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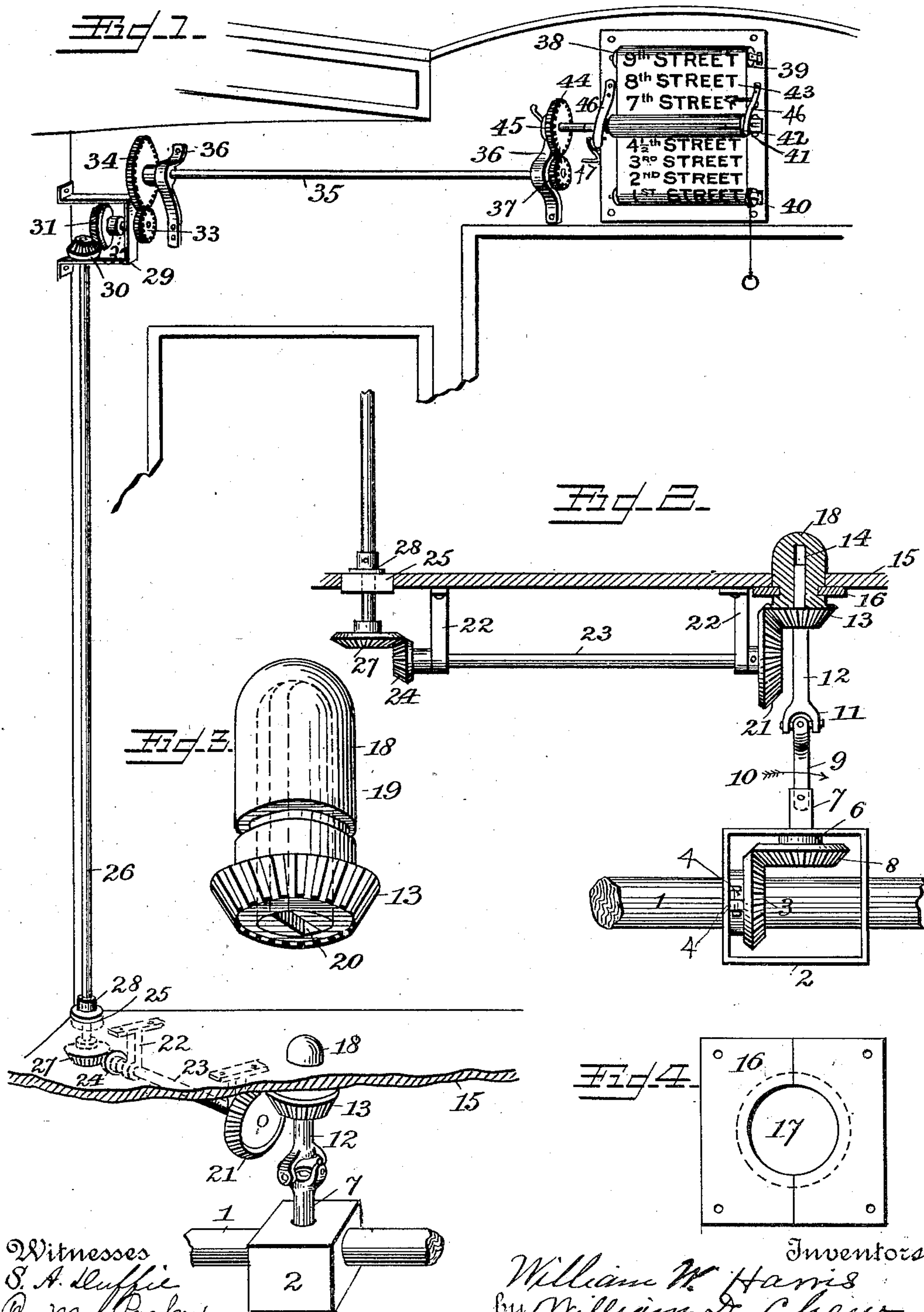
Patented July 22, 1902.

W. W. HARRIS & W. D. CHEW.  
STREET CAR AND RAILWAY INDICATOR.

(Application filed Oct. 24, 1901.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses  
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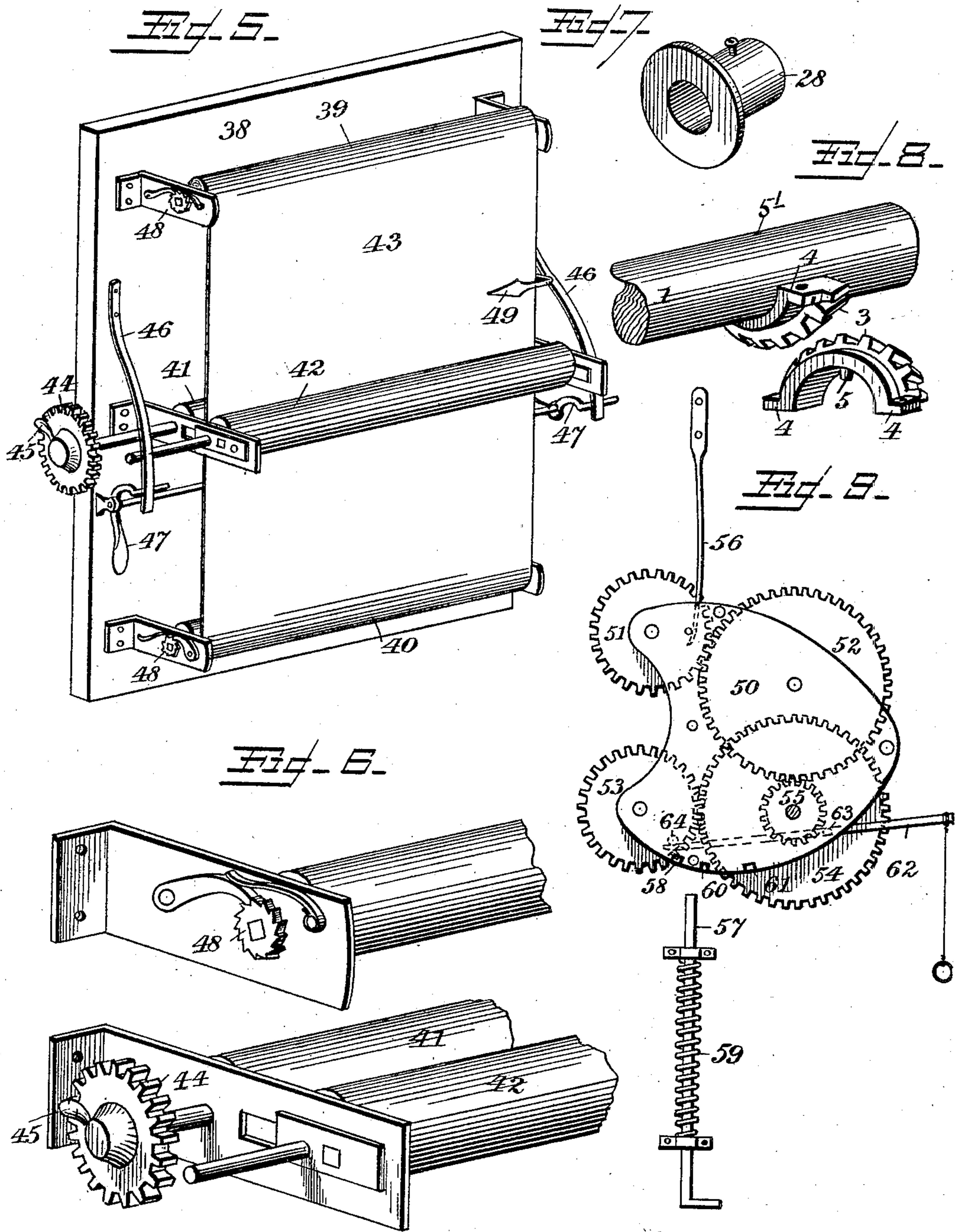
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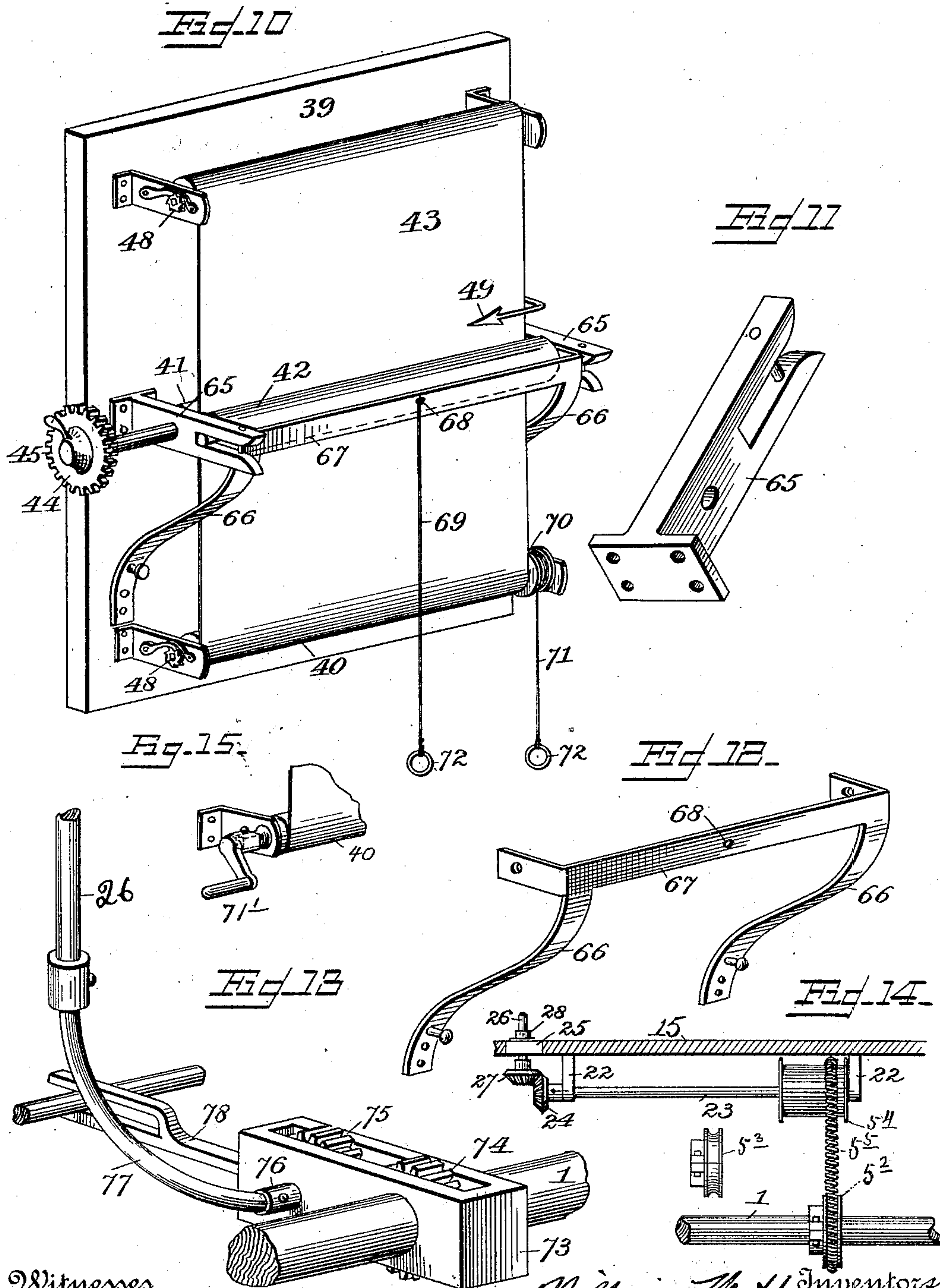
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# UNITED STATES PATENT OFFICE.

WILLIAM W. HARRIS AND WILLIAM D. CHEW, OF ELDORADO, ARKANSAS.

## STREET-CAR AND RAILWAY INDICATOR.

SPECIFICATION forming part of Letters Patent No. 705,235, dated July 22, 1902.

Application filed October 24, 1901. Serial No. 79,770. (No model.)

*To all whom it may concern:*

Be it known that we, WILLIAM W. HARRIS and WILLIAM D. CHEW, citizens of the United States, residing at Eldorado, in the county of Union and State of Arkansas, have invented certain new and useful Improvements in Street-Car and Railway Indicators, of which the following is a specification.

Our invention is a street-car and railway indicator with machinery for operating the same; and it consists in a movable indicator-apron stretched on rollers and bearing the names of the stations and stops along the line, said apron being moved on the rollers by machinery operated from the axle of the car.

In the accompanying drawings, Figure 1 is an elevation of our invention. Fig. 2 is an enlarged view of one of the lower parts of our invention which is connected with the axle of the car and runs the main shaft that directly runs the gearing which shifts the apron on the roller. Fig. 3 is an enlarged view of a hub and bevel cog-wheel used in Figs. 1 and 2. Fig. 4 is a collar designed to fit in the circular slot of the hub represented by Fig. 3. Fig. 5 is an enlarged view in perspective of the indicator. Fig. 6 represents enlarged views of brackets used in connection with the indicator, showing the ends of some of the rollers. Fig. 7 is a perspective view of a cuff. Fig. 8 shows part of an axle and the cog-wheel in two parts which surrounds the axle. Fig. 9 is a face view of a reversing system of cogs. Fig. 10 is a modification of the indicator and is intended more particularly for use on street-cars. Fig. 11 is a perspective view of one of the brackets used on the form of the indicator Fig. 10 just mentioned. Fig. 12 is a perspective view of a pair of springs and connecting-bar used in connection with indicator Fig. 10. Fig. 13 is a modified form of mechanism for operating the indicator when we use a flexible shaft. Fig. 14 is a view of our principal method of operating our device. Fig. 15 shows one end of the roller 40, having on one end a crank-handle.

Our invention is described as follows, beginning at the bottom of Fig. 1:

1 represents the axle of a car.

2 represents boxing in which gearing-wheels operate. This boxing is rigidly secured to the trucks by any practical means.

3, Fig. 2, is a bevel gear-wheel made in two parts, Fig. 8, and secured to the axle by means of flanges 4 on the ends of said two parts and bolts passing through the perforations of said flanges. Said parts are each also provided with dowel-pins 5, which enter into perforations 5', made in the axle 1. This wheel is thus made so that it may be secured to any axle of a railway-car or streetway-coach now in use.

A grooved pulley-wheel 5<sup>2</sup>, Fig. 14, is made exactly like the bevel cog-wheel 3, just described, except instead of using the bevel cogs we use a groove to accommodate a spiral belt, and the grooved pulley 5<sup>3</sup> is made exactly like the grooved pulley 5<sup>2</sup>. However, a plain grooved pulley may be used when it can be gotten on the shaft 23 without being made in parts. This grooved pulley 5<sup>3</sup> may be used and sometimes is on the shaft 23; but we prefer a spool-pulley 5<sup>4</sup> on shaft 23, so that the spiral belt may move to the right or to the left as the car sags or swings slightly from side to side, and between the pulleys 5<sup>2</sup> and 5<sup>3</sup> or between the pulleys 5<sup>2</sup> and 5<sup>4</sup> we use a spiral-spring belt 5<sup>5</sup>, so as to accommodate the car as it springs up and down in its motion. This we deem to be the most preferable way of operating the machinery that operates the indicator and is the method we preferably use. The other two methods (shown in Figs. 2 and 13) are modifications of this method.

Situated and firmly secured in the box 2 is a bearing 6, Fig. 2, in which is journaled the shaft 7 of a bevel gear-wheel 8, which meshes with the bevel gear-wheel 3 on the axle 1. In the upper end of this shaft 7 is hinged a shaft 9, so that its upper end may play to the right or left, as indicated by the arrow 10. Hinged to the upper end of this shaft 9 by a wrist-joint 11 is another shaft 12. The extreme upper end 14 of this shaft 12 is rectangular and oblong in shape.

15 represents the bottom or floor of the coach, and secured to the lower face of said bottom is a collar 16, Fig. 4. This collar is made in two parts, each part having a half-circle recess, so that when the two parts are brought together the collar has a circular opening 17. Journaled in this collar 16 is a hub 18, having around its center a groove 19,



and on its lower end is rigidly secured a bevel cog-wheel 13, and running longitudinally through the center of the hub and nearly to the top thereof is a rectangular oblong opening 20, in which fits and plays up and down the rectangular oblong-shaped end of the shaft 12. It will be seen by the construction of the mechanism just described that the coach may swing to the right and to the left, backward and forward, and give up and down, and yet the two bevel cog-wheels 13 and 21 will still remain in mesh, and it will be seen also that the coach may perform the same motions when the mechanism shown in Fig. 14 is used and also when the flexible shaft 77 is used, as shown in Fig. 13.

Rigidly secured to the bottom of the coach and extending downward are brackets 22, in which is journaled horizontally a shaft 23. On one end of this shaft is rigidly secured a bevel cog-wheel 21, and on the other end of this shaft is rigidly secured a pinion bevel cog-wheel 24. Just above the end of the shaft 23 and secured in the floor 15 is a bearing 25, through which a shaft 26 vertically works, its lower end being journaled in said bearing and extending downward beneath the bottom of the floor and having rigidly secured on its lower end a bevel cog-wheel 27, which meshes with the bevel cog-wheel 24, secured on the horizontal shaft 23. Just above the floor is secured to the vertical shaft 26 a collar 28, which keeps said shaft 26 from slipping down.

Extending from the wall of the coach in some convenient place and immediately over the bearing 25 is rigidly secured a bracket 29, and in this bracket is journaled the upper end of the vertical shaft 26, and to the upper end of this vertical shaft 26 is rigidly secured a bevel cog-wheel 30, which meshes with a bevel cog-wheel 31, secured on a shaft 32, which is horizontally journaled in said bracket, and on the other end of said shaft 32 is secured a face pinion cog-wheel 33, which meshes with a larger cog-wheel 34, secured on a horizontal shaft 35, said shaft journaled in brackets 36, secured to the wall of the coach, and on the right-hand end of said horizontal shaft 35 is rigidly secured a face pinion cog-wheel 37.

Secured to the wall of the coach and in sight of the passengers is a board 38, and to this board 38 are secured in proper brackets an upper roller 39 and a lower roller 40 and two center rollers 41 and 42. To the upper roller 39 is secured one end of an indicator-apron 43, while the other end of said indicator-apron is secured to the lower roller 40, said apron passing between the rollers 41 and 42. The axle of the rear roller 41 extends beyond the edge of the board and has secured on its end a cog-wheel 44, which meshes with pinion-wheel 37 on the horizontal shaft 35. Said wheel 44 is provided with a locking device 45, so that said wheel 44 may be allowed to idle on its axle when desired. The front

roller 42 is held against the rear roller 41 by means of springs 46, Fig. 5, said springs capable of being raised by levers 47, thus relieving the pressure of front roller 42 against rear roller 41, so that the indicator-apron 43 may be run up or down—that is, up on the roller 39 or down on the roller 40.

The rollers 39 and 40 are secured in suitable brackets and are made to operate by springs in their ends, similar to springs used in window-shades, and are wound up until the apron 43 is at proper tension, and the rollers are held so as to give such proper tension by means of ratchet-wheels, springs, and pawls 48. These rollers are set so that they pull against each other and keep the indicator-apron taut.

Secured to the board 38 is a pointer 49, (see Figs. 5 and 10,) which points to the station shown on the apron where the car stops. When a car starts out from a station, the axle 1 in revolving operates either one of the gearings above described, and shown in Figs. 2, 13, and 14, which is "geared back," so that when the cars make, say, a mile, more or less, the apron will make about an inch, more or less, and then the second station is marked on the indicator-apron, and then when the car gets to the third station that station is marked on the apron, and so on until the whole length of the trip has been made and marked. Thus it will be seen that no matter how far apart or how near together the stations may be they will be accurately marked on the apron, and then this apron can be used as a guide by which to mark all other aprons. Now when the car gets to the end of the line and simply runs backward over the line it will be seen that the stations will be shown on the apron correctly; but if the car be turned around by a turning-table or by running around a circle it will be necessary to reset the apron, and for this purpose we have a setting and reversing device, as shown in Fig. 9. This setting and reversing device consists of two plates 50, between which are journaled a series of cog-wheels 51, 52, 53, 54, and 55. We attach this train of wheels to the shaft of the rear roller 41 instead of the wheel 44, said shaft passing through and being rigidly secured to the small wheel 55. By so doing the machine can be made to run backward or forward, and consequently the apron run up or down, by shifting from wheels 51 to 53. If the coach is turned at the end of the line, then it is to be shifted; but if the coach is run backward to the point of beginning it need not be shifted.

56 is a spring to throw wheel 51 onto wheel 37 on the shaft 35, and while wheel 51 is running on this cog-wheel 37 a spring-catch 57 is in recess 58 of one of the plates 50 to hold the wheels steadily in gear. This catch 57 is situated below this series of gear-wheels and is actuated by a spiral spring 59 and is



by said spiral spring thrown up into the recesses 58, 60, and 61 in the bearing-plates 50, between which the gear-wheels run.

62 is a lever pivoted to the outer bearing-plate at 63, its forward end resting under a projection 64 on said bearing-plate. By pulling on this lever 62 and pulling down the catch 59 said catch can be placed in recess 60. This will throw the wheels 51 and 53 out of gear—that is, neither of them will then be in contact with wheel 37—and another pull on lever 62 will throw the catch 59 in the recess 61, and thereby throw wheel 53 in mesh with wheel 37. This works the machine in the reverse direction.

The invention as above described is adapted more particularly for railway-cars, but will work quite as successfully on street-cars; but for lines of street-cars in small towns, where cheapness is desirable, we have adopted a cheaper method of running the apron back, and instead of using the bracket and spring, as shown in Fig. 5, we use brackets 65, bifurcated at their outer ends, in which bifurcations the front roller 42 works and is held in place by a pair of springs 66, held together by a connecting-bar 67, having in its center a perforation 68, from which perforation dangles a cord 69, and the lower roller 40 is provided on one end with a spool 70, around which is wound a cord 71. By pulling on the cord 69, which has been wound around the spring-roller, and raising the spring 66 off from the front roller 42 the apron is allowed to roll back on the other roller in the position it was when it started on its first trip. These cords may have rings 72 or other handholds for convenience. This last-mentioned device is a modification, and instead of using the spool 70 and the cord 71 we may in lieu thereof add a crank-handle 71' on either end of the roller 40, and thus wind the curtain by means of this crank-handle.

As a further modification of our invention instead of using a vertical shaft, as shown in Figs. 1 and 2, we use a flexible shaft and machinery for operating the same (shown in Fig. 13) and described as follows: 1 is the axle. 73 is a box. This box is oblong and rectangular, and the axle 1 is journaled therein, and to the axle 1 and in one end of this box is rigidly secured a face cog-wheel 74, which may be exactly like beveled cog-wheel 3, Fig. 8, except the bevel. In the other end of the box is journaled a face cog-wheel 75, which meshes with cog-wheel 74, and to the axle 76 of this cog-wheel 75 is rigidly secured a flexible shaft 77, the free end of which is secured to the vertical shaft 26. (Shown in Fig. 1.) To the end of the box 73 is secured an arm 78, with means for fastening the box securely to the trucks to keep it steadily in place.

All the machinery described above may be boxed in for protection, and the indicator-apron may be covered, leaving a slot through

which only the name of the street, station, or depot at which the car stops may be seen.

Having described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. An automatic railway-indicator, consisting of a grooved pulley, rigidly secured on one of the truck-axles; a horizontal shaft journaled in bearings beneath the car-floor, and having rigidly secured to one end a spool pulley-wheel; a spiral-spring belting passing around said pulleys; a beveled pinion cog-wheel rigidly secured to the other end of said shaft; a vertical shaft running up through the floor of the coach and borne in suitable bearing; a beveled wheel rigidly secured on its lower end, meshing with last-mentioned pinion-wheel; a pinion-wheel rigidly secured on the upper end of said vertical shaft; a shaft journaled in a bracket and having on one end a beveled cog-wheel meshing with last-mentioned beveled pinion-wheel, and on its other end a face pinion-wheel; a horizontal shaft journaled in brackets; a cog-wheel rigidly secured on one end of said shaft and meshing with the last-mentioned pinion-wheel; a pinion-wheel secured on the other end of said shaft; a board secured to the wall of the coach having a spring-actuated roller journaled in suitable brackets near its upper end; a spring-actuated roller journaled in brackets near the lower end of said board; said rollers adapted to be held at proper tension by ratchet-wheels, pawls and springs; rear and front center rollers journaled in suitable brackets; the front roller adapted to be pressed against the rear roller by springs; a cog-wheel loosely journaled on the shaft of the rear roller; a lock adapted to lock said wheel; an indicator-apron bearing on its face the names of stations, streets and depots, and having one end secured to the upper roller and the other to the lower roller; said apron adapted to be wound first on one roller and then on the other or partly on both, and being held in place by the two center rollers; and a pointer secured to the board, pointing out the names of the stations where the car stops, substantially as shown and described and for the purposes set forth.

2. A railway-indicator consisting of a board, brackets secured to said board near its center and its upper and lower ends; spring-actuated rollers journaled in the upper and lower brackets; ratchet-wheels, pawls, and springs secured to the ends of the upper and lower rollers and adapted to lock them; a rear and front roller journaled in the central brackets; an indicator-apron having one end secured to the upper roller, said apron passing down between the center rollers and its lower end secured to the lower roller; said rollers pulling against each other so as to keep the apron taut, said apron adapted to be wound on the upper or lower roller or partly on both; the front center roller held against the apron by



springs; levers secured to said board and adapted to raise said springs; said indicator adapted to be operated by gear-wheels and shafts running back to an axle of the trucks; 5 substantially as shown and described.

3. A railway-indicator consisting of a board, brackets secured to said board near its center and its upper and lower ends; spring-actuated rollers journaled in the upper and lower 10 brackets; ratchet-wheels, pawls, and springs secured to the ends of the upper and lower rollers and adapted to lock them; a rear and front roller journaled in the central brackets; an indicator-apron having one end secured 15 to the upper roller, said apron passing down between the center rollers and its lower end secured to the lower roller; said rollers pulling against each other so as to keep the apron taut; said apron adapted to be wound on the 20 upper and lower roller or partly on both; springs for holding the front center roller against the apron; means for withdrawing said springs; manually-operated means for operating the lower one of the spring-actuated 25 rollers, and gearing connections between said

rear roller and an axle of the car, substantially as shown and described and for the purposes set forth.

4. In combination with a street-car indicator, a system of reversing-wheels consisting of bearing-plates 50, a series of cog-wheels journaled between said bearing-plates and adapted to run back or forward; a lever operating against a projection on one of the bearing-plates and adapted to throw one of the 35 initial wheels in mesh with the driving-wheel; a spring-actuated locking-bar adapted to catch in recesses in the bearing-plates and thereby hold either initial wheel in mesh with the driving-wheel or both out of mesh there- 40 with; said reversing device adapted to be secured on the axle of the rear center roller; substantially as shown and described.

In testimony whereof we affix our signatures in presence of two witnesses.

WILLIAM W. HARRIS.  
WILLIAM D. CHEW.

Witnesses:

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