C. B. HARRIS.

Fare-Register.

No. 206,565. **Patented July 30, 1878.**

Fig 1

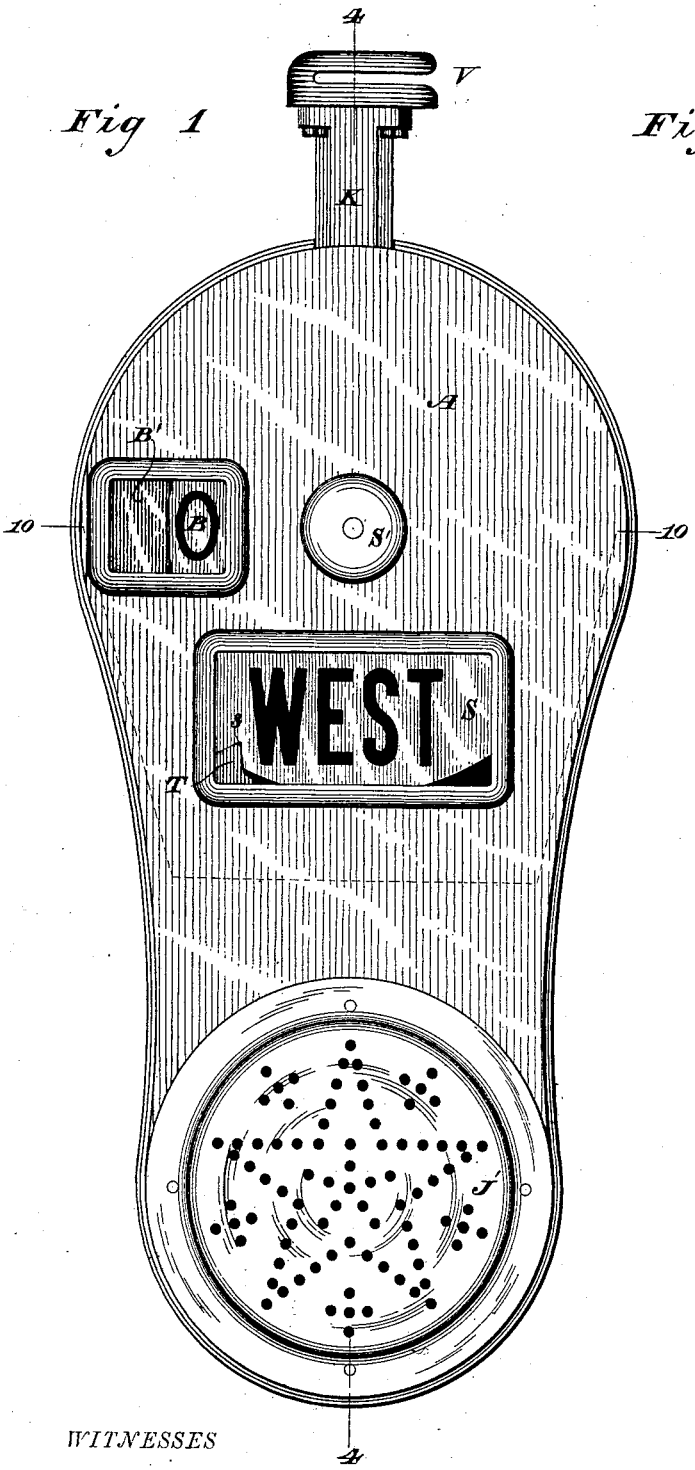
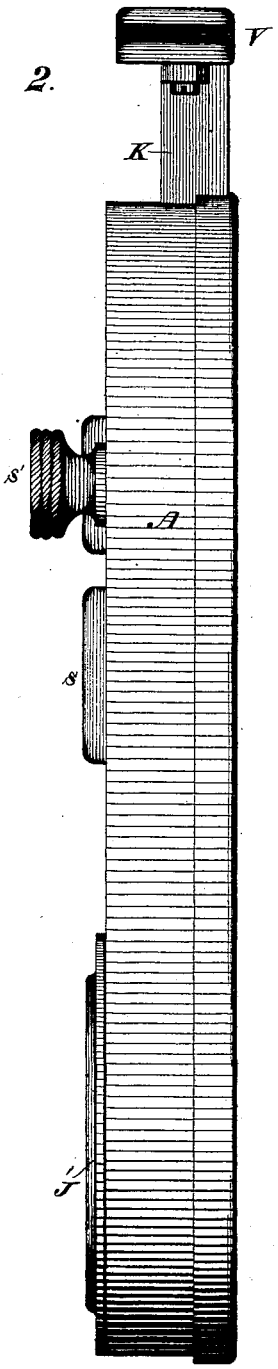


Fig 2.



WITNESSES

Wm A Skinkle

Geo W Breck

INVENTOR

Charles B. Harris.

By his Attorneys

Baldwin Hopkins & Peyton

C. B. HARRIS.

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Fig 3.

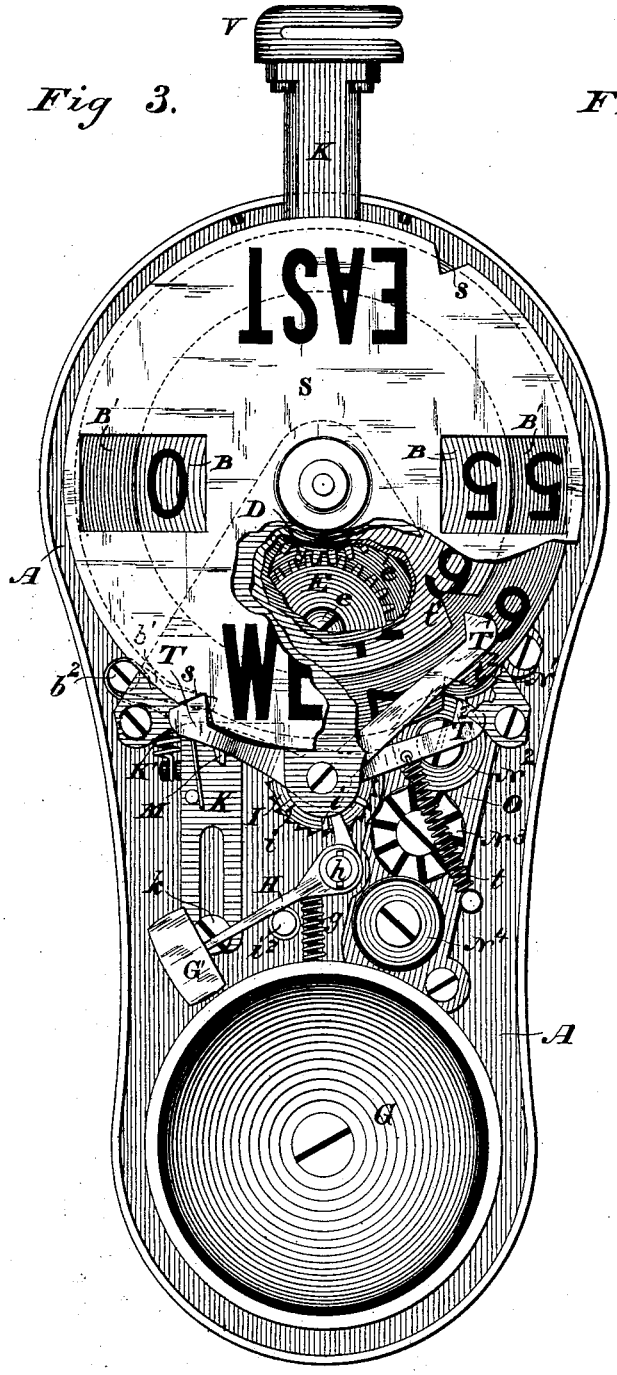
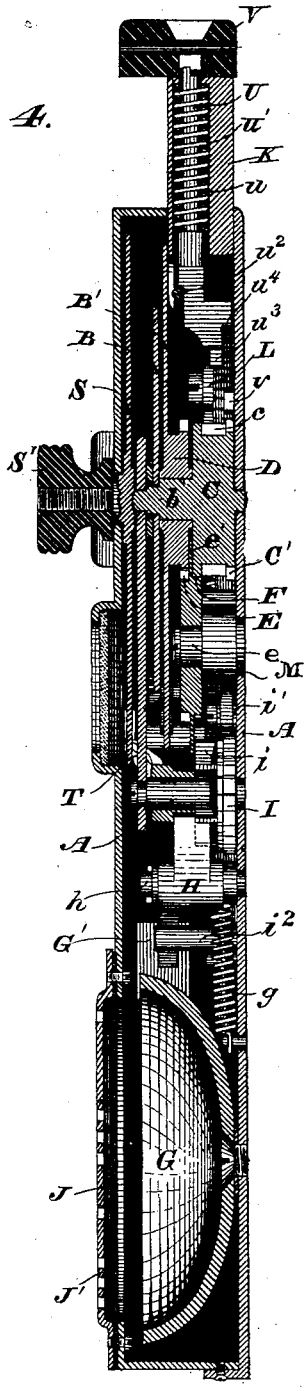


Fig 4.



WITNESSES

Wm A Stinkle

Geo W Breck

INVENTOR

Charles B Harris

By his Attorneys

Baldwin Hopkins & Peyton

C. B. HARRIS.

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Fig 5.

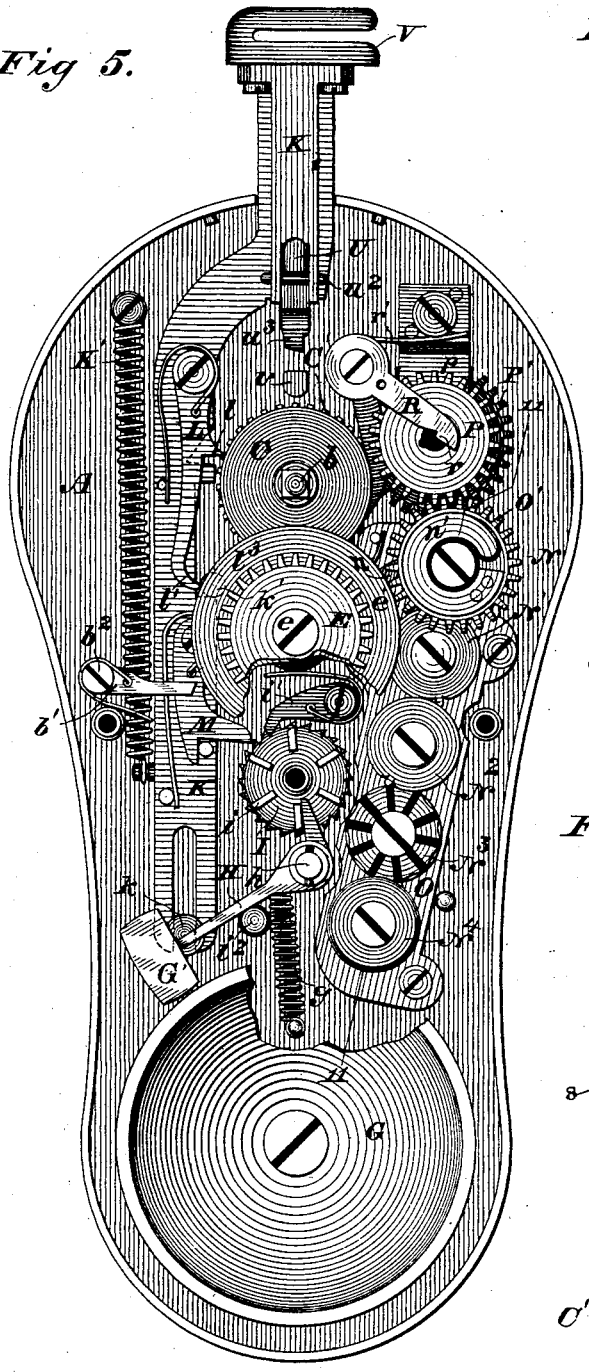


Fig 6.

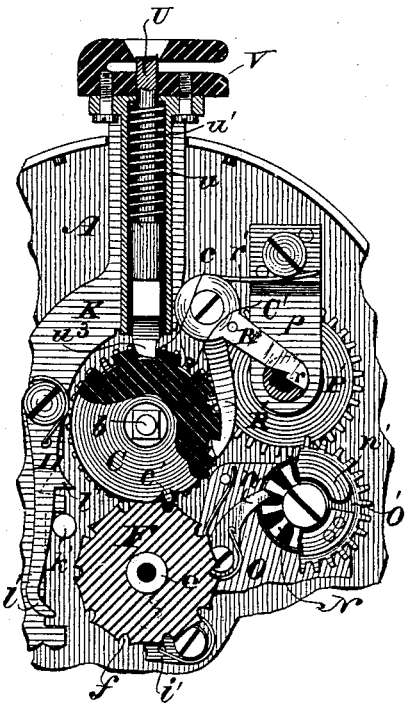


Fig 7.

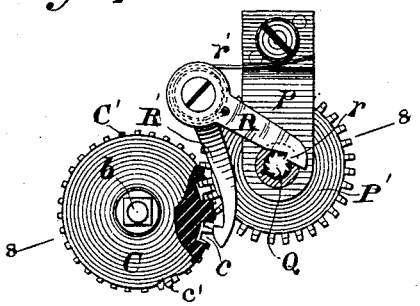
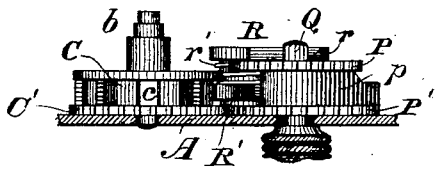


Fig 8.



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Wm a Skinkle

Geo W Breck

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Baldwin Hopkins & Peyton

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Fig 10.

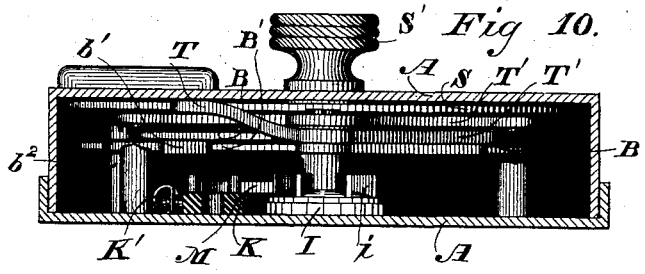


Fig 9.

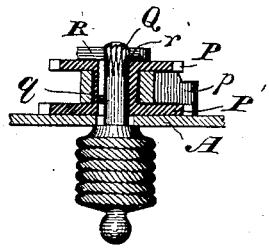


Fig 11.

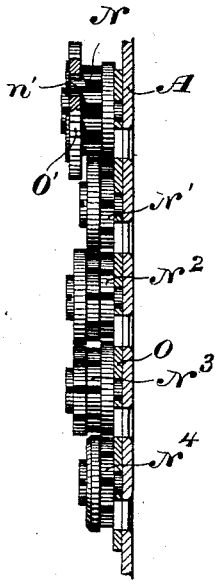


Fig 12.

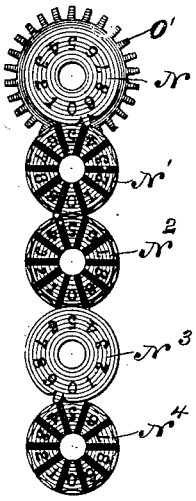
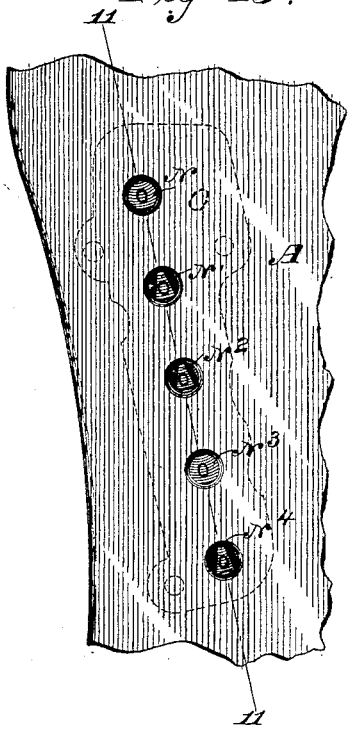


Fig 13.



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By his Attorneys

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UNITED STATES PATENT OFFICE.

CHARLES B. HARRIS, OF NEW YORK, N. Y.

IMPROVEMENT IN FARE-REGISTERS.

Specification forming part of Letters Patent No. **206,565**, dated July 30, 1878; application filed June 17, 1878.

To all whom it may concern:

Be it known that I, CHARLES B. HARRIS, of the city, county, and State of New York, have invented certain new and useful Improvements in Fare-Registers, of which the following is a specification:

My invention belongs more especially to that class of registers termed "portable fare-registers," which are adapted for the use of conductors upon railroads, drivers of passenger-vehicles, and for such other like kindred uses or purposes, whereby a check is put upon the receiver or collector of the fares, and pilfering or cheating by dishonest practices or abstraction prevented, the collector having to make a registry, and announce it by sounding an alarm for each collection made.

The object of the first part of my present invention is to furnish a fare-register provided with means whereby the amount of fares or collections made during the travel of the car or vehicle in each direction will be permanently recorded and ascertained; to which end my invention consists of a fare-register having an indicator or sign by which the direction of travel may be known, so organized that the indicator cannot be changed to indicate a different direction of travel without first making a permanent record of the fares collected.

This part of my invention further consists of the combination, with the registering mechanism of a fare-register, of an indicator or sign showing the direction of travel of the vehicle inclosed in the same casing or receptacle with the registering mechanism, the indicator being so organized that it cannot be changed to indicate a different direction of travel without first bringing the register to zero, or in a position indicating no registry.

This part of my invention further consists in the combination of primary registering mechanism, secondary, permanent, or transfer registering mechanism, and an indicator or sign showing the direction of travel, the indicator being so organized that it cannot be changed to indicate a different direction of travel unless the primary register is at zero, or at a point indicating no registry, the setting of the primary register back to that point after a registry has been made transferring its record to the secondary or permanent register.

This part of my invention further consists of a fare-register provided with a window or opening to permit of inspecting the registering mechanism or record, and with a window or opening to permit of inspecting an indicator, or sign which indicates the direction of travel of the car or vehicle.

This part of my invention further consists in the combination, in a single case, of registering mechanism, alarm mechanism, an actuator, handle, or push-bar for working the register and sounding an alarm, and an indicator, which indicates the direction of travel, whereby the sounding of the alarm announces the registry of the fare, and the indicator shows in which direction of travel of the car or vehicle the registry was made.

The object of the next part of my invention is to furnish a fare-register with a canceling device or punch, which may be operated independently of the registering mechanism, or, in connection with it, to register each actuation of the punch; to which end my invention consists of the combination of the actuator, push-bar, or handle of the register with a punch carried thereby, and so organized as to be worked independently of the register or in connection with it.

This part of my invention further consists in the combination of registering mechanism, an actuator or push-bar, and a punch or canceling device mounted in an axial bore or opening in the push-bar.

My invention also consists in providing the actuator or push-bar of a fare-register with jaws or a slotted head for the reception of a ticket or strip to be punched or canceled.

My invention also consists in the combination of registering mechanism, an alarm, and an actuator or push-bar for operating the register and alarm, slotted for the reception of a ticket or strip to be punched or canceled.

My invention further consists in the combination of primary registering mechanism, secondary or transfer registering mechanism, an alarm, an actuator or push-bar for actuating the mechanism and alarm, and a punch or canceling device carried by the actuator.

My invention further consists in the combi-

nation of primary registering mechanism, secondary or permanent registering mechanism, and a punch or canceling device, the actuations of which are first registered by the primary register and then transferred to the secondary register as a permanent record.

The object of the next part of my invention is to prevent access of dust and extraneous matter to the alarm mechanism, and also to prevent tampering therewith by the insertion of wires or small instruments through the perforations in the casing which permit of the escape of the sound, and this without impairing the efficiency of the alarm or obstructing the free escape of the sound from the casing, which ends I attain by employing a diaphragm or disk vibrating in unison with the alarm to shield and protect it.

This part of my invention further consists in the combination of an alarm, a perforated cover to permit the free escape of the sound, and a vibrating diaphragm or disk interposed between the perforated cover and the alarm.

My invention also consists in the organization, construction, and arrangement of the various details of the mechanism, as will be hereinafter specifically set forth.

The accompanying drawings show all my improvements as embodied in one machine in the best way now known to me. Obviously, however, some of the improvements may be used without the others and in registers differing somewhat in their general construction from that therein shown.

Figure 1 is a front elevation of my improved fare-register; Fig. 2, a side view thereof; Fig. 3, a front view, the cover of the casing being removed to show the internal parts, and portions of the mechanism broken away for the purpose of clearer illustration; Fig. 4, a vertical central section through the device on the line 4 4 of Fig. 1; Fig. 5, a view similar to that of Fig. 3, with portions of the mechanism removed; Fig. 6, a corresponding view of portions of the mechanism, partly in section; Fig. 7, a view of portions of the mechanism employed for transferring the record of the primary or temporary register to the secondary or permanent register, detached; Fig. 8, a section therethrough on the line 8 8 of Fig. 7; Fig. 9, a view of the key and portions of the mechanism by which the transfer of the record is accomplished, also in section on the line 8 8 of Fig. 7; Fig. 10, a horizontal section through the apparatus on the line 10 10 of Fig. 1; Fig. 11, a longitudinal section through the transfer or secondary registering mechanism on the line 11 11 of Fig. 13; Fig. 12, a face view of the secondary registering-wheels detached; and Fig. 13, a view of a portion of the back of the casing, showing the openings through which to read the secondary or permanent register.

The casing or box A is preferably of the tapering curvilinear form shown in the drawings, as being more convenient for handling and better adapted for the reception of the mechanism as organized in the present instance. In the upper enlarged end of the casing is mounted the registering mechanism and dials, and in the lower or smaller end is secured an alarm apparatus.

The registering mechanism consists of two sets—a primary mechanism for temporarily registering the fares collected on each separate trip or direction of travel of the car or vehicle, and a secondary mechanism, to which a transfer of the record of the primary register is made at the terminus of each direction of travel, to obtain a permanent record of the fares collected, the transfer being accomplished during the act of resetting or moving the primary mechanism back to the zero or starting point, in readiness to commence the registry of fares to be collected on the return or back trip of the car or vehicle.

The primary register consists, in the present instance, of two flat circular disks or dials, B B′, of different diameters or size, mounted on the same axle, stud, or arbor *b*, one above the other, the upper or smaller disk, B, being provided on its face, near the edge, with the numerals 0 to 9, inclusive, while the larger disk below it is provided with numerals 1 to 9, inclusive.

The smaller disk, B, is the unit-disk, and at every complete revolution thereof the larger or tens disk is turned one-tenth of a revolution, whereby, as will readily be understood, I am enabled to register by the two disks—in this instance, ninety-nine fares.

For convenience of reading or inspecting the register, and to enable the passenger to see that his fare is properly registered, an opening or window is made in the case A, the window being, however, covered with some transparent material to prevent tampering with the mechanism which controls or governs the movements of the dials. This governing mechanism consists of an actuating-wheel, C, fixed upon the axle *b*, and provided, in this instance, with ten teeth or notches, *c*, in its periphery. The unit-disk B is fixed on this axle *b* so as to turn with it, while interposed between the said disk B and wheel C, so as to turn loosely on the axle *b* and independently of it, is mounted a cog-wheel, D, carrying the disk or dial B′. A wheel, E, similar to the wheel D, is mounted upon a stud-axle or arbor, *e*, rising from the casing, and is formed with or firmly connected by an intermediate plate, *e′*, to a wheel, F, provided with notches *f*, ten in number in this instance, corresponding to the notches in the wheel C. The two wheels E and F are thus caused to turn together on the same arbor.

The teeth of the cog-wheels D and E mesh or interlock, while a tongue or tooth, *c′*, on the wheel C, at every revolution of that wheel, meshes with one of the notches *f* in the wheel F, turning it the distance of one tooth, or one-tenth of a revolution.

Below the primary registering mechanism is secured the alarm apparatus, which consists,

in this instance, of a bell, G, of well-known construction, and a hammer, G′, mounted upon the long arm of a bent lever or bell-crank, H, which has its fulcrum or pivot on a stud or pin, *h*. The hammer is actuated by a ratchet-wheel, I, provided on its face or crown with radial ribs or projections *i*, one of the ribs, as the ratchet-wheel is partially rotated, acting upon the short bent arm of the lever to rock it upon its fulcrum and raise the hammer end, which, as soon as the rib is carried out of contact with or released from the bent end of the lever, allows the hammer suddenly to descend and sound an alarm, owing to the action of a spring, *g*, which exerts its tension on the hammer-arm.

A suitable pawl, i^1, prevents back rotation of the ratchet-wheel and sounding of the alarm until a forward movement of the wheel takes place sufficient to allow the hammer-lever to slip from the carrying or actuating rib, which release of the hammer is permitted only when the registering mechanism is actuated, whereby a false alarm, without actuating the register, is rendered impossible.

The movement or stroke of the hammer toward the bell is limited by a suitable stop, i^2, which, while allowing the hammer to strike the bell when released from the ratchet-wheel, holds it slightly out of contact with the bell when at rest.

In order to prevent the entrance of dust and extraneous matter to the alarm mechanism, and also to prevent the insertion of small instruments through the perforations in the casing which permit of the free escape of the sound, in endeavors to tamper with the apparatus, and this without obstructing or impairing the efficiency of the alarm, I interpose between the perforated case or cover and the alarm a diaphragm, J, vibrating in unison with the bell. This diaphragm is preferably composed of a thin circular iron plate, secured at the edges between the casing and the perforated cap or cover J′ thereof, leaving the center of the plate free to take up the sound-vibrations.

The actuator of the registering mechanism and alarm consists, in this instance, of a slide-rod or push-bar, K, the upper end of which projects through an opening or guideway in the upper end of the casing, and its lower end, which is slotted longitudinally to permit free play of the slide, being secured to the casing and guided in its reciprocating movements by a suitable screw or rivet, *k*, the reciprocating movements of the push-bar being limited by suitable shoulders thereon, which come in contact with a suitable stop or pin, *k′*. This push-bar carries a pawl, L, acted on by a suitable spring, the pawl being provided with a projecting tooth, *l*, which engages with the notches in the wheel C, to actuate or move it the distance of one notch, or one-tenth of a revolution, at every complete stroke inward of the push-bar. The lower end or extension *l′* of the pawl is curved, and acts upon the stop, stud, or projection *k′*, on the backstroke of the push-bar, to carry the pawl free and clear of the wheel C.

Another pawl, M, carried by the bar K, acts upon or engages one of the arms or ribs on the ratchet-wheel I, on the downstroke of the push-bar, to rotate the wheel and elevate the hammer against the tension of its impelling-spring.

A full stroke of the push-bar must take place before the ratchet-wheel will be in a position to permit of a release of the hammer to sound the bell. A partial stroke of the push-bar is insufficient to actuate the register, merely raising the bell-hammer, which is prevented from descending by the pawl i^1. The push-bar, after each inward stroke, is automatically thrown back or returned to its normal or raised position by a spring, K′, in the usual way.

The secondary, permanent, or transfer registering mechanism consists of a train of wheels, N N^1 N^2 N^3 N^4—five in this instance—the first of which registers units; the second, tens; the third, hundreds; the fourth, thousands; and the fifth, ten-thousands. These wheels are of well-known construction, and their operation well understood. Therefore, with the exception of the unit-wheel N, detail description of the train is deemed unnecessary. The train is preferably mounted on a suitable plate, O, secured in the casing by suitable rivets or screws. The wheels are each provided on their rear faces with numerals 0 to 9, inclusive, and the registry made by the wheels is adapted to be read through suitable openings in the back plate of the casing. (Clearly shown in Figs. 11 and 13 of the drawing.)

The unit-wheel N is provided on its front face with ten teeth or notches, with which engage a pawl, *n*, acted on by a suitable spring to prevent back rotation of the wheel. Loosely mounted over this face of the wheel, and on the same arbor or stud with it, is a cog-wheel, O′, provided with a circular spring pawl or detent, *n′*, which engages with the teeth or notches of the unit-wheel N to connect the two wheels together when the cog-wheel O′ is rotated in the proper direction in making a transfer from the primary to the secondary mechanism, but allows the wheel O′ to turn independently of the unit-wheel N, so as to produce no effect thereon when the primary register alone is being worked.

In order to transfer the record made by the primary or temporary registering mechanism to the permanent register, I employ a double cog-wheel, P P′, turning on a suitable plate, *p*, the wheel being intermediate of the actuating-wheel C of the primary register and the unit-wheel of the permanent register, one of the disks, P, of the double wheel meshing with the similar disk or wheel O′ on the unit-wheel N, and the other disk, P′, meshing with a similar disk or cog-wheel, C′, formed on or connected with the actuating-wheel C.

The wheel P P′ is operated by a key, Q, which passes through a suitable hole in the

back of the casing and into a central opening or key-hole in the wheel, the key-hole being provided with a groove for the reception of a spline or feather, *q*, on the key-shank.

The operating end of the key is also provided with teeth or ratchets, to engage with a tooth, *r*, in a locking-plate or detent, R, mounted just over or in front of the wheel P, and partially overlapping the key-hole or opening therein, whereby, when the key is inserted into the wheel to actuate it, its ratcheted end will push aside the plate R, and be permitted to turn in one direction—*i. e.*, the direction to make the transfer—by throwing the latch or plate outward; but the key will be locked from turning in the other direction by the engagement of the tooth *r* of the locking-plate with the ratcheted end, the effort to turn the key forcing the tooth *r* into engagement with one of its ratchets.

The locking-plate R is connected with or forms part of another arm or latch, R′, which engages with the teeth or notches in and prevents back rotation of the primary actuating-wheel C, except when the key Q is inserted and turned in making a transfer, which retracts the latch R′ by its action upon the locking-plate R. This double-armed locking-plate or detent R R′ is mounted upon a suitable stud-axle, and acted upon by a spring, *r′*, to keep them normally in position, one in engagement with the wheel C and the other partially covering the key-opening in the wheel P P′.

In order to ascertain the fares collected on each direction of travel of the car or vehicle, I employ, in this instance, a circular plate, S, on the face of which, near its periphery, and at two points, one directly opposite the other, are placed words, letters, signs, or marks indicating opposite directions of travel, being, in this instance, the words "east" and "west," which would be the proper signs to employ on a road or route running east and west; but it will be obvious that other signs or words may be used as occasion or circumstances require. This plate or disk is situated in the upper end of the casing, directly over the primary registering-dials B B′, being secured upon the end of a suitable spindle or shaft, actuated from the outside of the casing by means of a suitable button or handle, S′, for convenience in turning, changing, or shifting the indicator.

The indicator-plate is slotted at two points, as clearly shown, so as to leave the view of the registering-disks unobstructed, a suitably-covered window in the casing also permits of conspicuous display of the words or signs indicating the direction of travel of the car or vehicle.

To prevent the indicator being changed or shifted to indicate a different direction of travel without first making a permanent record of the fares collected, and without moving the primary register back to zero or the starting-point, (beyond which point the registering-disks cannot be carried, as the disk B′ will be locked by a pawl, b^1, mounted on a stud or arbor, b^2, on the casing,) I provide the indicator-plate with notches *s*, with which engage the toothed or projecting end of one arm, T, of a three-pronged latch, the latch being pivoted, in this instance, upon the arbor of the ratchet-wheel that actuates the bell-hammer, and is acted upon by a spring, *t*, which tends to keep the arm T normally in engagement with one of the notches *s*. The other arms, T^1 T^2, of this three-pronged latch are adapted, when the register is at zero, to vibrate the arm T^1 into a notch, t^1, in the unit-disk B of the primary register and the arm T^2 into a similar notch, t^2, in the disk B′ of said register. This will permit the indicator to be turned so as to bring the sign desired, indicating the direction of travel, opposite the window in the casing, the locking-arm T riding out of the notch *s* in the plate, and the other arms vibrating into the notches in the registering-disks. When, however, an operation of the register takes place the notches in the primary disks are taken out of line with the prongs T^1 T^2 of the three-pronged latch, which will effectually prevent the indicator-plate from being turned, as an attempt to turn the plate, except when the register is at zero, only brings the arms T^1 T^2 in contact with the curved edges of the disks, which is not sufficient to carry the arm T out of the locking-notch.

To adapt a punch or canceling device to a fare-register, so that it may either be used independently of the registering mechanism and alarm or in connection therewith, whereby each actuation of the punch will be registered and announced, and to adapt the actuator of the registering mechanism for the reception of the ticket or strip to be punched or canceled, I, in this instance, provide the upper end of the push-bar K with a longitudinal bore or opening, *u*, for the reception of a punch or canceling device, U, and mount on the end of the bar a slotted head or jaws, V; or the bar itself may be slotted, the slot being of the proper width to receive the ticket or strip to be punched or canceled.

A suitable opening or female die is also formed in the head or jaws V to permit of the escape of the chippings; or these chips may be preserved in a suitable locked receptacle attached to the punch, if desired, to constitute an additional record of the actuations of the punch and fares collected.

The punch-die consists of a bar having a reduced tubular upper portion encircled by a spiral spring, u^1, which tends to throw or retract the die from the slot or ticket-guiding jaws on the backstroke of the push-bar, the retracting movement being limited by a suitable pin or stop, u^2. The lower end of the bar is enlarged and provided with a flattened reduced end, u^3, and with a shoulder, u^4, adapted to abut against or come in contact with a stop, *v*, on the casing.

When the push-bar is in its normal position, as shown in Fig. 4, the punch is withdrawn

from the ticket-slot. An inward stroke of the push-bar to actuate the registering mechanism and sound the alarm carries the punch-bar with it until its shoulder w^4 abuts against the stop v and its end w^3 enters one of the notches of the primary registering-wheel C, as shown in Fig. 6. The push-bar, in continuation of its stroke, now moves endwise on the punch-bar, which is forced across the ticket-slot to punch the ticket or strip inserted therein.

It will be noticed that as the end of the punch-bar is brought in engagement with the notch in the wheel C, that wheel will be prevented from being carried forward farther than is necessary for the proper movement of the dial to indicate a registration of the movement of the push-bar and punch, the latch R′, as hereinbefore stated, preventing back rotation of said wheel.

If it is desired to work the punch independently of the register and alarm, the push-bar, when in the position of Fig. 6, is not allowed to rise to its utmost limit, which would bring the register and alarm-actuating pawls in working position, but is allowed to rise only to a distance sufficiently to carry the ticket-slot above the cutting end of the punch-bar, which does not rise with the push-bar within that limit, owing to the action of its spring. Any number of tickets may be punched or canceled in this manner without registering the actuations of the punch or sounding an alarm.

The operation of my improved register is as follows: Starting with the indicator in the position shown in Fig. 1, the direction of travel being indicated as "west," each fare is registered on the primary register, and the registry is announced by the alarm by an inward stroke or movement of the push-bar or actuator, which brings the actuating-pawl L into engagement with the wheel C, turning it one-tenth of a revolution. The tenth actuation of the wheel C causes its entire revolution, and brings its tongue or projection c' into engagement with the idle-wheel F, causing it and the wheel E connected with it to make one-tenth of a revolution, and, as the wheel E is in gear with the wheel carrying the disk B′, a similar movement, or one-tenth of a revolution, is also imparted to the said disk, which makes the primary register indicate 10 through its window. This operation is continued as long as the collection continues, the disk B′ making one-tenth of a revolution at every entire revolution of the unit-wheel B, the two wheels, as will be obvious, being capable of registering ninety-nine fares, which is more than is ordinarily required in one direction of travel of a vehicle; but the disks may be multiplied, if desired. The inward stroke of the push-bar also actuates the alarm as soon as the registering movement is complete.

At the end of the route the collector brings the primary register back to zero by the use of the key Q, in order to enable him to change the direction-indicator, the primary register, while being reset, transferring its record through the wheel P P′ to the secondary or permanent register, which is capable, in the present instance, of registering an immense number of fares.

The advantages of my improvements will be obvious without further elaboration.

I do not intend to limit myself to the precise construction and organization of the various parts of my improved register, they being susceptible of considerable variation without departing from the spirit of my invention.

I do not, however, broadly claim a fare-register having a primary or temporary and a permanent or secondary registering mechanism, as that is not my invention.

I claim as of my own invention—

1. The combination, substantially as hereinbefore set forth, of a fare-register with a direction-indicator, locked from indicating a different direction of travel without making a permanent record of the fares collected.

2. The combination, substantially as hereinbefore set forth, with the registering mechanism of a fare-register, of an indicator or sign inclosed in the same casing with the registering mechanism, and incapable of being changed to indicate a different direction of travel without resetting or bringing the register to the zero or starting-point.

3. The combination, substantially as hereinbefore set forth, of primary or temporary registering mechanism, secondary or permanent registering mechanism, and an indicator or sign showing the direction of travel, and so organized that a different direction of travel cannot be indicated without bringing the primary register to zero or starting-point and transferring its record to the permanent register.

4. The combination, substantially as hereinbefore set forth, of registering mechanism, an indicator or sign which indicates the direction of travel, and a surrounding casing provided with windows or openings therein, for the purpose of inspecting the register and the direction-indicator or sign.

5. The combination, substantially as hereinbefore set forth, in a single case, of registering mechanism, alarm mechanism, an actuator, handle, or push-bar for working the register and sounding an alarm, and an indicator which indicates the direction of travel, whereby the sounding of the alarm announces the registry of the fare, and the indicator shows in which direction of travel of the car or vehicle the registry was made.

7. The combination, substantially as hereinbefore set forth, of the registering mechanism and alarm with a punch carried by the actuating push-bar or handle, the punch being capable of having its actuations registered and announced, or of being operated without actuating the registering mechanism or sounding an alarm.

7. The combination, substantially as hereinbefore set forth, of registering mechanism, an actuator or push-bar, and a punch or can-

celing device mounted in an axial bore or opening in the push-bar.

8. The combination, substantially as hereinbefore set forth, with the registering mechanism, of a fare-register, of an actuator or push-bar provided with jaws or a slotted head for the reception of a ticket or strip to be punched or canceled.

9. The combination, substantially as hereinbefore set forth, of registering mechanism, an alarm, and an actuator or push-bar for operating the register and alarm, slotted for the reception of a ticket or strip to be punched or canceled.

10. The combination, substantially as hereinbefore set forth, of the primary registering mechanism, the secondary or transfer registering mechanism, the alarm, the actuator or push-bar for actuating the mechanism and alarm, and the punch or canceling device carried by the actuator.

11. The combination, substantially as hereinbefore set forth, of primary registering mechanism, secondary or permanent registering mechanism, and a punch or canceling device, the actuations of which are first registered by the primary register and then transferred to the secondary register as a permanent record.

12. The combination, substantially as hereinbefore set forth, with the alarm mechanism of a fare-register, of a vibrating diaphragm or disk to shield and protect it, whereby tampering with the alarm mechanism is prevented without impairing its efficiency.

13. The combination, substantially as hereinbefore set forth, of an alarm, a perforated cover to permit of the free escape of the sound, and a vibrating diaphragm or disk interposed between the perforated cover and the alarm.

14. The combination, substantially as hereinbefore set forth, of the primary registering disks with a pawl or detent to engage a notch or tooth in one of the disks, whereby, when the disks are being reset, back rotation beyond the starting-point, or that indicating no register, is prevented.

15. The combination, substantially as hereinbefore set forth, of the direction-indicator disk, inclosed within the register-casing, with a button, knob, or handle outside the casing, to actuate or reverse the indicator.

16. The combination, substantially as hereinbefore set forth, of the primary registering-disks, having a notch in their peripheries, the direction-indicator plate, also provided with a notch in its periphery, and the pronged locking latch or plate to lock the indicator-plate from turning until the registering-disks are brought to a certain point.

17. The combination, substantially as hereinbefore set forth, of the push-bar or actuator, the bell-hammer, and the actuating-wheel of the bell-hammer, provided on its periphery with ratchet-teeth engaged by a pawl to prevent back rotation, and on its face or crown with ribs or projections, one of which is acted upon by the push-bar to rotate the wheel, while another actuates the bell-hammer.

18. The combination, substantially as hereinbefore set forth, of the primary registering mechanism, the secondary registering mechanism, the transferring-wheel provided with an opening for the reception of a key, a notched plate or detent partially overlapping the opening in the transfer-wheel, and a key the end of which is notched or ratcheted, whereby the key, when inserted to actuate the transfer-wheel, can be turned in one direction only.

19. The combination, substantially as hereinbefore set forth, with the primary and permanent registering mechanism of a fare-register, of a key for accomplishing the transfer of the record from one to the other mechanism, provided with a notched or ratcheted actuating end.

20. The combination, substantially as hereinbefore set forth, of the transfer-wheel with a double-armed locking-plate or detent, one arm of which nominally overlaps the opening in the transfer-wheel, and the other nominally engages with the teeth in the actuating-wheel of the primary register to prevent back rotation thereof, whereby the actuating-key, when turned in the proper direction, retracts the detent from engagement with the actuating-wheel of the primary register, and permits said register to be reset, and the transfer of its record accomplished.

21. The combination, substantially as hereinbefore set forth, of the push-bar, with the punch bar or die inclosed therein, and provided with a locking end adapted to engage the teeth of the actuating-wheel of the primary register when the push-bar is forced inward, whereby the actuating-wheel is locked from forward rotation and the punch adapted to be worked without registering its actuations or sounding the alarm, by reciprocating the push-bar thereon within limits not sufficient to carry the pawl on the push-bar above the actuating-wheel so as to engage its teeth.

In testimony whereof I have hereunto subscribed my name.

CHARLES B. HARRIS.

Witnesses:
JACOB DU BOIS,
HENRY BURDON.