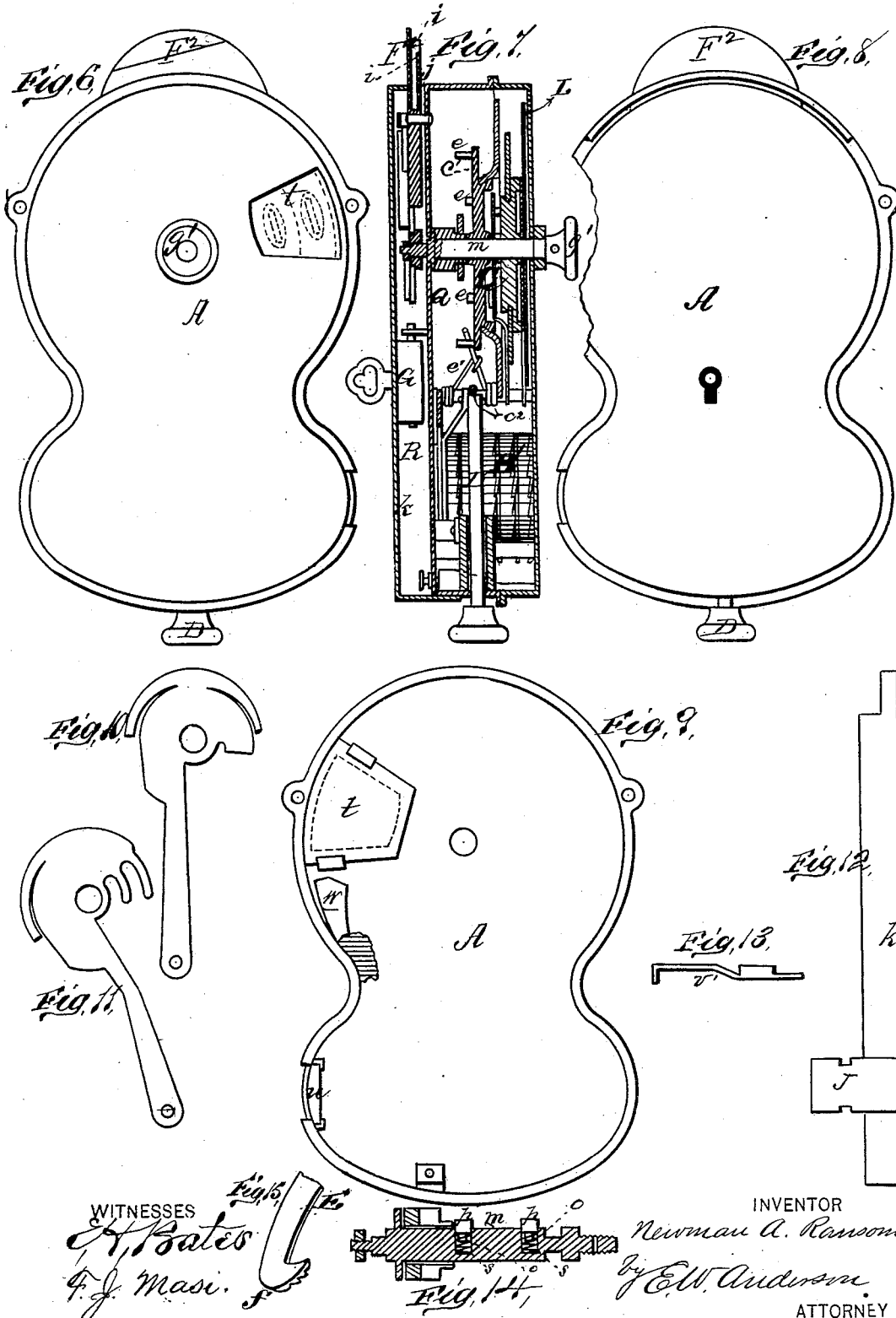


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## IMPROVEMENT IN FARE-REGISTER AND TICKET-RECEIVER.

Specification forming part of Letters Patent No. 203,773, dated May 14, 1878; application filed April 2, 1878.

*To all whom it may concern:*

Be it known that I, NEWMAN A. RANSOM, of Chicago, in the county of Cook and State of Illinois, have invented a new and valuable Improvement in Fare-Registers; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a face view of the register-case, showing the ticket-disk and operating mechanism. Fig. 2 is a top view of the register with the lid removed. Fig. 3 is a top view of the operating devices of the registers, the latter being removed. Figs. 4, 5, 10, 11, 12, 13, and 14 are detail views. Figs. 6 and 8 are front and rear views of the case. Fig. 7 is a longitudinal vertical section of the fare-register, and Fig. 9 is an inside view of removable cover of the register-case. Fig. 15 is a perspective view of the ratchet, showing the notches upon its under side.

This invention has relation to improvements in fare-registers for street and railroad cars and other vehicles, and various other uses where a tally account is wanted to be kept, from time to time, with convenience, dispatch, and safety from mistakes and frauds; and the nature of the invention consists in combining, with one or more registering mechanisms inclosed within a casing, a primary ticket-receptacle and a device, substantially as hereinafter described, which delivers or feeds a ticket into the said receptacle, and is actuated simultaneously with the alarm and registering mechanisms, being so connected therewith as to be operated by the same.

It also consists in means whereby the primary or trip register disks may be turned, when desired, and the zeros on said disks brought together under a glazed aperture in the casing, and meanwhile, when the disks are thus being turned, the view of the disks through the glazed aperture is shut off until the zeros arrive at the point desired, at which they are to be started afresh at the beginning of each trip or any part thereof.

It also consists in certain other novel com-

binations and parts, as will hereinafter be more fully set forth.

In the annexed drawings, the letter A designates a flat oblong metallic case, having in one end an alarm-bell, B, and a secondary or permanent general register, B'. At the other end of the case is the primary or trip register C. The register C has large plain figures upon its disks, which are seen in front of the glazed aperture aforesaid in the casing, and are used to show the number of fares taken or passengers carried between any two points on the road. This register is provided with means whereby the conductor may restart it (at zero only) when required, so that it will always indicate the number of passengers for the trip or part of a trip, as may be desired.

It will be more clearly shown farther on that this register can be started only at zero. Therefore the conductor is unable to make a false showing by it to defraud his employers. Hence an inspector is enabled by this plainly-visible register to compare the number of passengers with the credit given by the conductor to his employers without making himself known to the conductor, and thus honest conductors can be known and appreciated, while dishonest ones can be found out and dispensed with.

The register B' is a continuously-counting register, counting ten thousand or more, as desired, and while it is actuated simultaneously with the register C, yet it runs on without ever being reset, and is not changed by starting the other register afresh at zero. Thus it retains all of the tallies for all of the trips and parts of trips in one sum, so that nothing of the record is lost by restarting the other register, as aforesaid.

These registers do not differ essentially in their construction from that described in my Letters Patent No. 189,261, of April 3, 1877, except that, the cylindrical casing shown therein being dispensed with, the guard-plates are prevented from rotating by being engaged with the uprights *a*. In the said Letters Patent these plates engage a groove upon the inside of the said cylindrical casing.

The pawl-carriers *b*, which actuate the register-disks, are pivoted at one end to a connecting-bar, *c*, to which the plunger D is also connected by means of a link, *a*<sup>1</sup>, pivoted at one

end to the plunger D and at the other end to the pawl-carrier of register B'. The pawl-carriers *b* vibrate on the axis-posts of the registers B' C, the said posts being rigidly secured at one end to the back plate of the case and engaged in perforations at their remaining ends in the front plate thereof.

Plunger D is situated in a passage of suitable dimensions, which is provided at the bottom and on the inside of the back part of case A, by rigidly fastening a block of metal thereto and passing a drill through both. The plunger D extends outward through the bottom part of case A sufficiently, and is provided with a suitable knob or handle, by which it is operated. By drawing upon this plunger the registers B' C are actuated simultaneously, the plunger being retracted by the reaction of spring A', (engaged with the bar C,) which is coiled around a post, *x*, and bears at one end against the side wall of the casing. Being retracted, the pawls take hold afresh upon the ratcheted lower or units disks, and are held to such engagement, ready to reactuate the said disks, by means of the springs *d*.

The units-disk *c*<sup>1</sup> of the primary register C has ten equidistant cogs, *e*, upon its under side, one of which engages the power-arm of an angular vibrating alarm-hammer lever, *e*<sup>2</sup>, as often as the plunger D is operated, thereby drawing back the hammer and compressing its operating-spring *e*<sup>1</sup>, so that, as soon as the said lever *e*<sup>2</sup> is released by the cog *e* passing off therefrom, its hammer *e*<sup>2</sup> is brought sharply in contact with bell B, producing an alarm at the moment a fare is registered.

The hammer *e*<sup>2</sup> is made by rigidly fastening a suitable steel wire to a sleeve by coiling it around the sleeve and soldering it thereto, leaving two projecting arms of the wire, one of which serves as the power-arm aforesaid, and the other forms a suitable metallic ball to complete the hammer. This hammer is placed with its sleeve freely turning on a post, *x*<sup>1</sup>, which is rigidly secured at one end to the back part of case A, and has a small point at the other end, that engages a hole in the front part of case A.

Spring *e*<sup>1</sup> is formed with a coil surrounding the hammer-sleeve, and has two arms, one of which rests against the inside of the casing and the other engages the arm of the hammer *e*<sup>2</sup>.

E represents a ratchet with a beveled head, *f*, which has one or more notches in the under side thereof next to the inside wall of the back plate of the casing A, to which it is rigidly attached at its end opposite the head.

E' is a latch, pivoted at one end to the connecting-bar *c*, and provided with an angular head, *f*<sup>1</sup>. The heads *f* *f*<sup>1</sup> are held into engagement with each other by a spring, *f*<sup>2</sup>, and also with the side walls of the case A. As often as the plunger D is drawn out the head of the latch E' is passed up over the head of E, and is forced by the spring *f*<sup>2</sup> against the side wall. Upon the return of the

plunger the head of the latch E' passes under the head of the ratchet E, in contact with its notched edge, until the full back stroke of the plunger is had, when it again gets on top of the said ratchet, owing to the spring *f*<sup>2</sup>. If the plunger be stopped midway of the inward stroke, and it be attempted to draw it out again in registering a second fare, the edge of the head *f*<sup>1</sup> will be engaged with the ratchet-notch of *f*, and the outward movement of the plunger thereby prevented until the full inward stroke has been completed and the pawls upon the carriers re-engaged with their respective registers. The object of these devices is to prevent the secondary register from being operated without at the same time actuating the primary register simultaneously therewith. The necessity hereof is found in the fact that all machinery is likely to have more or less lost motion where there are joints and connections, and thereby the actuating-pawl of register B' might become engaged before that of register C, when, if the plunger were to be stopped at that point and then be again drawn upon, another number would be registered on B', but not on C'; but by the devices E E' *f* *f*<sup>1</sup> *f*<sup>2</sup> the plunger is prevented from being drawn outward again after it has moved inward enough to engage the pawl of the secondary register until it has gone far enough to pass the latch E' off from the ratchet E, when the pawl actuating the primary register will have also become engaged for the next registration.

The pawl-carrier of the units-disk of the primary register has upon its under side a spur, *g*, extending through a curved slot in the casing and engaging one end of a lever, F, having its fulcrum upon the outside of the register-case. The remaining end of the lever F is connected by a pitman, F<sup>1</sup>, to a metallic disk or feeder, F<sup>2</sup>, having in its edge a recess, *i*, of sufficient size to hold only a single ticket at a time. The ticket is made of any suitable material, shape, size, and thickness, being adapted to the recess *i* in the feeder F<sup>2</sup>, so that one ticket is fed freely, but no two such tickets can be fed at once. The feeder F<sup>2</sup> swings upon a stud, *a*<sup>3</sup>, in its center, stud *a*<sup>3</sup> being rigidly secured to the back plate Q of case A. The feeder F<sup>2</sup> has in its side, and opening into recess *i*, a curved slot, *i*<sup>1</sup>, in which the bent end of a vibrating striker, *v*<sup>1</sup>, swings. Striker *v*<sup>1</sup> is pivoted to F<sup>2</sup> on stud *h*, and is maintained at the inner end of slot *i*<sup>1</sup> by a suitable spring, *h*<sup>1</sup>, coiled around the head of *h* and rigidly secured thereto at one end, while the other end engages the arm of striker *v*<sup>1</sup>. The pitman F is provided with a projecting arm, *h*<sup>2</sup>, which comes in contact with the striker *v*<sup>1</sup>, near its bent end, as often as the ticket-feeder disk is swung by the operation of the plunger, causing the striker to swing round with its bent end at the outer end of the slot and push the ticket out of the recess into the receptacle.

The ticket-feeder disk projects through the

slot *j* in the wall of the receptacle R, of suitable dimensions, attached to the register-case, as shown in Fig. 7, by means of a suitable lock, G. This receptacle is made in the register-case, or is made separate and attached thereto, as may be preferred, and it consists of a box or a pouch, as preferred, being closed, in either case, by a suitably secure lock to prevent it from being opened by any one except the authorized person holding the key thereto. The receptacle is of such size and capacity as the case requires, holding as many tickets as are taken in one or more trips until reaching the receiving-office, where they are discharged.

The recess *i* of the ticket-feeder is partly outside of the receptacle, and a ticket is readily insertible therein. If the plunger be then operated, the mouth of recess *i* is swung inside of the receptacle and the ticket ejected from the recess into the receptacle by the striker aforesaid.

The ticket-feeder can only be actuated by operating the plunger, and consequently the registers and the alarm, and, as the feeder only holds one ticket at a time, for every ticket fed into the receptacle one fare must be registered and an alarm sounded. If cash fares are received, they are registered by operating the plunger, and the amount of cash fares due to the company from the conductor is then obtained by subtracting the number of tickets found in the receptacle from the whole number of fares registered, the remainder being the number of cash fares.

The hub of each of the disks of the primary register (of which there are two, units and tens) is provided with a notch, *n*, upon its inside surface, and the axis or post *m*, upon which the said disks rotate, has transverse recesses *o* on a level with each of the disks, in which are seated the catch-pins *p*, that are projected from the recesses, by the spiral springs *s*. These pins offer no obstacle to the rotation of the disks in registering fares; but when the axis is turned in the same direction as the said disks these pins enter the notches and abut against their square ends, and at this moment the zeros are in line with each other, and the rotation of the axis, being continued, causes the zeros to be brought opposite a glazed show-aperture, *t*, in the casing, when the primary register must start afresh, beginning with 1. This zero-gathering operation in the primary register has no effect whatsoever upon the secondary register, where, if, for instance, sixty-five fares had been registered previous to the said operation, the next fare registered on the primary register would make sixty-six fares on the secondary register. The condition of the latter is inspected through a glazed aperture, *u*, in the edge of the case A, which aperture is covered by a non-transparent guard, J, attached to the removable flanged plate *k*, which forms, with the register-case, the ticket-receptacle aforesaid.

Above the top disk of the primary register,

upon its axis-post *m*, is removably secured a non-rotating plate, L, which has upon its edge a slot, *v*<sup>2</sup>, through which the figures on the disks are seen when said slot is in line with the glazed aperture in the front of case A. This plate has upon its edge spaced serrations *v*<sup>4</sup>, which engage a spring-latch, *w*, on the casing, and prevent plate L from rotating in the opposite direction from the disks when registering, but allow it to turn freely with the post in the act of gathering the zeros in the same direction. The object of this is to prevent the conductor from deceiving a detective. For instance, the settling officer settles accounts with the conductor from the secondary register only. Now, the conductor carries the register on his breast, with the numbers on the primary register plainly visible to an inspector. Now, if he has forty fares registered, and then goes out on the platform and takes four more in cash, ringing a false bell or beater, he must run the register up to 44 to deceive the inspector. This he can only do by turning the knob—that is, if he does not actuate the plunger—and as soon as he does this the plate L conceals the figures on the register, so that he cannot see what figures are under the view-aperture, and as the said plate cannot be turned back, and the conductor is required to have the view-slot always open, it will be plain that “beating” is impossible.

The axis-post *m* protrudes outward from a suitable hole in the front plate of case A sufficiently to receive a suitable knob, *g*<sup>1</sup>, on the outside of the casing, by which it is turned in gathering the zeros. By giving the knob *g*<sup>1</sup> a slight turn the glazed aperture *t* is covered by plate L and the figures of register C concealed from view, and they can only be again exposed by turning the said knob and post a full revolution and gathering the zeros, as aforesaid. By this means, at the beginning of any trip or part thereof, register C may be started afresh with the view-slot and the zeros in line with aperture *t*, exposing the new trip or partial number as it is registered.

The case A, containing the devices above set forth, is designed to be worn by the conductor, when in use, on the breast, in full view of all present, and is provided with two ears or loops, one at the right edge and the other at the left edge, each consisting of a part of the back and front plates of case A, with a suitable hole through them, whereby they are connected by means of eyelets clinched therein or held in place by a nut on one side and a bead or a shoulder upon the other side, serving the double purpose of holding the case together securely closed and of suspension by inserting a ring into each of the eyelets, and then a strap attached to the rings, of suitable length, passes over the neck of the conductor. Case A is provided with suitable perforations for escape of sound about the alarm-bell B, and is further securely fastened or closed by means of a suitable lock, when deemed necessary, to prevent tampering.

