

(No Model.)

2 Sheets—Sheet 1.

D. B. D'O. BLAKE.
STATION INDICATOR.

No. 530,821.

Patented Dec. 11, 1894.

Fig. 1

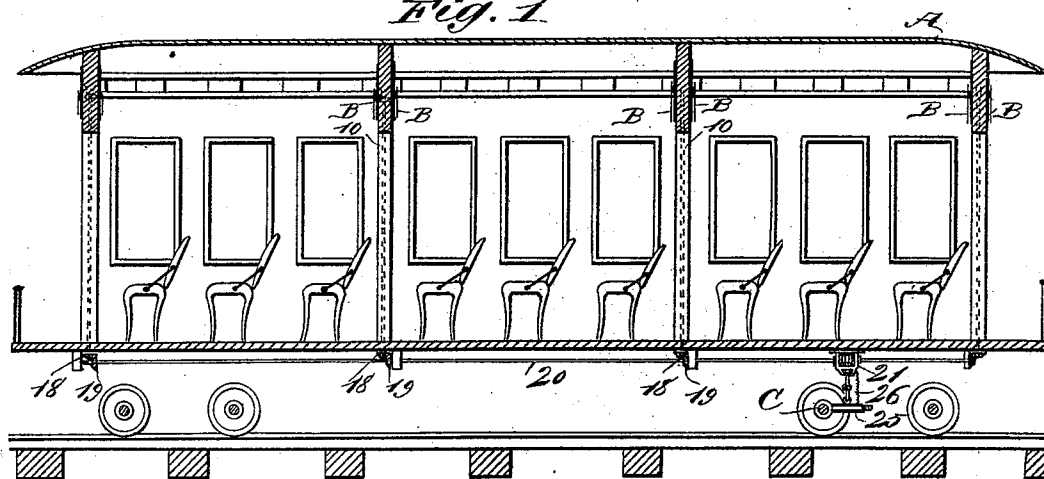


Fig. 2

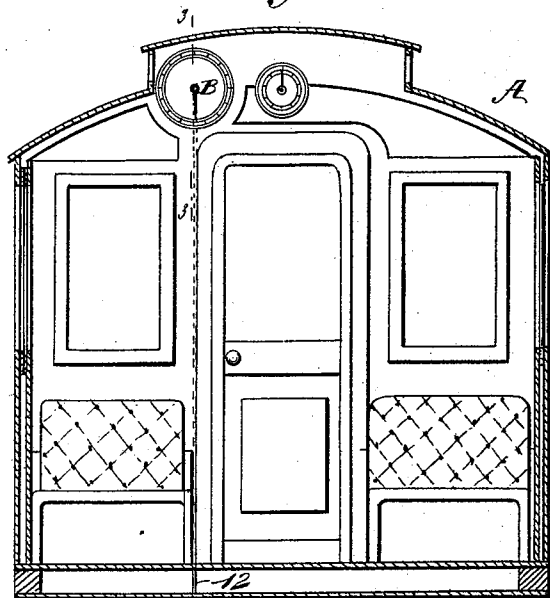


Fig. 3

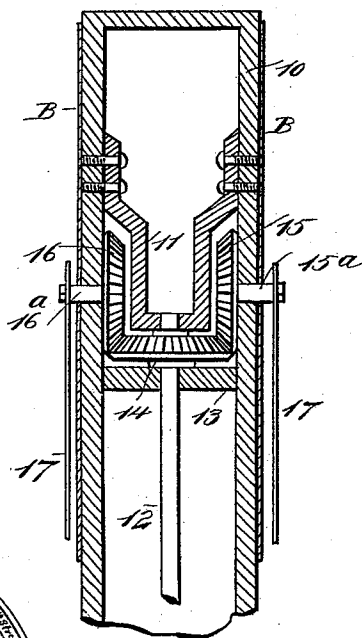
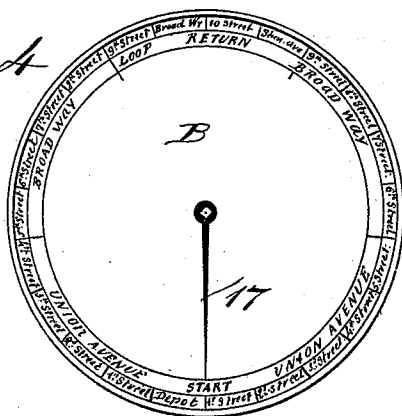


Fig. 4



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(No Model.)

2 Sheets—Sheet 2.

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Fig. 5

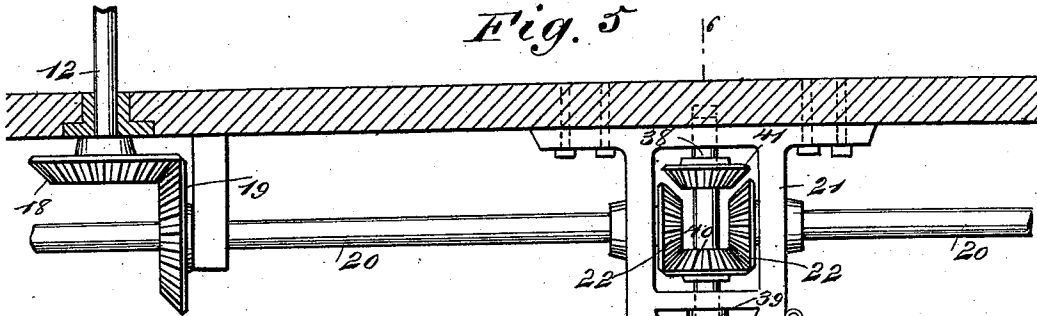


Fig. 6

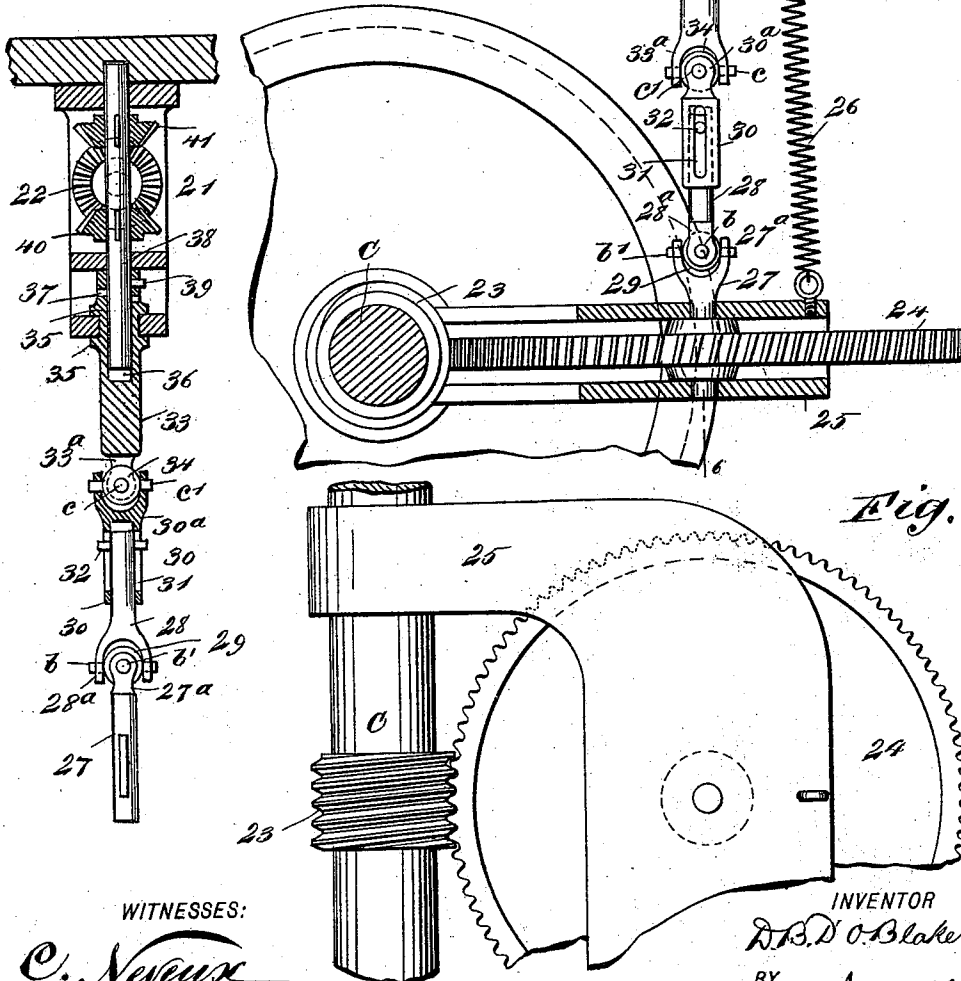
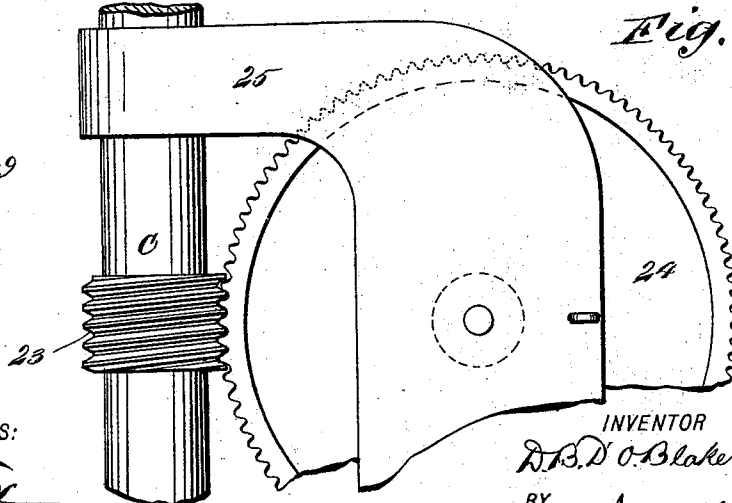


Fig. 7



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UNITED STATES PATENT OFFICE.

DENNIS B. D'ORSEY BLAKE, OF DENVER, COLORADO.

STATION-INDICATOR.

SPECIFICATION forming part of Letters Patent No. 530,821, dated December 11, 1894.

Application filed January 11, 1894. Serial No. 496,519. (No model.)

To all whom it may concern:

Be it known that I, DENNIS B. D'ORSEY BLAKE, of Denver, in the county of Arapahoe and State of Colorado, have invented a new and Improved Station-Indicator, of which the following is a full, clear, and exact description.

My invention relates to a station indicator, and it has for its object to provide a device adapted especially to be attached to tram or surface cars of any description, and which will automatically act in a manner to indicate to the passengers the name of the street or station as it is being passed or approached, thus enabling the passenger to determine how many blocks he or she may be from the destination proposed, and how far from the starting point; and the invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the views.

Figure 1 is a longitudinal vertical section through a car having the improvement applied thereto. Fig. 2 is a transverse section through the car, taken in front of one of the partitions thereof. Fig. 3 is a vertical section taken practically on the line 3—3 of Fig. 2. Fig. 4 is a face view of the dial employed. Fig. 5 is a detail view of the driving mechanism of the indicator. Fig. 6 is a section through said driving mechanism taken practically on the line 6—6 of Fig. 5; and Fig. 7 is a detail plan view of a carriage which is carried by the axle of the car, and which carries the prime driving mechanism for the indicator.

The car A, may be of any approved construction, that in the drawings being illustrated as provided with partitions 10, dividing it into several compartments, and in this form of car a dial B, adapted to indicate the streets or avenues in the route over which the car passes, is placed in the several partitions 10, and in the front and the rear of the car, the dial showing upon opposite sides of the partitions or supports upon which it is located, the said dial being shown in detail in Fig. 4.

In Fig. 3 one of the partitions is shown in vertical section, the dial being attached thereto at opposite sides. The dial is preferably made circular in shape, and within the partition 10, which is hollow, a substantially U-bracket 11, is located, which forms the upper bearing for a vertical shaft 12, the said shaft being guided in a lower bearing 13. This shaft is provided at its upper end with a beveled gear 14, which meshes with two similar gears 15 and 16, located within the space contained within the partition 10, one adjacent to each side wall of said space. These gears 15 and 16 are journaled in the partition through the medium of spindles 15^a and 16^a, and each of the spindles extend through and beyond the dials B, and each has secured thereto a hand or pointer 17. These hands or pointers are adapted to travel over the face of the dial, and upon the face of each dial the names of the streets or avenues on the route are produced, as shown in Fig. 4, and likewise the loop or other returning point. At the lower portion of the dial the starting point is indicated, while at the upper portion the return point is shown; but the order or arrangement of the indicating information upon the dial may be changed or varied from that shown in the drawings.

Each shaft 12 extends downward through the bottom of the car, and is provided at its lower end with a beveled gear 18. These beveled gears are made to mesh with like gears 19, which are secured upon one or more line shafts 20. In Fig. 5 two of such line shafts are indicated, both of them leading into a hanger 21, and within the hanger each shaft is provided with a beveled gear 22, firmly secured to its shaft.

The line shafts 20, are adapted to be driven from one of the axles C of the car, and preferably the rear axle is selected for this purpose, since the forward axles are usually employed as driving axles in for example electric, and in some cases cable cars. Therefore, the wheels of the rear axles will not be liable to slip owing to the braking, or to the stopping and starting of the car, as the influence of such mediums will be felt only by the forward axle, or those to which the motor and braking mechanisms are connected. Therefore the rear axle C, is provided with a

worm 23, and this worm is engaged by a worm wheel 24 of suitable diameter, and provided with a number of teeth calculated with respect to the distance between stations, streets or avenues, in order that the dial may show correctly the various places to be indicated and past which the car is to travel, giving this information at the proper time.

The worm wheel 24, is fulcrumed or pivoted preferably in a hanger 25, which is itself pivotally connected with the axle C; and the said hanger of the wheel 24, is connected with the hanger 21 in which the shafts 20 are journaled, and which is secured to the bottom of the car, through the medium of a spring 26, as is best illustrated in Fig. 5. The hanger 25 carries said worm wheel in proper position no matter in what direction the body of the car may have motion.

Since the worm wheel is connected with the axle the wheels of which travel upon a fixed track, and the body of the car with which the hanger of the worm wheel is connected has more or less play upon its springs, a yielding, yet driving connection must be effected between the worm wheel and the driving shaft or shafts 20. Such a connection is illustrated in detail in Figs. 5 and 6, and it consists of a spindle 27, which is secured firmly to the worm wheel 24, the said spindle being provided with a fork 27^a at its upper end, and the spindle 27 is adapted to meet a second spindle 28, provided at its lower end with a fork 28^a. The said forks may be at right angles to each other, and between them a ball 29, is located, and each fork is connected with the ball through the medium of a pin, the pin of the fork 28^a being designated as *b* and the pin of the fork 27^a being designated as *b'*.

The spindle 28, is made to enter a sleeve 30, which sleeve is provided with a slot 31 in opposite sides, and the spindle 28, is provided with a pin 32, which extends through and has guided movement in said slots. The sleeve 30, is provided with a forked upper end 30^a, and the said fork receives at right angles to it the forked end 33^a of an upper spindle 33; and between these two forks a ball 34, is placed, the fork 33^a being connected with the ball by a pin *c*, while the fork 30^a is attached to the ball by a pin *c'*.

The upper end of the spindle 33, is provided with guide flanges 35, whereby it has guided rotary movement in the lower portion of the hanger 21 connected with the car body, and within the said hanger the spindle 33, which at its upper end is provided with a longitudinal chamber 36, is provided with a spiral groove 37, and the chamber of the spindle 33, is adapted to receive the lower end of a shaft 38, which shaft at its upper end is journaled in the upper end of the hanger 21. The shaft 38, is provided with a pin 39, adapted to travel in the spiral groove 37 of the spindle 33; and the said shaft 38, is provided with two beveled or miter gears 40 and 41, both of

which are adapted to engage with the beveled gears 22 on the shafts 20, but only one of the gears 40 or 41 is in engagement at one time with the line shaft gears, as shown in Fig. 5. Thus it will be observed that no matter what the relation of the body of the car may be with respect to the rear axle, the driving mechanism between the worm wheel 24 and the line shafts will act to drive the latter.

In operation, when a car, for example, is to travel over a route containing a loop, whereby one end of the car is always the front end, the pin 39 contained in the shaft 38 will engage with the end wall of the upper portion of the spiral groove 37 in the upper spindle 33, as shown in Fig. 5, and the line shafts 20 will be constantly driven in one direction, and the calculation of the teeth upon the worm wheel 24 engaging with the axle worm 23, will be such that when the streets or avenues over which or across which the car may pass are reached, the pointers on the dials will indicate the names of said streets or avenues, either just before they are approached or just after they are passed, or at the time they may be approached; but when a car is to be switched at the end of the route in a manner to reverse the ends of the car, it will be observed by reference to Fig. 5 that the connecting medium between the axle C and the line shafts 20 will be reversed automatically, since when the axle turns in an opposite direction the pin 39 in the short coupling shaft 38, will be carried down to the lower end of the spiral groove 37 in the upper spindle 33 of the connecting shafts, and therefore the coupling shaft 38 will be drawn downward, causing its lower gear 40 to disengage the gears of the drive shafts 20, and the upper gear 41 of the coupling shaft will be brought into mesh with the gears on the line shafts 20, and in this manner the said line shafts will be turned in the same direction as before, although the car may be turned end for end, and the pointer will be made to indicate in the same manner.

In this manner it will be observed that a station indicator may be constructed by means of which, in an entirely automatic manner, the various streets or avenues through which the car may pass, or across which it may travel, may be accurately made known to the occupants of the car, and at the proper time.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination of the indicator, an operating shaft geared to the car axle and formed in telescopic sections, a cam or spiral groove being formed in one shaft-section and the other having a pin entering said groove, gear wheels on one of said shaft-sections, with shafting geared to the indicator and provided with a gear intermediate of the first named gears and with which said two gears

are alternately and automatically engaged when the rotation of the axle is reversed, substantially as set forth.

2. The combination of the indicator and operating shaft geared to the car axle and formed in telescopic sections, a cam or spiral groove being formed in one shaft-section and the other having a pin entering the groove, two bevel gears on the upper shaft section, and the lower shaft section being universally jointed at its lower portion to the gearing which connects it with the axle, with shafting geared to said indicator and provided with a gear intermediate of said two gears and whereby rotary motion in the same direction is transmitted thereto regardless of the direction of rotation of the car axle, substantially as set forth.

3. A station indicating apparatus comprising a vertically swinging bracket through which the car axle freely passes, a horizontal worm wheel geared to the axle, a spring supporting the bracket from the under side of the car, a hanger on the car bottom, a vertical shaft section journaled therein, a second shaft section journaled in the lower end of the hanger and having a longitudinal bore receiving the lower end of the first shaft section, a spiral groove and pin connecting said telescopic ends, a longitudinally extensible shaft section universally jointed to the lower end of said second shaft section and to the

axis of said horizontal worm gear, an indicating mechanism and line shafting geared thereto and provided with an operating gear intermediate of the two first named gears to be driven in the same direction thereby, substantially as set forth.

4. The combination with the compartmented car having hollow partitions or casings 10 in the end walls of its compartments, shafts extending through opposite sides thereof and provided with pointers, dials at both sides of the end walls, bevel gears on the inner ends of said shafts, and vertical shafts extending down through said walls or partitions beneath the car and there provided with bevel gears, of the line shafting extending longitudinally of the under side of the car and provided with bevel gears meshing with said vertical shafts, a vertical automatically reversing shaft having two bevel gears between which are similar gears on the line shafting; the said vertical shaft being formed longitudinally extensible and in universally jointed sections and provided on its lowermost section with a worm gear meshing with a worm on the car axle and a yielding bearing carrying said worm gear, substantially as set forth.

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Witnesses:

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