(No Model.) 3 Sheets—Sheet 1.

E. S. IRVIN.

STATION INDICATOR.

No. 377,384. Patented Feb. 7, 1888.

Fig. 1.

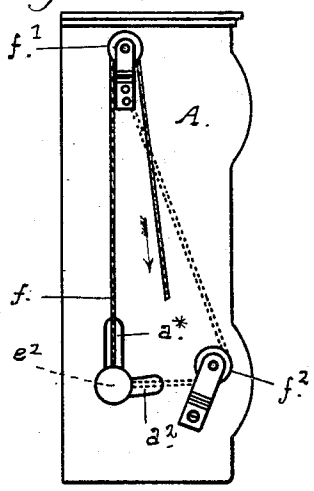


Fig. 2.

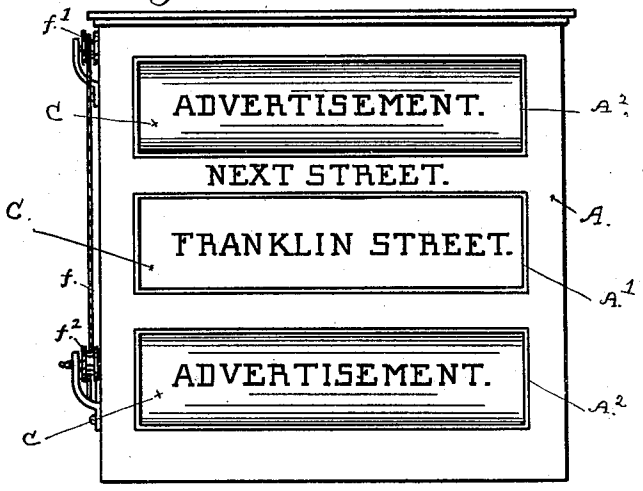
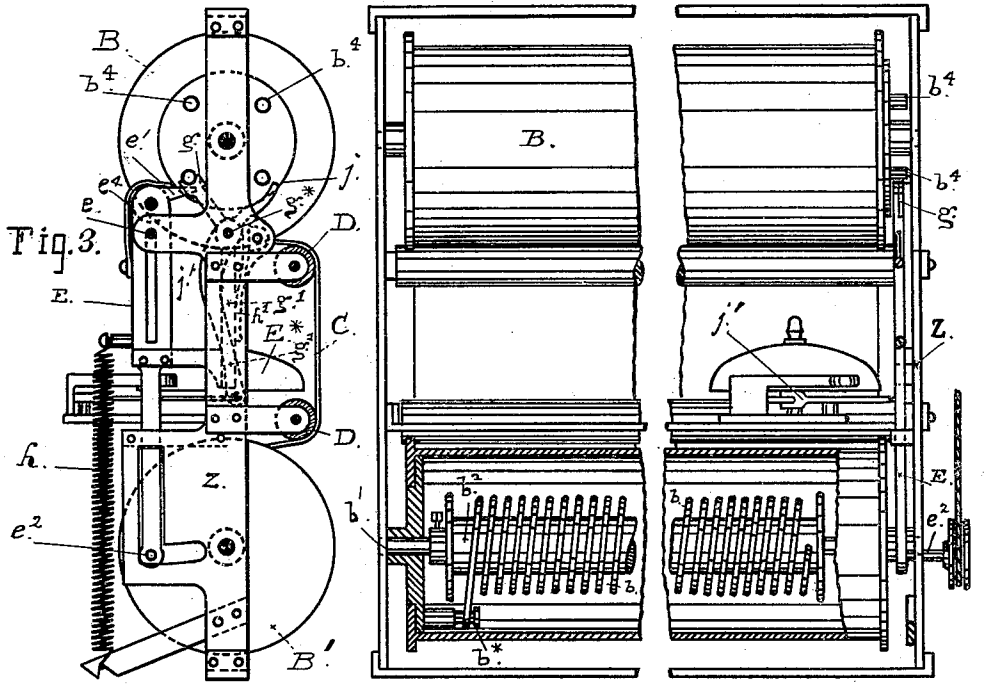


Fig. 4.

Fig. 3.



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Fig. 5.

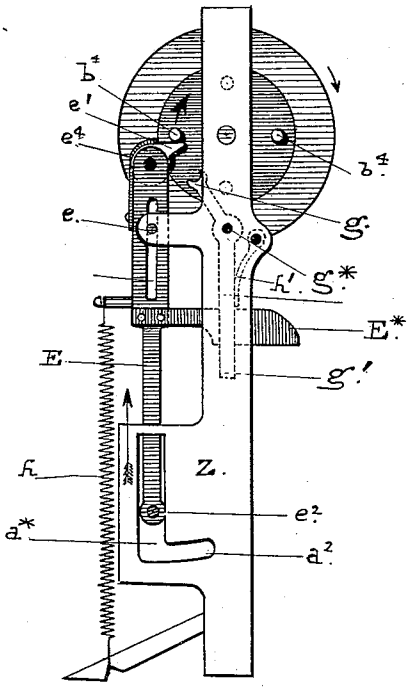
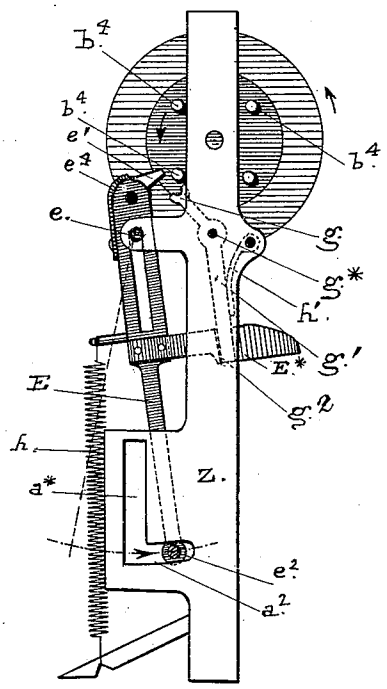


Fig. 6.



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(No Model.) 3 Sheets—Sheet 3.

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STATION INDICATOR.

No. 377,384. Patented Feb. 7, 1888.

Fig. 7.

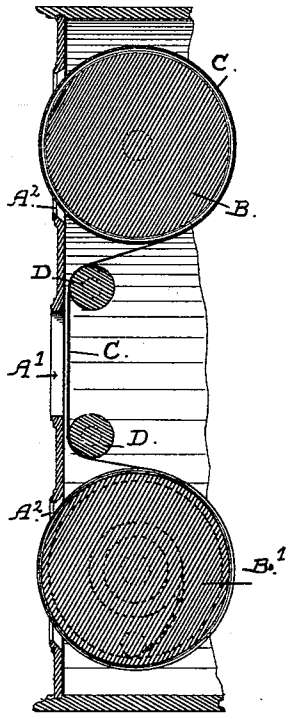
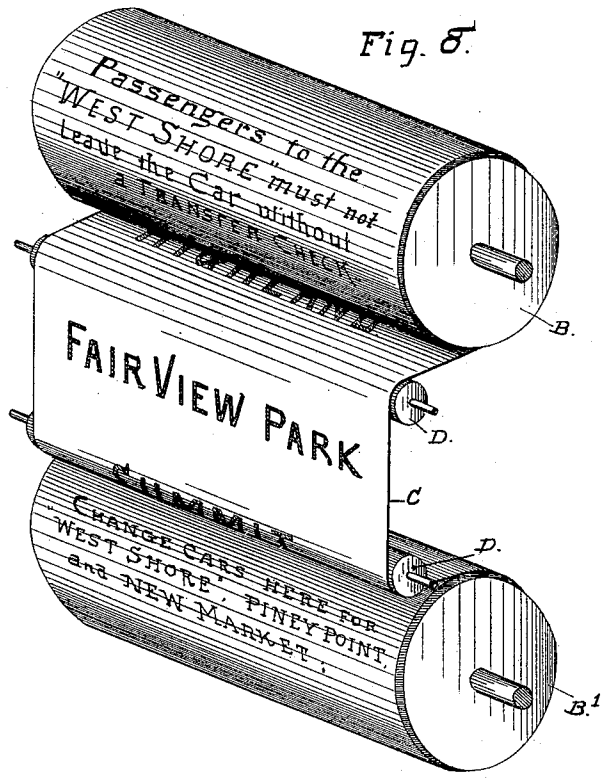


Fig. 8.



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UNITED STATES PATENT OFFICE.

EDWIN S. IRVIN, OF BERKELEY, ASSIGNOR TO THE PACIFIC INDICATOR COMPANY, OF SAN FRANCISCO, CALIFORNIA.

STATION-INDICATOR.

SPECIFICATION forming part of Letters Patent No. 377,384, dated February 7, 1888.

Application filed January 20, 1887. Serial No. 224,856. (No model.)

To all whom it may concern:

Be it known that I, EDWIN S. IRVIN, a citizen of the United States, residing in Berkeley, in the county of Alameda, in the State of California, have invented certain new and useful Improvements in Street and Station Indicators for Railway-Cars; and I do hereby declare that the following is a full, clear, and exact description of my said invention, reference being had to the drawings that accompany and form part of this specification.

My invention relates to improvements in street or station indicators for use in railway-cars; and it embraces certain construction, arrangement, and combination of inclosing-case, moving band or apron, and rollers, as hereinafter fully described, in and by which a single apron is used for displaying the names of streets or stations, and for showing at the same time such matter as rules or regulations, official notices, or advertisements through openings in the case. The object of this part of my invention is to utilize both sides of a band or apron and bring the apparatus into a small compact form. It also embraces certain improved mechanism for operating the apron intermittently, and for producing movements in one direction or the other to exhibit the names of streets or stations in the order required by the direction of travel of the train.

The following description fully explains the nature of these improvements and the manner in which I have produced and applied them in the construction of an improved indicator according to my invention, the accompanying drawings being referred to by figures and letters.

Figure 1 is an outside view of the indicator, taken from the end or side. Fig. 2 is a front view. Fig. 3 is a side view of the apron, rollers, and operating mechanism removed from the case. Fig. 4 is a view of these parts taken from the rear, the lower roller being shown in section. Figs. 5 and 6 are views showing two positions of adjustment of the upper-roller-operating mechanism, the first figure illustrating the movements of the parts in winding up the apron on the upper roller, and the latter figure their movements in letting the apron off the upper roller and taking it up on the lower roller. Fig. 7 illustrates the form and arrangement of the case and apron open to bring both sides to view at the same time through the front of the case, this view being a vertical section at a right angle to the axes of the rollers. Fig. 8 is a perspective view of the apron and rollers removed from the case.

The drawings illustrate what I consider the best form and arrangement of case and parts. The names of the streets or stations, as they are required to follow one another, are printed across the apron at regular distances apart, and are displayed in succession in either direction by winding up the apron on one roller or the other. To produce this movement in one direction, the upper roller is moved with a step-by-step motion in such manner that the apron is wound up on it and the names of the streets in succession at suitable intervals before the opening in the case, and to move the apron in the reverse direction the mechanism is capable of such adjustment that the upper roller lets off the apron a suitable length or portion at a time, which is taken up by the lower roller. These step-by-step movements of the apron are the same in both cases, as the same mechanism is brought into play to produce them. In the present invention this mechanism is set in motion by the driver or conductor by means of a cord or wire; but it will be evident that the same can be made to operate automatically at each cross-street or other point where the name is required to be displayed.

Similar letters of reference indicate corresponding parts in all the figures of the drawings where they occur.

A is the case, with openings A' A^2 in the front to expose portions of the surface of the apron C.

B B′ are two drums or rollers, of comparatively large diameter, set in parallel line, one directly over the other, to which the ends of the apron C are fastened, and around which the apron is wound in contrary directions, so that when both rollers are turned on their axes in the same direction the apron will unwind from one and be taken up by the other. The roller B′ is a spring-barrel. It is loosely set on a fixed rod or spindle, b^2, and contains a coiled spring, *b*. One end of the spring is secured at b^* to the roller or barrel portion,

and the other end is made fast to a spool on the spindle. The spool is held by set-screws, as shown in Fig. 3, but may be turned upon the spindle to regulate the force or tension of the spring by loosening these screws. The spring is coiled around its spool by that movement of the roller B′ produced by drawing off the apron, and the power thus stored up is sufficient to turn the roller in the contrary direction and wind up the apron again as it is let off from the other roller. The movement of the apron in one direction is thus produced by mechanism that rotates the upper roller a part of a revolution at a time and winds up the apron by drawing it from the lower roller, and in the contrary direction by the reaction of the coil-spring in the lower roller, which maintains a constant tension on the apron and winds it up as it is let off by the upper roller. The distance between one name or line of matter and the next on the surface of the apron and the diameter of the rollers are so proportioned that each rotation brings the next name in front of the case-opening and draws the one previously-exhibited out of sight. I utilize both surfaces of the apron by making an opening in the case A directly in front of the roller, so that the greater portion of the surface of the apron lying upon the roller is exposed to view through this aperture, and also place the two rollers apart and bring that portion of the apron stretching from one to the other quite close to and directly against another opening. The surface of the apron upon both rollers can be used by having an opening in the case-front for each roller, which is the construction I have employed in the indicator illustrated in these drawings. That portion of the apron surface exposed at the middle of one of the three openings is carried over two small intermediate rollers, D D, as shown in Fig. 3, and in such manner that this surface is the side of the apron the reverse of that presented by the rollers B B′.

The mechanism to produce movement of the apron intermittently from one roller to the other is applied to the roller B, and is constructed of the following parts. An arm, E, at one side of the frame, is capable of sliding longitudinally on a fixed pin, *e*, and also of swinging sidewise upon it as a center. These movements are produced by a pull-cord, *f*, attached to the lower end of the arm E, which is shifted from one pulley, *f′*, at the upper part of the case to another pulley, f^2, lower down, according as the movement is to be changed from a rectilinear to an oscillating one. Pulley *f′* is directly over and in line with the pin *e*, and the cord, when passed over this pulley, will move the arm vertically, a slot in the upper end portion being provided for the pin to run in. The upper end of the arm is furnished with a laterally-projecting spring-pawl, *e′*, the end of which sets in line with a number of pins, b^4, on the head of the roller B. A flat spring, e^4, holds this pawl in position to engage the pins during the upward movement of the arm or bar E, but allows it to yield and slip by the pins on the downward movement. The length of this movement is equal to the distance between the pins b^4, so that at the end of its upstroke when the pawl leaves one pin the next pin is in position to be caught by the pawl, which yields and springs under the pin as the arm E finishes its downward stroke. A coil-spring, *h*, is attached at the lower end to the frame and at the upper end to the arm E to produce the downward movement. At such time it is necessary to keep the roller B from turning back under the action of the spring in the roller B′, and at all times, also, a means to lock the upper roller or to take the strain of the spring is required. The vibrating lever-catch *g′ g′* is applied, therefore, to engage with the pins b^4 in such manner that when the pawl is pressing against one of the pins and turning the roller the forked end *g* of the catch lies directly in the path of the next pin and comes under it at the end of the upward movement of the arm E to lock the roller. This movement and action of the arm E and the lever *g* takes place during that adjustment which causes the apron to wind upon the roller B; but when the reverse movement of the apron takes place the lever is operated by the swinging movement of the arm E to let off the roller B, one pin at a time. This part *g g′* is pivoted at *g**, and is held in position by the spring *h′*, applied at one side. The lower end of the lever rests against a shoulder, g^2, on a finger-piece, E*, that projects from the arm E, to which it is riveted, and plays against the side of the frame Z. During the up-and-down movement of the arm this piece E* slides along the lever without disturbing its position, and the lever only moves as the pins b^4 press it aside to pass its forked end. In this movement of the arm E its lower end travels in an upright guide-slot, *a*;* but to produce the oscillating movement on the center, *e*, the end e^2 is made to travel in the curved slot a^2. This change is made by shifting the operating-cord from the pulley *f′* to the pulley f^2, and the length of the oscillation is sufficient to raise the pin b^4 out of the seat in the forked end *g*, the end of the pawl *e′* being long enough to engage the pin. The spring *h′* must have sufficient force to throw the arm E back again to the upright position when the cord is released, in order to bring the forked catch *g* quickly into place to receive the next pin of the roller; and as the lever rests against the shoulder g^2 of the piece E* the movement which throws the pin b^4 out of the forked end *g* also turns this end aside to let the pin pass by in the direction of the arrow in Fig. 6; but the catch must be quickly restored to position to catch the next pin and stop the roller. Under these conditions it will be seen that the apron is made to unwind from the upper roller and be taken up by the lower roller a distance equal to the space from one pin to the next, and the names of the streets or stations then

appear in reverse order. In the one case, under the sliding movement of the arm E, the roller B is rotated step by step to wind up the apron, and in the other case, by the movement on the center, *e*, the arm lets off the roller, one pin at a time, and the apron is taken up on the lower roller. Therefore, when the direction of travel of the car is changed, the indicator is reversed by simply changing the operating-cord on the pulleys f' f^2 to produce either character of movement in the arm E.

Upon the front side of the apron, to appear at the opening A′, are printed the names of the streets or stations along the line of the road, and upon the reverse side, to be exhibited through the openings A^2, are arranged such matter as directions to notify passengers of changes or transfers to branches or cross-roads at the street or station where such are to be made, or regulations as to trains to or from given points, or official notices of any kind. Spaces not devoted to such matter on the back of the apron may be filled with advertisements. These may be readily applied to the back of the apron by having them arranged on separate strips and fixing them with cement. In this way the matter upon the back of the apron can be changed at any time without affecting the front side.

The indicator is quickly regulated to start with any given name or number of street, or to bring the apron back when the operating-cord may have been pulled at the wrong time, by taking the knob e^2 in the hand and moving it in either of the slots $a^* a^2$ in the side of the case.

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

1. In a station or street indicator, the combination, with a spring-impelled drum or roller, B′, and roller B, for displaying signs or moving an apron, of the pins b^4 on roller B, the sliding arm E, with hinged pawl *e*′, for turning the roller B by engaging with its pins, and the lever-catch *g g*′ and spring *h*′, for holding the roller, as set forth.

2. In a station or street indicator, the combination of a suitable case having openings A′ and A^2 A^2 above and below the same, and in the same face of the case the drums or rollers B B′, one located back of each opening A^2, apron C, wound in reverse direction over said rollers, and rollers D D, for holding the apron close up to the opening A′, and mechanism, substantially as described, for rotating said rollers B B′ to wind the apron alternately upon one and off the other roller, for operation as set forth.

3. In a station or street indicator, the combination of a suitable case having openings A′ A^2 A^2, the former between the latter, the apron C, drums or rollers B B′, set to show through openings A^2, and having the apron wound in opposite directions thereon, one of said rollers being a spring-barrel and the other having pins or projections with which mechanism for turning the roller step by step is caused to engage, substantially as described, and the rollers D D on opposite sides of the opening A′, and contiguous to the front of the case, to turn the opposite or reverse side of the apron to the opening, as set forth.

4. In a station or street indicator, the combination, with the drums or rollers B B′, apron C, and spring for turning the drums in one direction to wind the apron upon one and draw it off of the other, of the sliding bar or arm E, movable on the pin *e*, and having the piece E*, provided with a shoulder, g^2, the lever-catch *g g*′, lying against said shoulder g^2, a spring, *h*, applied to arm E for producing its vertical restoration, and a spring, *h*′, applied to lever-catch *g g*′, to produce lateral restoration of part E *g g*′ to normal position, the pulleys f' f^2, and the operating-cord *f*, capable of being shifted, as described, to operate the slide-bar vertically or laterally, as described.

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