

O. E. MICHAUD.
STREET CAR REGISTER.

No. 505,167.

Patented Sept. 19, 1893.

Fig. 1.

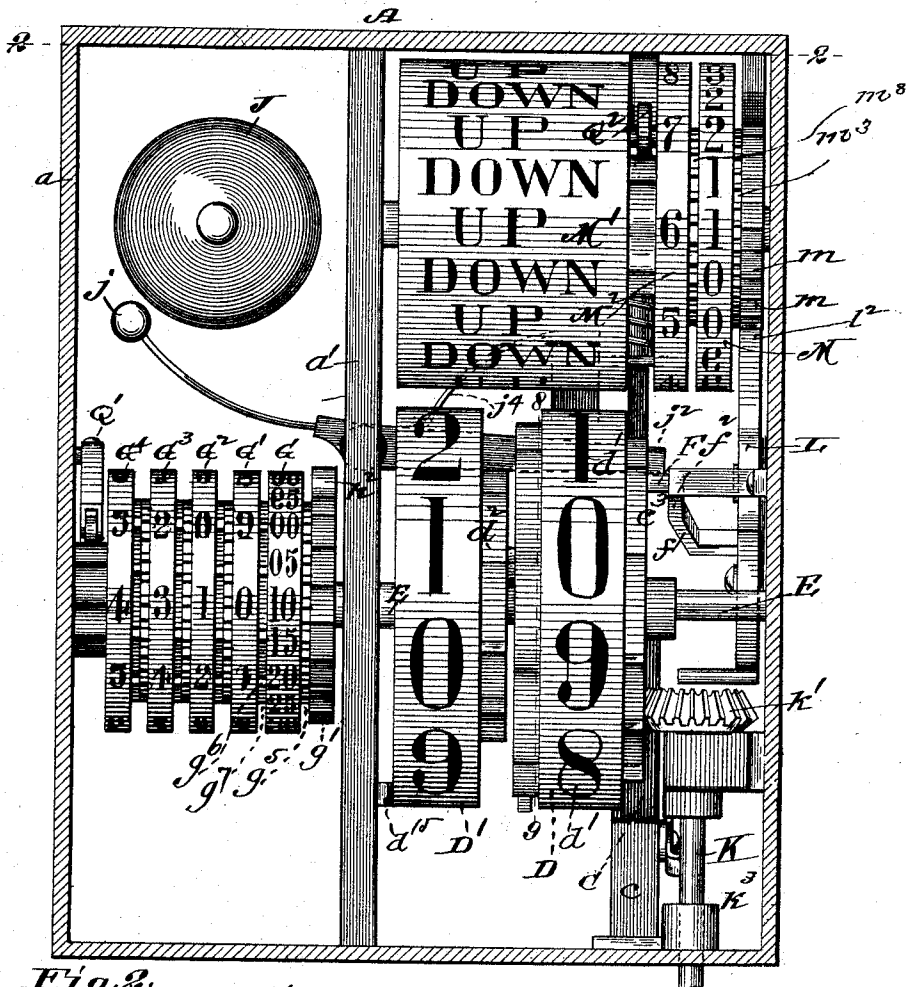
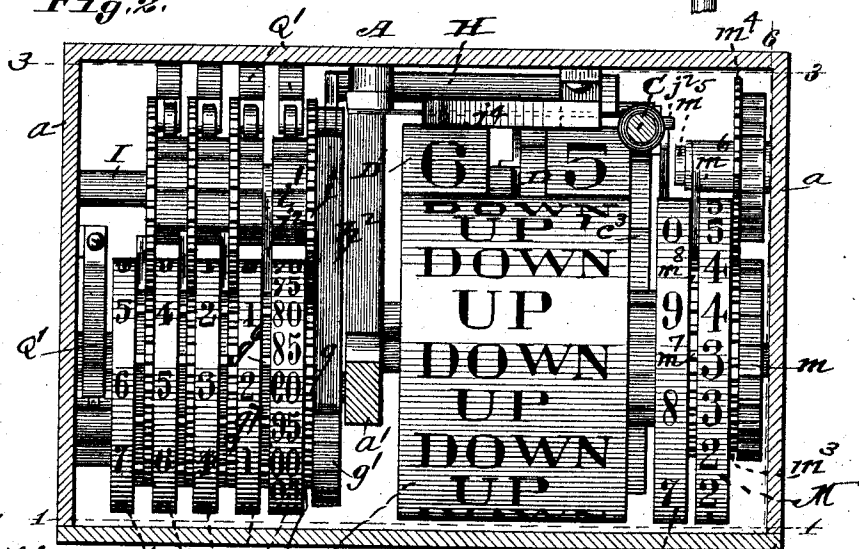


Fig. 2.



Attest: 1
A. Bonville
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Inventor:
O. E. Michaud by C. B. Moody
his atty

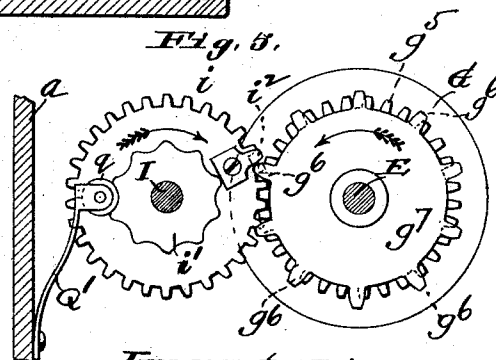
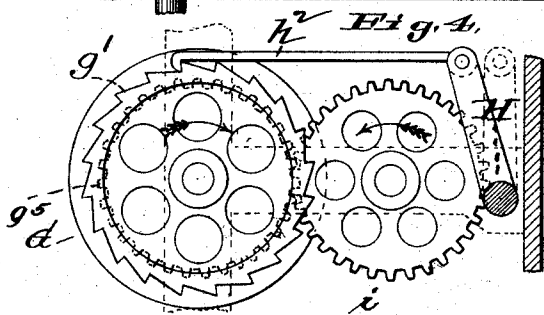
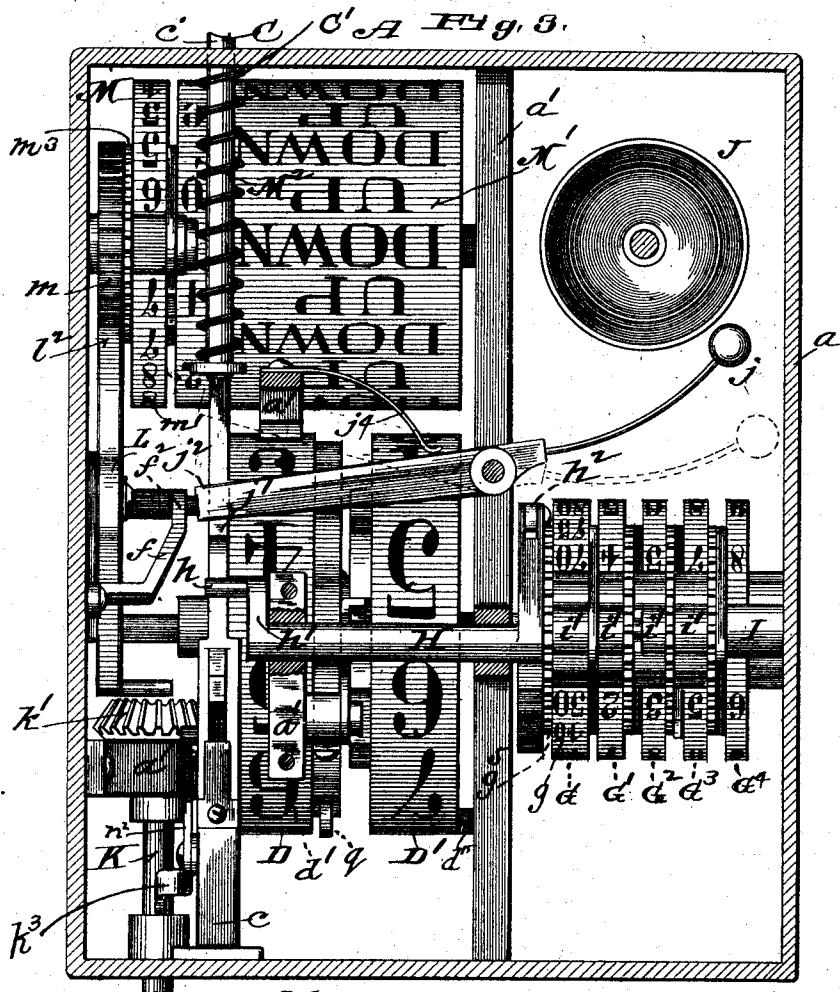
(No Model.)

4 Sheets—Sheet 2.

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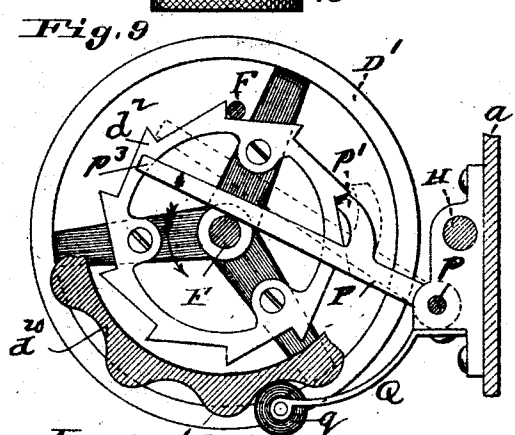
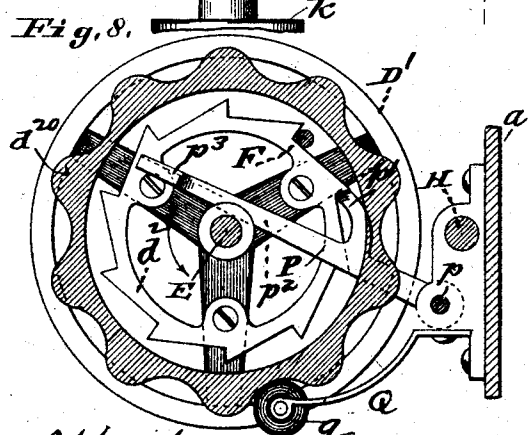
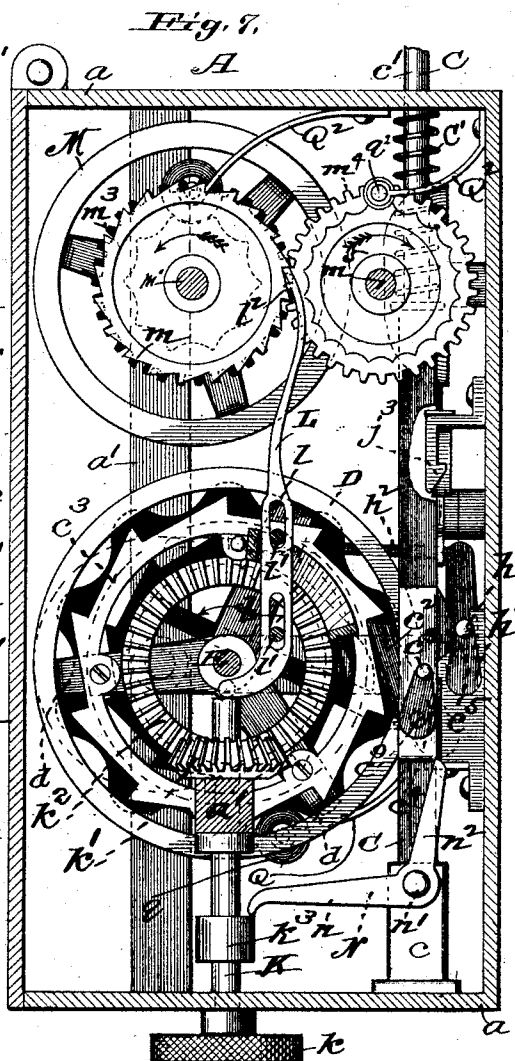
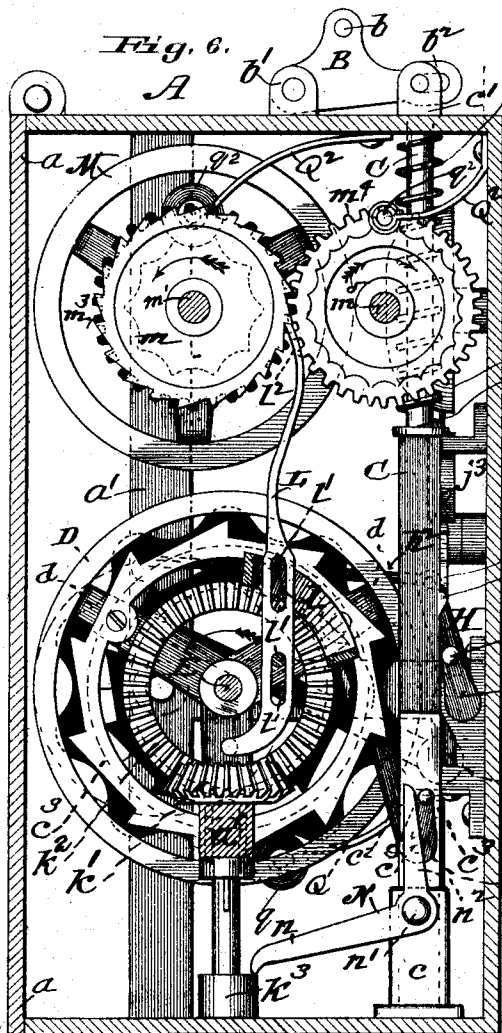
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4 Sheets—Sheet 3.

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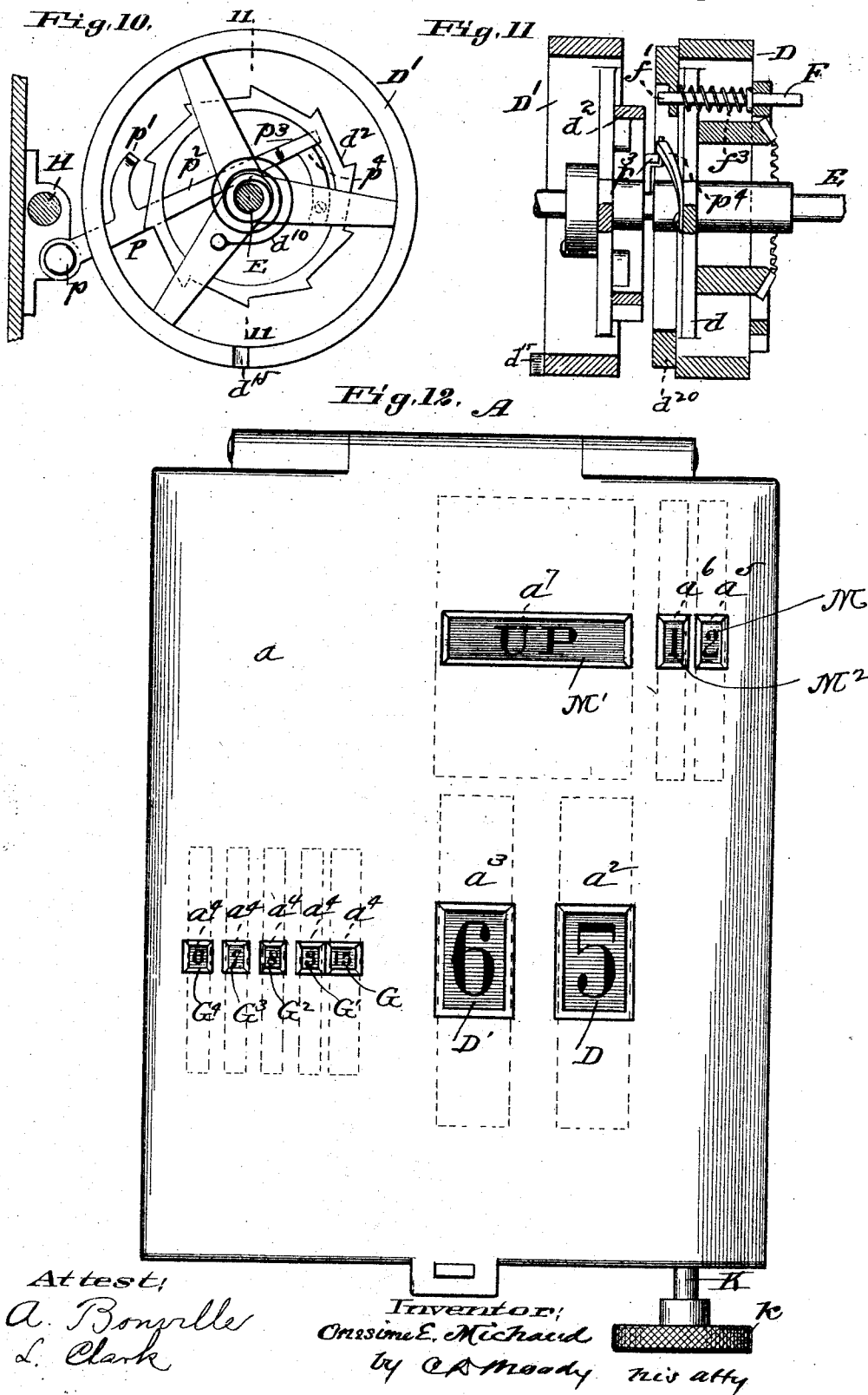
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UNITED STATES PATENT OFFICE.

ONESIME E. MICHAUD, OF ST. LOUIS, MISSOURI.

STREET-CAR REGISTER.

SPECIFICATION forming part of Letters Patent No. 505,167, dated September 19, 1893.

Application filed February 23, 1893. Serial No. 463,374. (No model.)

To all whom it may concern:

Be it known that I, ONESIME E. MICHAUD, of St. Louis, Missouri, have made a new and useful Improvement in Street-Car Registers, of which the following is a full, clear, and exact description.

The present improved construction includes mechanism for registering the number of fares taken, the aggregated amount of the fares, the number of trips the car makes and the direction of the trips, and it consists substantially as is hereinafter set forth and claimed, aided by the annexed drawings, making part of this specification, in which—

Figure 1 is a transverse vertical section of the improved mechanism, the section being taken on the line 1—1 of Fig. 2 which in turn is a horizontal section on the line 2—2 of Fig. 1; Fig. 3 a vertical transverse section on the line 3—3 of Fig. 2; Fig. 4 a detail, being a vertical longitudinal section exhibiting a portion of the amount-of-fares registering mechanism; Fig. 5 another detail, in vertical longitudinal section, further illustrating the mechanism last named; Fig. 6 a vertical longitudinal section on the line 6—7 of Fig. 2; Fig. 7 a section (on the line 6—7) similar to that of Fig. 6, but showing some of the parts in a different position; Fig. 8 a vertical longitudinal section on the line 8—9 of Fig. 1; Fig. 9 a section on the line 8—9 of Fig. 1, showing the parts in a different position; Fig. 10 a view of the opposite side of the parts of Figs. 8 and 9; Fig. 11 a section on the line 11—11 of Fig. 10; Fig. 12 a front elevation of the register.

The same letters of reference denote the same parts.

The improved register, A, has a suitable casing, *a*, for inclosing the mechanism, and in conjunction with a suitable frame work, *a'*, serving to sustain the movable parts.

In registering the fares and the value thereof motion is communicated to the registering mechanism preferably by means of any cord, not shown, which leads to the lever, B, and connecting therewith at the point *b* see Fig. 6. The lever is pivoted at *b'*, and at *b''*, has a slotted connection with a rod, C, which is adapted to be, and by the turning of the lever B is moved endwise and downward and by spring C', about said rod upward

within the casing, the rod in its described movement being suitably guided by reason of its lower end engaging in a socket *c* and its upper end, *c'*, working through the top of the casing. The rod is provided with a pawl, *c''*, which engages with a ratchet, *c'''*, which is connected with and forms part of the mechanism employed in registering the number of fares taken, as the rod by means of said pawl *c''*, operates the register on the upward, or spring-actuated return, stroke of said rod. The ratchet *c'''* is secured to a wheel, D, which by means of the arms, *d*, is fastened to a shaft E that extends horizontally and transversely in the register. The wheel, D, is the units-wheel, and it bears on its surface the numerals, *d'*, substantially as shown. On the same shaft is a tens-wheel, D', which is loose on the shaft. Every time the rod C, is depressed the pawl engages the ratchet and as the rod is lifted by the spring C', surrounding it, the ratchet is operated one tooth. When this wheel has been moved nine spaces a pin, F, see Figs. 8, 9, and 11 which is adapted to be moved transversely in the units-wheel, and which is carried around by the wheel in its rotation, encounters a cam, *f*, mounted on the casing *a*, see Fig. 1, and the pin in consequence is shifted endwise (that is, transversely in the wheel) and its opposite end, *f'*, is thereby moved into the plane of a ratchet, *d''*, which is attached to the tens-wheel D'. The cam, *f*, is shaped at *f''*, substantially as shown in Fig. 1 to cause the pin to be held as described for a long enough period of time to enable the pin F, acting against a tooth in the ratchet *d''*, to move the tens-wheel D' around one numeral-space and a numeral, *d'''*, upon the tens-wheel, thereby to be brought into position to be registered. As soon as the units-wheel has been turned around farther the pin F clears the cam *f*, whereupon a spring, *f'''*, surrounding the pin as in Fig. 11, acts to shift the pin backward into its original position and to disengage it from the tens-wheel ratchet. This operation is repeated at every revolution of the units wheel. When the downward movement of the rod C, has been accomplished, it is automatically returned to normal position by the spring C', that surrounds it. As the number of fares taken is thus being registered the values thereof are being else-

where registered, and as follows: G, G', G^2, G^3, G^4 , represent a series of figure-bearing wheels loose on the shaft E. The first wheel on its surface bears a series of figures, 5, 10, 15, up to 100, which respectively represent the value of one, two, three, &c., fares. The wheels G', G^2 , &c., have figures to register the hundred, thousands, ten thousands, &c.

The rod C is provided with a projection, c^5 , (see Fig. 6) which, as the rod is lifted, encounters the wrist pin h , of the arm, h' , of a rock shaft H, see Fig. 3 and said rock shaft is thereby turned from its position shown in Fig. 6 into that of its position shown in Fig. 7. The described motion of the rock shaft is, see Fig. 4 by means of the hook h^2 , transmitted to a ratchet, g' , which is fastened to the wheel G, and the last named ratchet and wheel are thereby rotated one figure-space, and the figure, g upon the wheel which corresponds to the movement of the rod C and the units wheel D, see Fig. 3 is accordingly brought into position to register, substantially as shown. This operation of the wheel is repeated at every stroke of the rod C, and when the wheel G has revolved sufficiently to register the amount of ninety five cents, and is moved again by the action of the rod C, its motion is communicated to the next wheel G' in the series, and in the following manner: Each wheel, G, G' , is provided with a gear wheel, g^5 . The gear wheel g^5 , of the wheel G, engages with a gear wheel i , that is loose upon a shaft I and that is provided with a scalloped shaped wheel i' and a projection or tooth i^2 . The rotation of the wheel G, therefore, effects the rotation of the parts i, i', i^2 , and at each revolution thereof the projection i^2 , encounters a tooth, g^6 , of a series of teeth upon a wheel g^7 , which is attached to the wheel G' , and this last named wheel, G' , in consequence is rotated sufficiently to bring a figure thereon into position to be read at the sight opening a^4 . The motion of the wheel G and the parts therewith united is thus communicated to the wheel G' , until it completes its revolution, whereupon and in an analogous manner its motion is communicated to the next wheel, G^2 , in the series, and so on until the capacity of the series of wheels, G, G', G^2, G^3, G^4 , is exhausted. The bell J, see Figs. 1 and 3, is rung by the hammer, j , at each movement of the rod C, a projection, j' , upon the rod C encountering the end j^2 , of the hammer arm and thereby lifting that end of the arm until it encounters a deflector, j^3 , and is released, whereupon a spring, j^4 , acts to cause the hammer to strike the bell, substantially as is indicated in Fig. 3.

The mechanism for registering the number of the car-trips will now be described. K represents a rod adapted to be moved vertically, and also to be rotated, and k represents a suitable handle therefor. At the end of the trip the conductor lifts the rod and causes the rod, or any part thereon to encounter a thrust-rod L. This last named part is slotted at l, l' ,

to engage with suitable guide pins l', l' , see Figs. 6 and 7 and when it is lifted by the rod K, as described, it is shifted from its position as shown in Fig. 6 into its position as shown in Fig. 7 and in doing this the upper end l^2 , of the rod, which is in engagement with a ratchet m , causes this ratchet to rotate one numeral space. This last named ratchet is attached to a units wheel, M, on shaft m . This wheel bears numerals, for the purpose of indicating the number of the car trip. The wheel is thus rotated one numeral-space at every upward movement of the rod K. The numerals upon the wheel M are preferably in pairs, 1, 1, 2, 2, 3, 3, &c., substantially as shown. See Fig. 3. This is for the purpose of giving the same number to the trip in both directions thereof, and M' , represents another wheel bearing suitable inscriptions or marks, such as the words "Down" and "Up," for indicating the direction in which the car is moving. This last named wheel, M' , by any suitable means, not shown, is connected with the wheel M to rotate therewith. Hence at every movement of the rod K, which occurs at the end of each half-trip, the wheels M, M' , are simultaneously moved to indicate the number and also the direction of the trip of the car.

The wheel M is a units-wheel, and to enable a larger number of car-trips to be registered a tens wheel M^2 , is preferably employed in conjunction with the wheel M, and motion is imparted thereto as follows: The wheel M is provided with a gear wheel, m^3 , which engages with another gear wheel m^4 upon the shaft m^5 . This last named shaft is thereby caused to rotate and in its rotation to cause a projection, m^6 on said shaft to encounter one, m^7 , of a series of teeth upon a wheel m^8 , that is attached to the tens-wheel M^2 see Fig. 2, and this wheel is thereby rotated one numeral-space at each revolution of the wheel M.

The rod K is utilized to accomplish another purpose: It is provided with a bevel gear k' , (see Figs. 1, 3, 6, and 7) which engages with a gear wheel k^2 which is attached to the units wheel D.

At the end of the trip it is essential that the wheels D, D' , be turned back to zero, and this is accomplished as follows: The rod K is provided with a shoulder k^3 , which, when the rod K is lifted, encounters the arm n , see Fig. 6 of a bell crank lever N and thereby causes this lever to be turned upon its pivot n' and its arm n^2 to encounter a pin, c^3 , upon an arm c^4 , which in turn is attached to a shaft, c^5 , which carries the pawl c^2 . The movement of the bell-crank lever N therefore causes the shaft c^5 , to be turned and the pawl c^2 to be disengaged from the ratchet c^3 . This last described position of the pawl is not shown. The wheel D is now free to be turned backward and by means of the rod K and the bevel-gear k' the desired rotation of the wheel is effected. The tens wheel D' , is reset to zero as follows: As the wheel D' is

rotated for the purposes of registration it operates to coil a spring, d^{10} , (see Fig. 10) and if the wheel D' were free the spring d^{10} would act at once to turn it backward. But at each forward movement of the wheel D' it is prevented from turning backward by the action of the dog P which is pivoted at p and whose tooth p' , drops behind the teeth of the ratchet d^2 , and the wheel D' is thereby prevented from turning backward. The dog P is extended at p^2 , substantially as shown and having an offset p^3 , (see Fig. 11) and when the units wheel, D , is turned backward in manner described a stop p^4 , thereon encounters the offset p^3 , of the dog arm and the dog is thereby lifted out of engagement with the ratchet d^2 , leaving the wheel D' free, whereupon the spring d^{10} , referred to, acts to turn the wheel backward into its original position. The movement of the wheel D' , is suitably controlled by a stop d^{15} , on its periphery engaging on the frame work a' .

An additional feature of the construction is the means for steadying the various wheels throughout the construction. The wheel D is provided with the scalloped wheel d^{20} . A spring arm, Q , provided with the roller q is adapted to coact with this wheel substantially as indicated in Figs. 8 and 9, and while the wheel D can in the manner described be turned forward and backward, and the spring arm referred to is of a nature to permit the movement, it is sufficiently strong to cause its roller to engage with sufficient force with the scalloped wheel to effect the desired steadiness therein and the desired registration in the proper manner. The wheels G , G' , are similarly steadied by means of the described scalloped wheels i' and the coacting spring arm Q' , substantially as shown see Fig. 5. The wheels M , are steadied in an analogous manner by means of the spring arm Q^2 and rollers q^2 , see Figs. 6 and 7.

In operation, the conductor, as a fare is taken, pulls the cord in the usual manner, and the wheels D , D' , are rotated to cause the numerals thereon to appear successively at the openings a^2 , a^3 , in the register-casing, and the wheels G , G' , &c., are simultaneously operated to cause the figures thereon to appear at the openings, a^4 , a^4 , &c., in the register-casing, substantially as shown. And at the end of each trip the wheels M , M^2 , are turned to cause the numerals to appear through the openings, a^5 , a^6 , and a word or character on the wheel M' indicating the direction of the trip to appear at the opening

a^7 , in the register-casing, substantially as shown. And in the manner stated the conductor resets his register, so far as the fare-mechanism is concerned, to enable a new counting to begin at the beginning of each half trip.

I claim—

1. A street car register combining in its construction the spring-actuated thrust-rod, C provided with the projection c^5 , the pawl c^2 , the ratchet c^3 , the units-wheel D , the tens-wheel D' having ratchet d^2 , the spring actuated pin F , the cam f , and the tens-wheel ratchet, and the rock shaft H , actuated by the projection c^5 , on the rod C , and the hook h^2 , transmitting the motion to the ratchet g , of the wheel G , and said wheel G , and its ratchet g , substantially as described.

2. The combination of rod C , having projection c^5 , the rock shaft H , actuated thereby the hook h^2 , communicating motion to the wheel G the wheel G , the wheel G' , the gear wheel g^5 , i , the projection i^2 , the toothed wheel g' , and the shafts E , I , substantially as described.

3. The combination of the rod K , provided with the bevel gear, the units wheel provided with a ratchet and bevel gear, the bell crank lever, and the pawl c^2 , and the rock shaft H , and the rod C , having projection c^5 , adapted to actuate the rock shaft, the hook h^2 , and the fare wheel G substantially as described.

4. The combination of the shouldered rod K provided with a bevel-gear, the units wheel D provided with its bevel gear, the bell crank, the pawl c^2 , attached to the shaft having the arm c^4 , the thrust-rod movable on pins l' , l' , which pass through its slots l , l , and the ratchet m , of the wheel M , and the spring actuated thrust-rod C , substantially as described.

5. The combination of the rod K provided with the bevel gear, the units wheel provided with the bevel gear, and stop p^4 , the tens wheel provided with the ratchet, and the spring, and the pivoted dog P provided with the tooth and the extension, and the stop d^{15} , and the spring actuated rod C , adapted as described, to move the actuating parts substantially as described.

Witness my hand this 13th day of February, 1893.

ONESIME E. MICHAUD.

Witnesses:

C. D. MOODY,
A. BONVILLE.