

(No Model.)

C. EBY.  
STREET INDICATOR.

No. 553,058.

Patented Jan. 14, 1896.

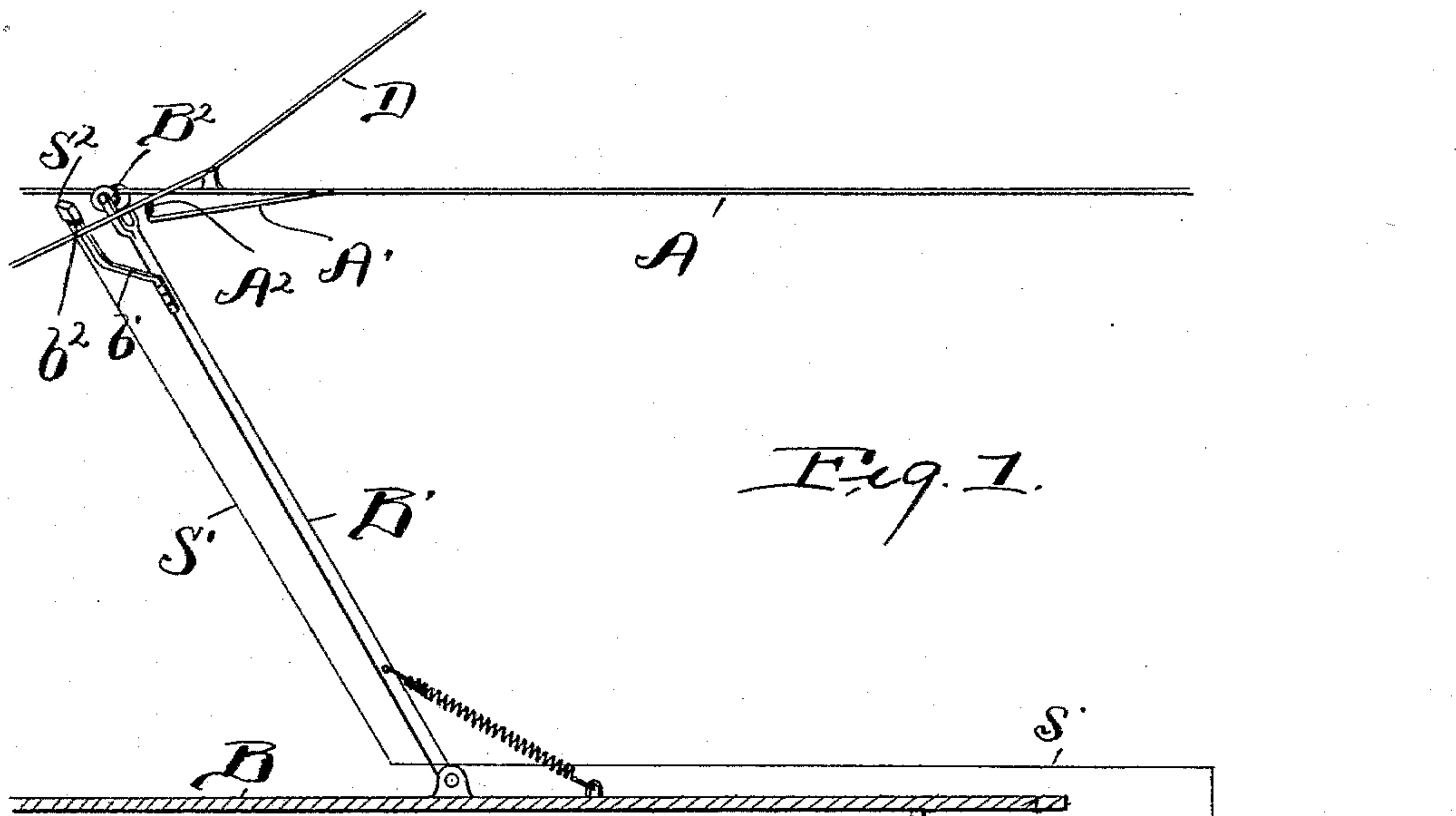


Fig. 1.

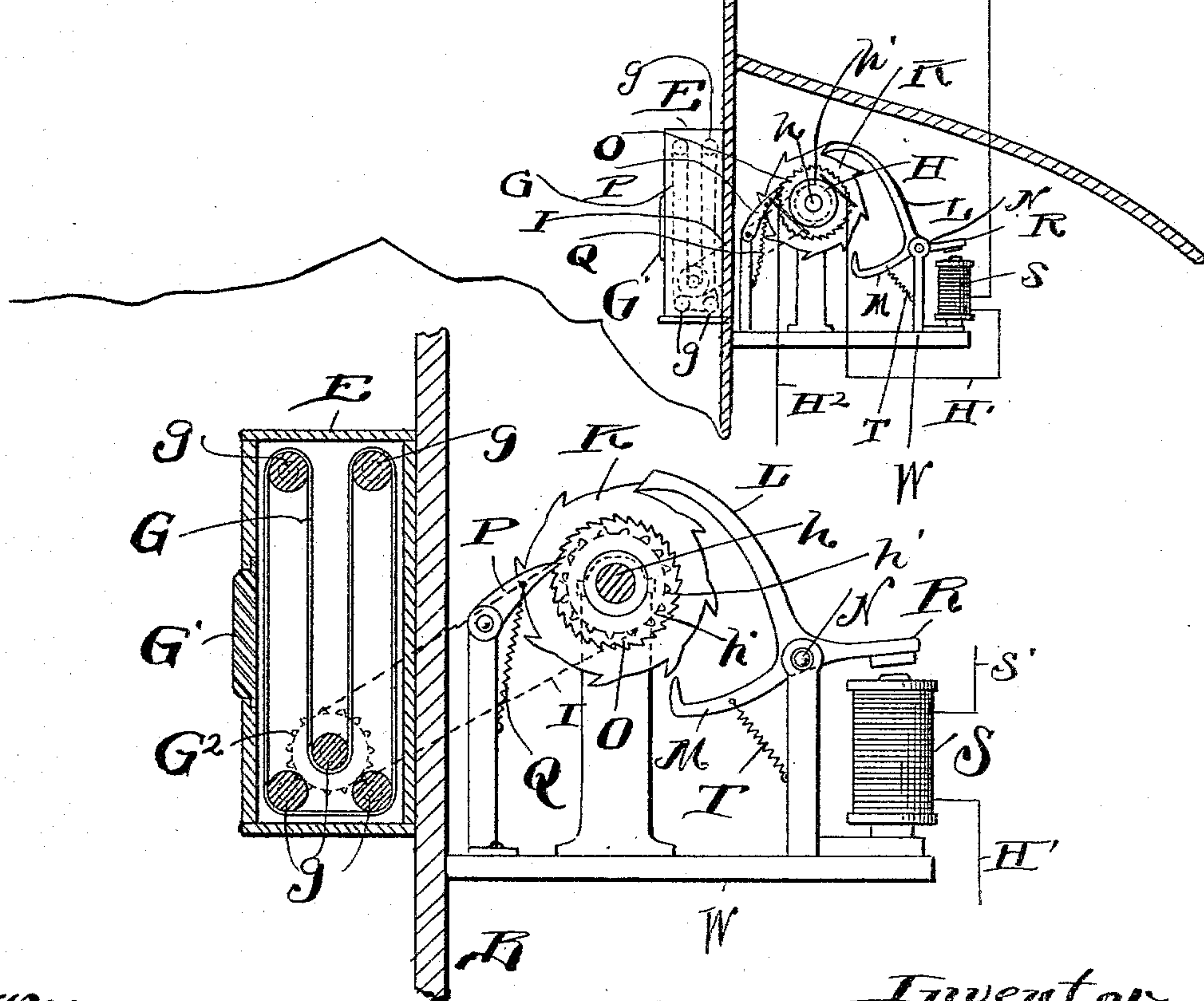


Fig. 2.

Witnesses.  
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# UNITED STATES PATENT OFFICE.

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## STREET-INDICATOR.

SPECIFICATION forming part of Letters Patent No. 553,058, dated January 14, 1896.

Application filed August 28, 1895. Serial No. 560,831. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLEY EBY, a citizen of the United States, residing at Rocky River, in the county of Cuyahoga and State of Ohio, have invented a new and useful Electrical Street-Name Machine, of which the following is a specification.

My invention relates to improvements in automatically-operated street-indicators more especially designed for use on cars of electric street-railways, wherein the overhead trolley-wire is employed, to indicate the streets that intersect with or cross the street-car line; and my invention pertains more especially to a street-indicator that comprises a street-name-bearing belt arranged within a box or case in any suitable portion of the car, which case or box is provided with a glass or window through which the names of the streets are exhibited, and which belt is operated by power transmitted from the trolley-wire.

In the accompanying drawings, Figure 1 is a side elevation in longitudinal section of a portion of a street-car provided with my improved street-indicator. This figure shows in perspective the trolley-pole of a car, the trolley-wire, and one of the cross-wires instrumental in supporting the trolley-wire and located any suitable distance in advance of a street intersecting with or crossing the street-car line. This figure diagrammatically exhibits a small motor employed in the operation of the street-indicator and located preferably in suitable proximity to the street-name-bearing belt, and also illustrates the apparatus employed for intermittently operating the motor. Fig. 2 shows in side elevation and vertical section the street-name-bearing belt and the box or case that contains said belt and provided with a glass or window through which the street names are exhibited. The small motor employed in the operation of the street-indicator has only its shaft illustrated in this figure, and this figure shows a ratchet-wheel operatively mounted upon the motor-shaft, the pawls adapted to engage said wheel and prevent the latter and consequently the motor-shaft from intermittently turning a greater distance than required to actuate the street-name-bearing belt a distance equal to the width of the space had between two names on the belt, and the drawing also exhibits an

armature operatively connected with said pawls and an electromagnet adapted to attract the armature and instrumental in the operation of the motor.

Referring to the drawings, A designates the trolley-wire or supply-conductor of an electric railway wherein the overhead trolley-wire or supply-conductor is employed.

B represents a street-car movable upon the track (not shown) of the railway and provided with a trolley-pole and trolley B' and B<sup>2</sup>, respectively, in the usual manner.

D designates one of the cross-wires that are instrumental in supporting the trolley-wire and which cross-wire is located a suitable distance in advance of a street intersecting with or crossing the railway-line, so that if the street-indicator, with which the car is provided, shall indicate said intersecting or cross street, when the car arrives at the aforesaid cross-wire, the conductor of the car shall have ample time to effect the stoppage of the car, if required, by the time it arrives at said intersecting or cross street.

My improved street-indicator comprises a box or case E located in any suitable portion of the car, preferably in the upper portion of the forward end of the car, as shown in Fig. 1. Within this case or box is suitably arranged a street-name-bearing belt G, that leads over suitable rollers g, suitably supported within the box or case. The latter, in its forward side, is provided with a glass or window G' through which the street names are exhibited. One of the rollers operatively engaged by the street-name-bearing belt is operatively connected, in any approved manner, with the shaft h of a small electric motor H, which motor is diagrammatically illustrated in Fig. 1, and has its shaft shown in transverse section in Fig. 2. The operative connection between the street-name-bearing belt and the motor-shaft consists preferably of a sprocket-wheel G<sup>2</sup> operatively connected with one of the belt-engaging rollers and operatively connected by means of a chain or belt I, with a sprocket-wheel h' operatively mounted upon the motor-shaft. The motor is operated intermittently, as hereinafter described, and I would also remark that the parts are so arranged and timed that the street-name-bearing belt shall



be actuated a distance equal to the width of the space had between two street names during each intermittent operation of the motor. Suitable means for arresting the operation of the motor, therefore, immediately upon the actuation of the street-name-bearing belt a distance equal to the width of the space between two street names upon said belt is provided, and comprises preferably a ratchet-wheel K operatively mounted upon the motor-shaft, and two pawls L and M adapted to engage the spaces between the teeth of the ratchet-wheel at almost diametrically-opposite points, respectively, of said wheel. Wheel K, and consequently the motor-shaft, are adapted to move only in the one direction, and means for preventing movement or circumferential displacement of said parts in the opposite direction is provided, and consists preferably of a ratchet-wheel O operatively mounted upon the motor-shaft and adapted to be engaged by a suitably-supported pawl P. A spring Q acts in the direction to retain pawl P in engagement with ratchet-wheel O, and the latter and engaging-pawl are of course suitably arranged to prevent rotation or circumferential displacement of the motor-shaft and wheel K in a direction opposite to the direction in which said wheel and motor-shaft rotate in the operation of the machine. The arrangement of ratchet-wheel K and pawls L and M is, of course, such that the movement of said wheel, and consequently the movement of the motor-shaft, shall be arrested when either of said pawls engage the wheel. Pawls L and M are integral or rigid with each other and are horizontally pivoted or fulcrumed at N to any suitable support. An armature R is operatively connected and preferably rigid with pawls L and M, preferably at the junction of said pawls. Armature R is adapted to be attracted by an electromagnet S when the latter is energized. Magnet S is supported in any approved manner. One terminal of said magnet is electrically connected by means of a suitable wire or electric-current conductor S', with a contact S<sup>2</sup> suitably supported from the upper portion of the trolley-pole. Contact S<sup>2</sup> is yieldingly supported from the upper portion of the trolley-pole and is shown rigid with a spring-arm b' of the trolley-pole. Contact S<sup>2</sup> is electrically insulated from its supporting-arm, as at b<sup>2</sup>. The other terminal of the magnet is electrically connected by means of a suitable wire or electric-current conductor H' with the one terminal of the electric motor, whose other terminal is electrically connected by a line H<sup>2</sup> in any approved manner with the ground or return conductor. Contact S<sup>2</sup> is adapted to electrically engage a contact A' electrically connected with the trolley-wire and supported from the trolley-wire supporting cross-wire in suitable proximity to the trolley-wire. Contact A' is, of course, insulated from the supporting cross-wire, as at A<sup>2</sup>. In other

words, contact A' is arranged in the path of contact S<sup>2</sup>, that, as already indicated, is yieldingly supported from the trolley-pole. When, therefore, contact S<sup>2</sup>, during the travel of the motor-car, comes into electrical engagement with contact A', current will flow from the trolley-wire to and through and energize the electromagnet, and thence to and through the small motor employed in the operation of the street-indicator. The energizing of the electromagnet will result in the attraction and movement of armature R against the magnet, and thereby disengage pawl L from ratchet-wheel K and permit the intermittent operation of the motor whose shaft bears said ratchet-wheel. The magnet, however, is only energized during the moment that the moving contact S<sup>2</sup> traverses the stationary contact A', and hence armature R, by means of a suitably-supported spring T that acts to hold said armature away from the magnet, is almost instantly after the energizing of the magnet withdrawn therefrom, so that pawl L immediately upon disengagement from wheel K will again be actuated into engagement with said wheel. In fact, the arrangement of parts is preferably such, as already indicated, that the street-name-bearing belt shall be moved a distance equal to the width of a space between two street names during the actuation of ratchet-wheel K a distance equal to the length of a space between two of the teeth of said wheels so that pawl L, when it, in the operation of the machine, is operatively disengaged from a notch in wheel K, will again be thrown into engagement with the next succeeding notch of said wheel. Pawl M acts as a guard to prevent ratchet-wheel K from being moved more than the fractional turn required to transmit to the street-name-bearing belt the requisite movement, and the arrangement of parts is such that when pawl L is in its ratchet-wheel engaging or locking position pawl M is out of operative engagement with said wheel, and when the armature R is attracted by the energized magnet and pawl L is operatively disengaged from wheel K pawl M shall be moved into engagement with said wheel and lock the latter as against movement beyond the distance required. A suitably-provided spring T not only acts to hold the armature away from the magnet, but simultaneously acts to retain pawl L in its locking or operative position and to retain pawl M in its inoperative position.

Magnet S, armature R, pawls L and M, and motor H are all conveniently supported by a shaft W, secured to the street-indicator-bearing wall of the car, as shown.

What I claim is—

1. The combination with the supply-conductor and motor-car of an electric-railway, and suitably supported street-name-bearing belt, of an electric motor operatively connected with the belt, a toothed wheel K operatively connected with the motor, a pawl L adapted to engage the spaces between the



teeth of said wheel and limit the operation of the motor, means acting to retain said pawl in engagement with the wheel and to retain the armature disengaged from the magnet, an armature rigid with said pawl, an electro-magnet adapted to attract the armature and having one of its terminals electrically connected with one of the terminals of the motor, a contact  $S^2$  suitably supported from the car and electrically connected with the other terminal of the magnet, and another stationary contact  $A'$  arranged in the path of contact  $S^2$  and electrically connected with the power-conductor, substantially as set forth.

2. The combination with the trolley-wire, motor-car, trolley-pole, and suitably supported street-name-bearing-belt, of an electric motor operatively connected with the belt, a toothed-wheel  $K$  operatively connected with the motor, a pawl  $L$  adapted to engage the spaces between the teeth of said wheel and limit the operation of the motor, means acting to retain said pawl in engagement with the wheel and to retain the armature disengaged from the magnet, an armature operatively connected with said pawl, an electro-magnet adapted to attract the armature and having one of its terminals electrically connected with one of the terminals of the motor, a contact  $S^2$  suitably supported from the trolley-pole and electrically connected with the other terminal of the magnet, and another stationary contact  $A'$  arranged in the path of contact  $S^2$  and electrically connected with the trolley-wire, substantially as set forth.

3. The combination with the trolley-wire  $A$ ,

motor-car, trolley-pole  $B'$ , and street-name-bearing belt, of the electric-motor  $H$  arranged within an electric circuit and operatively connected with the aforesaid belt, the toothed wheel  $K$ , pawls  $L$  and  $M$ , armature  $R$ , spring  $T$ , magnet  $S$  having one of its terminals electrically connected with one of the terminals of the motor, contact  $S^2$  suitably supported from the trolley-pole and electrically connected with the other terminal of the magnet, and stationary contact  $A'$  electrically connected with the trolley-wire, all arranged and operating substantially as shown, for the purpose specified.

4. The combination with the trolley-wire  $A$ , the stationary contact  $A'$  electrically engaging the trolley-wire, the motor-car, the trolley-pole  $B'$  provided with the spring-arm  $b'$ , and street-name-bearing belt suitably supported within the car, of the motor  $H$  arranged within an electric-circuit and operatively connected with the aforesaid belt, the toothed-wheel  $K$ , pawls  $L$  and  $M$ , armature  $R$ , spring  $T$ , magnet  $S$  having one of its terminals electrically connected with the motor, and the contact  $S^2$  supported but electrically insulated from the aforesaid trolley-pole-arm and electrically connected with the other terminal of the magnet, all arranged and operating substantially as shown, for the purpose specified.

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Witnesses:

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JOSEPH EBY.