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H. R. KUERSTEN.

STREET OR STATION INDICATOR.

No. 513,117. Patented Jan. 23, 1894.

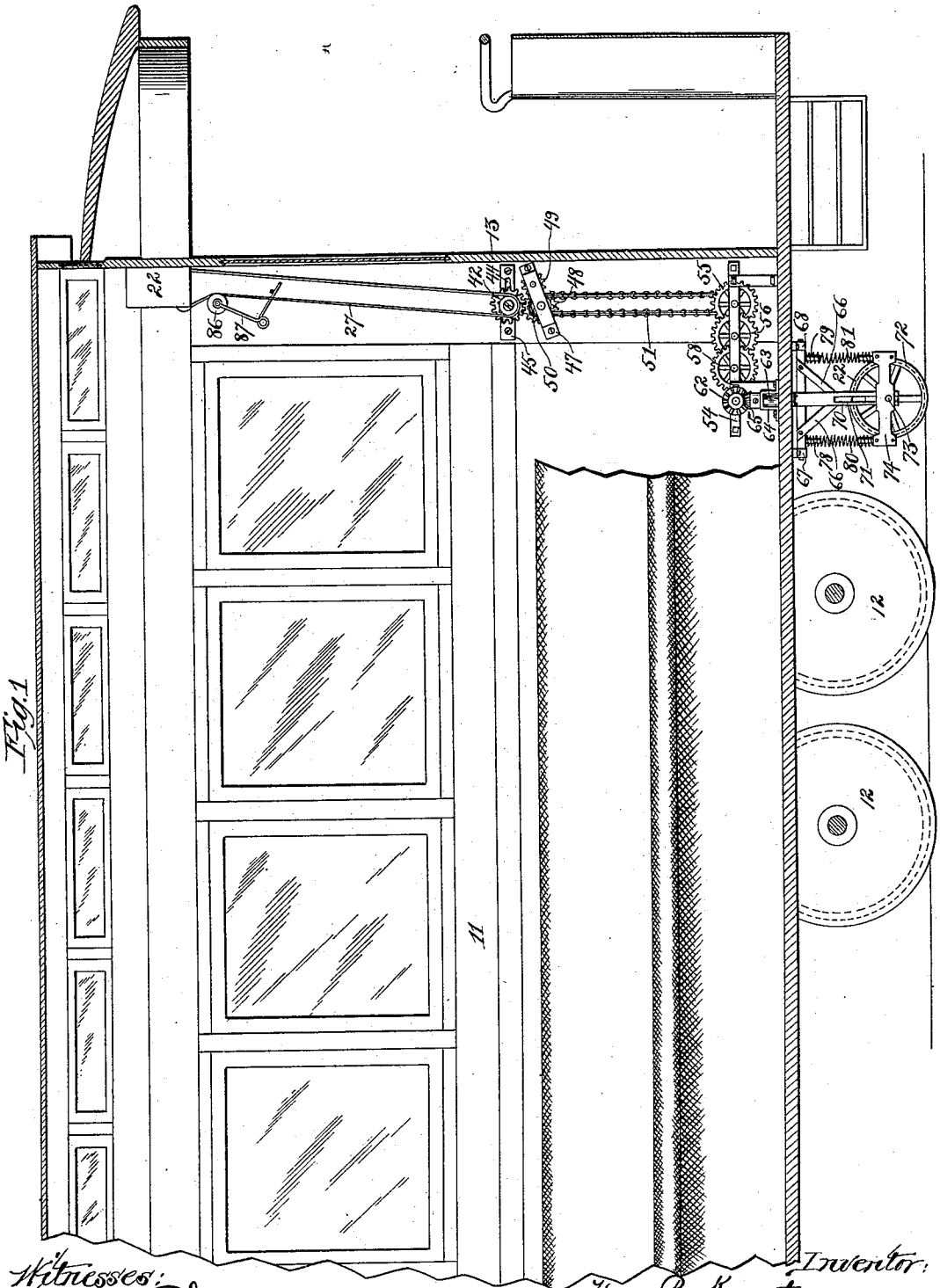

Fig. 1.

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Wm. A. Fleming

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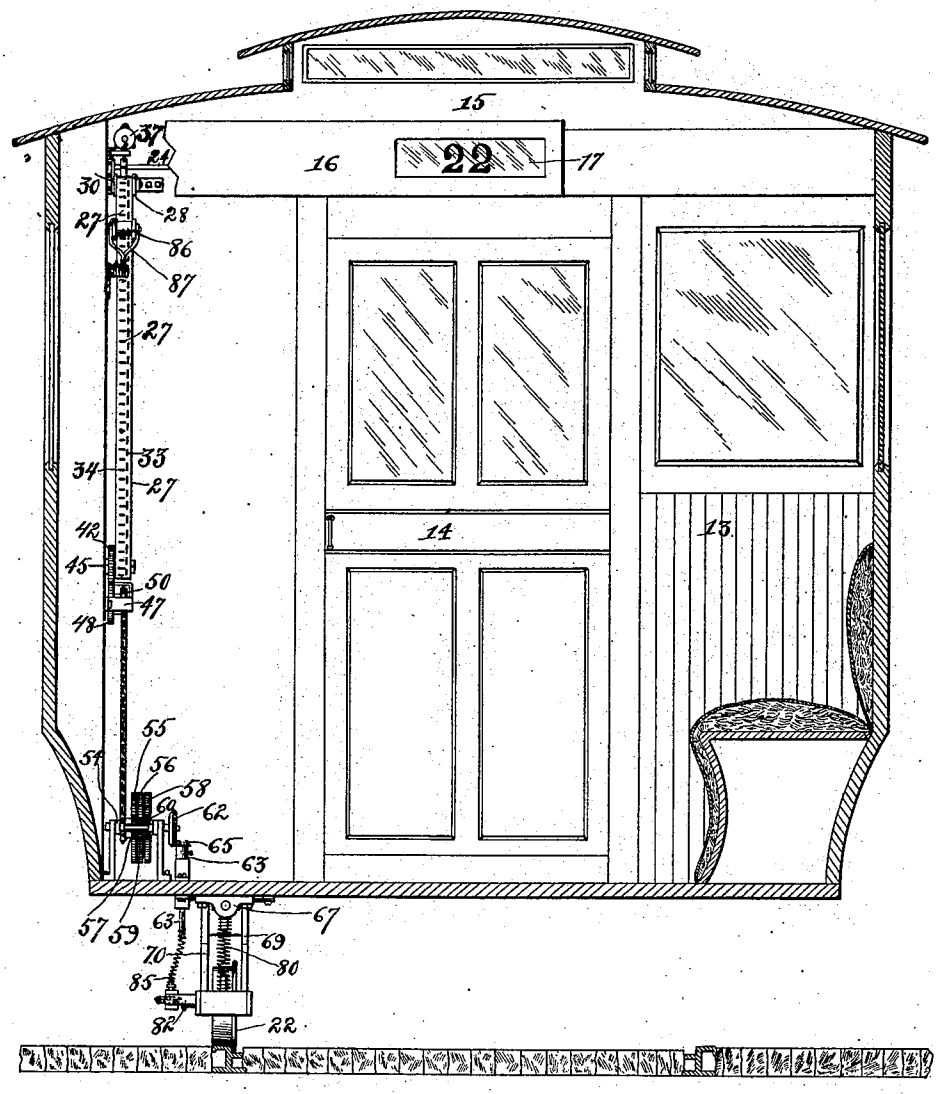
Fig. 2.



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STREET OR STATION INDICATOR.

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Fig. 4.

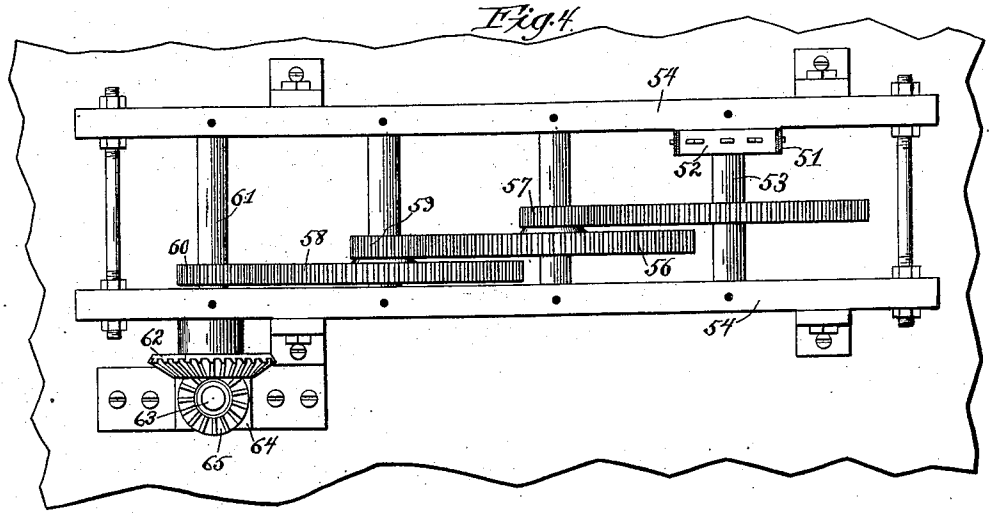

Fig. 3.

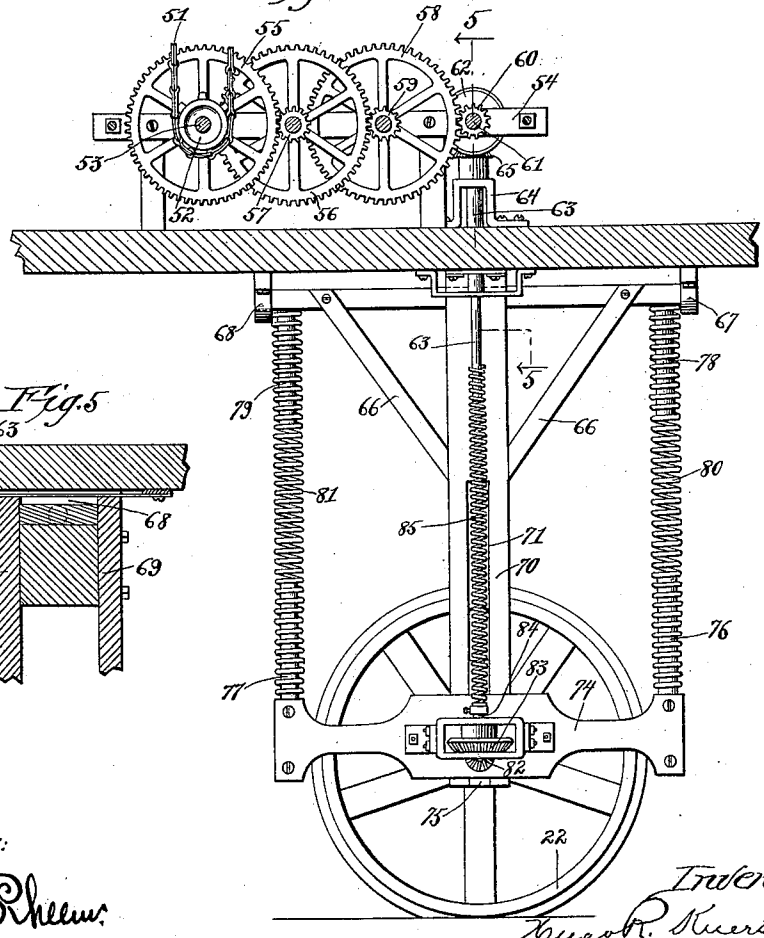

Fig. 5.

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STREET OR STATION INDICATOR.

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Fig. 6.

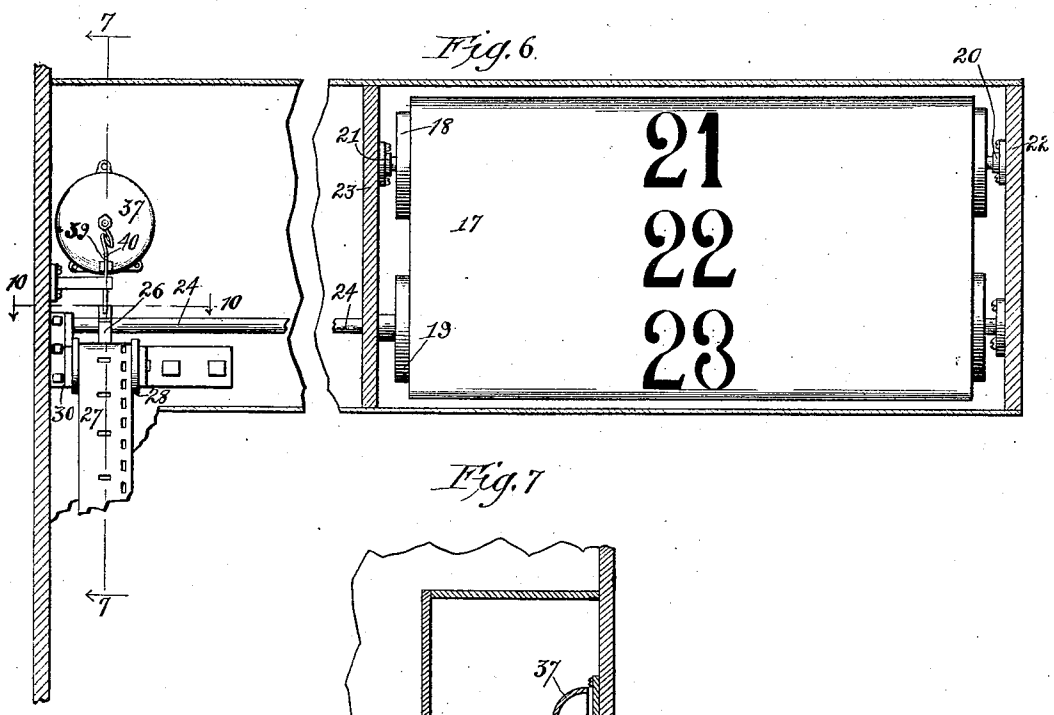


Fig. 7

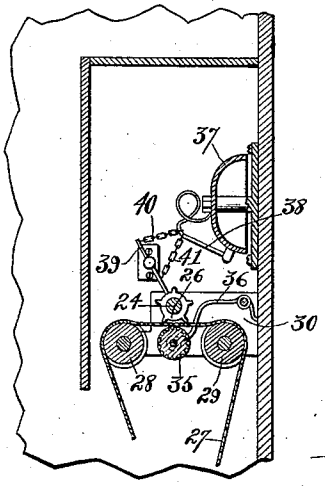


Fig. 10

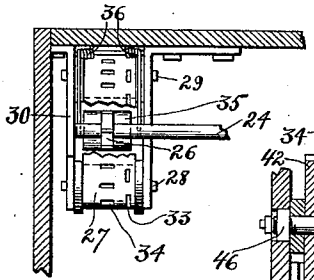


Fig. 9

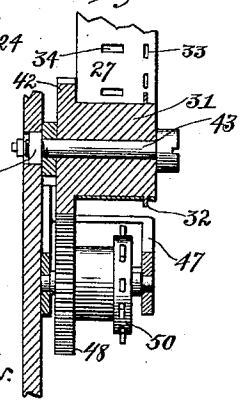
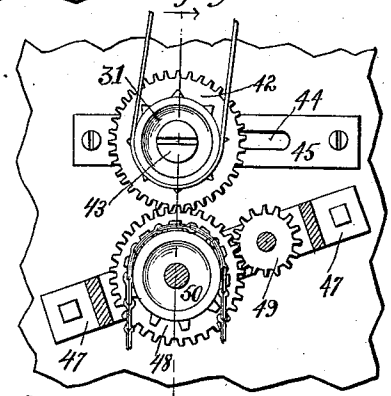


Fig. 8.



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UNITED STATES PATENT OFFICE.

HUGO R. KUERSTEN, OF CHICAGO, ILLINOIS, ASSIGNOR TO HIMSELF, AND ALBERT J. PAULI AND PETER SEIDL, OF MENOMINEE, MICHIGAN.

STREET OR STATION INDICATOR.

SPECIFICATION forming part of Letters Patent No. 513,117, dated January 23, 1894.

Application filed April 3, 1893. Serial No. 468,949. (No model.)

To all whom it may concern:

Be it known that I, HUGO R. KUERSTEN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Street or Station Indicators for Railway-Cars, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a partial longitudinal section of a car, showing part of my improved indicator. Fig. 2 is a vertical cross section through one end of the car. Fig. 3 is an enlarged detail, being a side elevation of the driving wheel and the adjacent mechanism. Fig. 4 is an enlarged detail, being a top or plan view of the parts shown in Fig. 3. Fig. 5 is a detail, being a section on line 5—5 of Fig. 3. Fig. 6 is an enlarged detail of the upper portion of the indicator. Fig. 7 is a sectional view on line 7—7 of Fig. 6. Fig. 8 is a side elevation of a part of the driving mechanism. Fig. 9 is a section on line 9—9 of Fig. 8; and Fig. 10 is a horizontal section on line 10—10 of Fig. 6.

My invention relates to indicators adapted to be used upon cars for the purpose of indicating the cross streets as the car approaches them.

The objects of my invention are to provide an improved indicator which will automatically indicate the streets, and one which will be simple in construction and may be easily adapted for use on different railway lines. I accomplish these objects as hereinafter specified and as illustrated in the drawings. That which I regard as new will be set forth in the claims.

In the drawings,—11 indicates a car, of which 12 are the wheels, 13 is the end wall or panel, and 14 is one of the doors.

15 indicates an indicator, which is preferably arranged over the door at the end of the car, as best shown in Fig. 2. The indicator consists of an outer covering, or box 16, having a suitable sight opening through which the names of the streets may appear, such names being carried upon a strip 17, of canvas or other suitable material, having the names painted upon it, said strip being wound upon rollers 18, 19, as best shown in Fig. 6. The upper roller 18 is a spring roller, preferably of the kind commonly used for shade rollers, and is mounted in brackets 20, 21, carried by end pieces 22, 23, as best shown in Fig. 6. The lower roller 19 is mounted upon a shaft 24 journaled in the end pieces 22, 23, which shaft is adapted to be rotated by driving mechanism in one direction or the other. When the shaft 24 is rotated in such direction as to wind the strip 17 upon the roller 19 the spring of the roller 18 will be wound up, and when the shaft 24 is rotated in the opposite direction the spring of the roller 18 will act to wind the strip upon such roller.

It is evident that, instead of arranging the rollers as shown, the upper roller could be operated by a shaft and the lower one by a spring, as the construction would not thereby be affected. The shaft 24 projects through the end piece 23, terminating near the side of the car, and is provided near its end with a sprocket wheel 26, as best shown in Figs. 6 and 7.

27 indicates an endless metallic belt, the upper portion of which passes over pulleys 28, 29, supported by a bracket 30 secured to the side of the car, as best shown in Figs. 6 and 7. The pulleys 28, 29 are so placed that their outer portions will be about on a line with the lower portion of the sprocket wheel 26, so that as the belt 27 passes over them it will be held in contact with the lower surface of the sprocket wheel 26. The lower portion of the belt 27 passes around a sprocket wheel 31 provided with sprockets 32, as best shown in Fig. 9, which sprockets are adapted to fit into perforations 33 in the belt 27. The perforations 33 are placed at regular intervals in the belt 27, and are preferably at one edge thereof, as shown in Figs. 6 and 9. By this construction, by rotating the sprocket wheel 31 the belt 27 will be driven.

34 indicates slots arranged transversely in the belt 27. The slots 34 are equal in number to the cross streets intersecting the railway track, and the spaces between the slots correspond to the distance between the successive cross streets. The slots 34 are so placed as to pass immediately under the teeth of the sprocket wheel 26, and are adapted to be engaged by said teeth as the belt 27 moves along. By this construction, as the belt 27

travels, whenever one of the slots 34 arrives opposite one of the teeth of the sprocket wheel 26 the sprocket wheel will be partially rotated, rotating the roller 19 in one direction or the other, and bringing into view the next succeeding street name or number upon the strip 17.

35 indicates a cogged idler arranged under the belt 27 and sprocket wheel 26, it being held in contact with the belt 27 by a spring 36, as shown in Fig. 7. The idler 35 serves to hold the belt 27 in close contact with the sprocket wheel 26, and insures the entering of the teeth of the sprocket wheel into the slots 34.

37 indicates a bell mounted over the sprocket wheel 26.

38 indicates a spring hammer, the elasticity of which tends to keep it normally in contact with the bell.

39 indicates a pivoted rod which is mounted near the sprocket wheel 26, one end thereof projecting to near the periphery of said sprocket wheel, and being adapted to be engaged by the sprockets of said wheel as the wheel rotates.

40, 41 indicate chains or cords which connect the opposite ends of the rod 39 with the hammer 38. The arrangement is such that by tilting the rod 39 in either direction the hammer 38 will be drawn back out of contact with the bell. By this construction, as the sprocket wheel 26 rotates the rod 39 will be rocked in one direction or the other, thereby moving the hammer 38 out of contact with the bell. The rotation of the sprocket wheel causes the sprocket to release the rod 39. The spring of the hammer will cause it to strike the bell forcibly, thereby causing it to sound.

Connected to the sprocket wheel 31, and preferably formed integral with it, is a gear wheel 42, which is mounted upon a shaft 43 secured in a slot 44 formed in a plate 45, which plate is secured to the side of the car. One end of the shaft 43 is screw threaded, and carries a bolt 46 back of the plate 45, as shown in Fig. 9, by which construction the position of the shaft 43 in the slot 44 may be adjusted.

47 indicates a bracket arranged in an inclined position under the plate 45, as best shown in Fig. 8.

48 indicates a gear wheel mounted in the bracket 47, and adapted to intermesh with the gear wheel 42. 49 indicates a pinion which is mounted in the bracket 47, and intermeshes with the gear wheel 48. The shaft of the pinion 49 is arranged closer to the gear wheel 42 than the gear wheel 48, it being so placed that by shifting the gear wheel 42 laterally it may be moved into mesh with said pinion 49, and may thereby be caused to rotate in the reverse direction.

50 indicates a sprocket wheel, which is mounted upon the same shaft as the gear wheel 48 and is preferably formed integral therewith, as shown in Fig. 9.

51 indicates a link belt, the lower portion of which passes around a sprocket wheel 52 mounted upon a shaft 53, which shaft is journaled in bearings carried by a frame 54 mounted upon the floor of the car, as best shown in Figs. 1 and 3. The upper portion of this belt 51 passes around the sprocket wheel 50, as shown in Figs. 1, 8 and 9.

55, 56, 57, 58, 59, 60 indicate a series of gear wheels and pinions intermeshing with each other, and arranged to diminish the rotation of the first pinion 60 as communicated to the sprocket wheel 52. Said gear wheels and pinions are also mounted upon suitable shafts journaled in the frame 54.

61 indicates the shaft of the pinion 60, which shaft carries a beveled gear 62, as best shown in Fig. 4.

63 indicates a shaft vertically journaled in a bracket 64 mounted upon the floor of the car, which shaft carries at its upper end a beveled gear intermeshing with the gear 62, as best shown in Figs. 1 and 4. The shaft 63 projects a short distance below the floor of the car, as shown in Figs. 3 and 5.

66 indicates a frame which is suspended below the floor of the car, being pivoted in brackets 67, 68, secured to the under side of the floor of the car. The frame 66 consists of side pieces 69, 70, each of which is provided with a vertical slot 71, as best shown in Fig. 1.

72 indicates the track wheel, mounted upon a shaft 73 journaled in a frame 74, as best shown in Figs. 1 and 3. The frame 74 is provided with blocks 75 at each side, which blocks are adapted to move in the slots 71, thereby permitting the vertical movement of said wheel 72.

76, 77 indicate pins which rise centrally from each end of the frame 74. 78, 79 indicate similar pins which depend from the frame 66 over the pins 76, 77.

80, 81 indicate springs arranged vertically between the upper pins 78, 79 and the lower pins 76, 77. The tension of the springs 80, 81 exerts a downward pressure upon the frame 74, and thereby serves to hold the wheel 72 upon the track with a yielding pressure.

The shaft 73 of the wheel 72 projects through one side of the frame 74 and carries a beveled gear 82, as best shown in Fig. 3. The gear 82 intermeshes with a beveled gear 83 arranged in a horizontal position upon a shaft 84, as best shown in Fig. 3. Rigidly secured to the upper portion of the shaft 84 is a flexible shaft 85, consisting of a spring, as best shown in Figs. 2 and 3. The upper end of the shaft 85 is rigidly connected to the lower end of the shaft 63, as best shown in Figs. 2 and 3. By this construction the rotation of the track wheel 72 in either direction will rotate the shaft 63, thereby rotating the diminishing gears 60, 59, 58, 57, 56, 55 and sprocket wheel 52. The link belt 51 will thereby be rotated, and through it the indicator will be operated. By providing a vertically movable spring-pressed track wheel

the inequalities of the track will not affect the operation of the indicator, injurious effect from the rocking of the cars is also avoided, and the track-wheel is constantly pressed against the track to insure proper and continuous action of the indicator driving mechanism, in which respect my invention is advantageous over a track-wheel which simply rests by gravity against the track. By pivoting the frame 66 the track wheel will also move sidewise, as may be necessary in rounding curves, &c.

In using my improved indicator on street railway lines in which the car returns along the same route, the conductor upon starting would loosen the shaft 43 and move the gear wheel 42 into mesh with either the gear wheel 48 or the pinion 49, depending upon the direction which the indicator should move. As the car progressed, the strip 17 would be unwound from one roller and wound upon the other, until at the end of the trip it would be nearly all wound upon a single roller. Upon the return trip the gear wheel 42 would be again shifted, causing the belt 27 to move in the opposite direction and the strip 17 to be re-wound upon the original roller. All the belts 27 used on a single line would be identical, but by placing the slots 34 properly the indicator could be used upon any line. In order to further tighten the belt I provide an idler 86, which is held in contact with the belt 27 by a spring 87, as best shown in Fig. 1. By the use of a belt having the slots 34 and a sprocket wheel 26, the sprocket wheel will not be rotated except when one of the slots 34 engages one of the teeth of the sprocket wheel, and such rotation will cease as soon as the next succeeding tooth of the sprocket wheel comes in contact with the surface of the belt 27. By this arrangement the strip is moved intermittently, and not constantly, which is a desirable feature.

I do not wish to limit myself to the use of a series of gear wheels for diminishing the speed of rotation of the track wheel 72, as many other equivalent devices could be used, but I prefer to use the arrangement shown.

That which I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination with a track wheel, and a shaft, of an endless belt having slots, means for driving said belt from said track wheel at a diminishing rate of speed, a sprocket wheel adapted to engage the slots of said belt and to be rotated thereby to rotate the shaft, and an indicator operated by the rotation of said shaft, substantially as described.

2. The combination with a track wheel, and a shaft, of an endless belt having slots, means for driving said belt from said track wheel at a diminishing rate of speed, a sprocket wheel adapted to engage the slots of said belt and to be rotated thereby to rotate the shaft, an indicator operated by the rotation of said shaft, and means for reversing the movement of said belt, substantially as described.

3. The combination with a car, a shaft 24, an indicator operated by the rotation of the shaft, and a sprocket-wheel mounted upon said shaft, of an endless belt 27 having slots, and mechanism operated by the motion of the car for rotating said belt and causing the slots therein to register with and engage the teeth of said sproket-wheel, said slots being arranged a distance apart corresponding to the distance separating the cross streets intersecting the route of the car, substantially as described.

4. The combination with a car, a shaft 24 mounted therein, an indicator operated by the rotation of said shaft, and a sprocket wheel 26 mounted upon said shaft, of a sprocket wheel 31, pulleys 28, 29 arranged under said sprocket wheel 26, a belt 27 passing over said pulleys 28, 29 to said sprocket wheel 31, perforations in said belt to receive the sprockets of said sprocket wheel 31, slots in said belt adapted to engage the teeth of said sprocket wheel 26, and devices operated by the motion of the car for rotating said sprocket wheel 31, substantially as described.

5. The combination with a car, a shaft 24 mounted therein, an indicator operated by the rotation of said shaft, and a sprocket wheel 26 mounted upon said shaft, of a belt 27 having slots 34 adapted to engage the teeth of said sprocket wheel 26, pulleys supporting said belt in proximity to said sprocket wheel 26, a sprocket wheel 31, perforations in said belt adapted to receive the sprockets of said sprocket wheel 31, a gear wheel 42 connected to said sprocket wheel 31, a shaft 43 supporting said gear wheel, said shaft being movable laterally, a gear wheel 48 adapted to intermesh with said gear wheel 42, a pinion 49 intermeshing with said gear wheel 48, and adapted to intermesh with said gear wheel 42, and mechanism operated by the motion of the car for driving said gear wheel 48, substantially as described.

6. The combination with a shaft 24, an indicator operated by the rotation of said shaft, and a sprocket wheel mounted upon said shaft, of mechanism for rotating said sprocket wheel, a pivoted rod 39 adapted to be engaged by the teeth of said sprocket wheel and to be rocked thereby, a bell 37, a spring hammer 38, and chains connecting the opposite ends of said rod 39 to said hammer 38, whereby as said sprocket wheel rotates the bell will be sounded, substantially as described.

7. The combination with a car, and indicating devices carried thereby, of a frame depending from the under side of said car, vertically movable bearings carried by said frame, a wheel journaled in said bearings, springs interposed between said frame and the vertically movable bearings, for exerting a downward pressure upon said bearings to constantly press the wheel downward, and mechanism operated by the rotation of said wheel for operating said indicating devices, substantially as described.

8. The combination with a car, and indicating devices carried thereby, of a pivoted frame depending from the under side of said car, vertically movable bearings carried by said pivoted frame, a wheel journaled in said bearings, springs for exerting a downward pressure upon said wheel, and mechanism operated by the rotation of said wheel for operating said indicating devices, substantially as described.

9. The combination with a car, and an indicator carried thereby, of a frame 66 pivotally suspended under said car, vertical slots in said frame 66, a wheel frame 74, blocks carried thereby and adapted to fit into said slots, a wheel pivotally journaled in said blocks, springs 80, 81 exerting a downward pressure upon said frame 74, a flexible shaft rotated by said wheel, and devices operated by said flexible shaft for operating said indicator, substantially as described.

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