(No Model.)

C. W. STETSON.

SWITCH OPERATING MECHANISM.

No. 422,990. Patented Mar. 11, 1890.

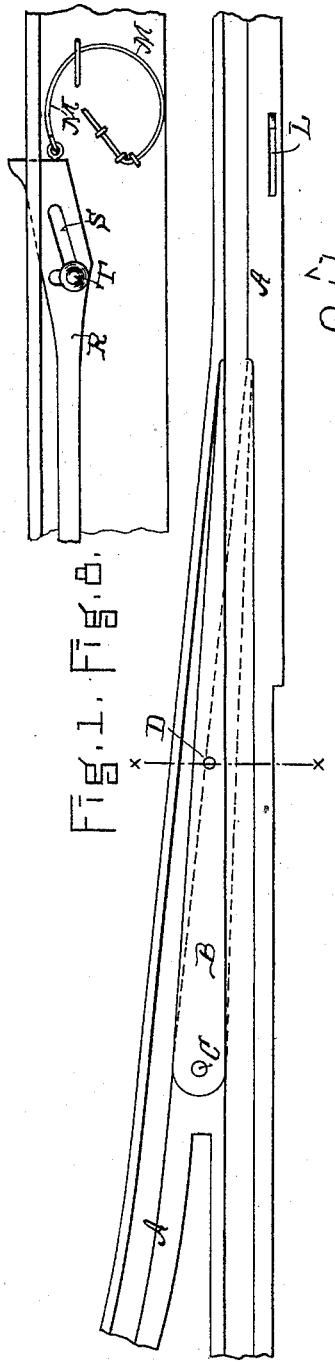

Fig. 1.

Fig. 8.

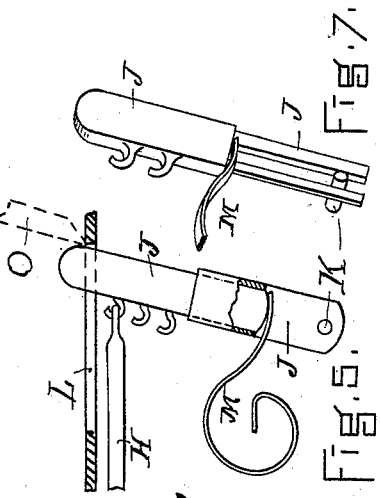

Fig. 5.

Fig. 7.

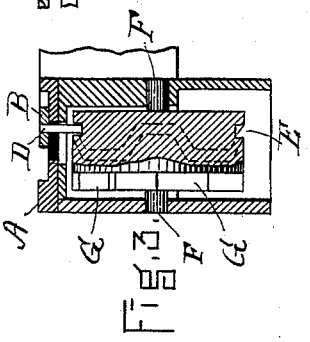

Fig. 3.

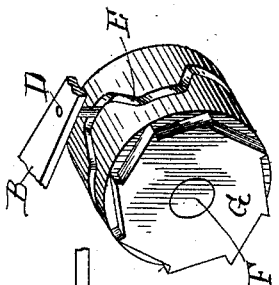

Fig. 4.

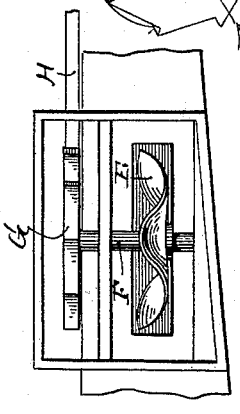

Fig. 6.

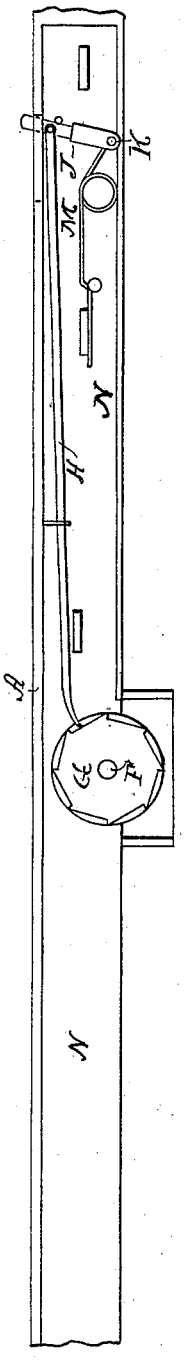

Fig. 2.

WITNESSES

T. Henry Marsh.

D. O. Bishop.

INVENTOR.

Charles W. Stetson

by A. D. Peirce & Co

Attorney

UNITED STATES PATENT OFFICE.

CHARLES W. STETSON, OF BOSTON, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO ALBERT H. SPENCER, OF SAME PLACE.

SWITCH-OPERATING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 422,990, dated March 11, 1890.

Application filed April 16, 1889. Serial No. 307,406. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. STETSON, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Switch-Operating Mechanism, of which the following, taken in connection with the accompanying drawings, is a specification.

The object of this invention is to provide improved means for shifting the switch-tongues of street-railroads, and especially for electric and motor lines, where the common tilting platforms are not available. By my improvements a treadle or like device carried on the cars and depressed at will by the driver or conductor comes in contact with a spring-actuated lever having a long push bar or pawl which engages the teeth of a ratchet-wheel secured to a rotating cam, by means of which the switch-tongue is thrown to the right and left alternately when the treadle is depressed.

My invention consists in the combinations of devices herein set forth, and especially referred to in the appended claims.

In the drawings, Figure 1 is a plan of diverging railroad-tracks with the switch-tongue shown in full and in dotted lines. Fig. 2 is a side view illustrating the action of the apparatus. Fig. 3 is a vertical section, and Fig. 4 a perspective view, of the cam, ratchet, and tongue. Fig. 6 is a bottom plan, and Figs. 5 and 7 details, of the lever and spring. Fig. 8 is a modification.

A represents a section of street-railway track, and B the switch-tongue pivoted at C, where the rails diverge, the two positions of the movable point being shown in full and dotted lines in Fig. 1. The tongue has about midway of its length a rigid fork or stud D, projecting downwardly to engage with the switch-shifting devices of my invention. Beneath the tongue B, I mount, in suitable bearings or supports, a rotatable cam E, grooved, as in Fig. 4, or bent, as in Fig. 6, in a sinuous form, so that the stud or fork D, entering such groove or bestriding the wavy edge of such sinuously-formed cam, shall be moved a short distance to right or left with each partial rotation of said cam, and the switch-tongue be thereby shifted as desired. On the shaft F of the cam I fix a ratchet-wheel G, the teeth of which are successively engaged by the tip of the push rod or pawl H, running about horizontally forward from a vibrating lever J, to which such pawl is pivoted. (See Fig. 2.) This lever has at its lower end a fixed pivot K, upon which it swings, and its upper end protrudes through a guide-slot L beside and parallel to the rail A, so that such upper end may be swung forward, carrying the pawl H with it and moving the cam E and ratchet G one tooth every time the lever is vibrated. This lever J has also a downward movement, so that it may be depressed to the level of the street in case a wheel runs over it, and it is provided with a spring or counter-balance to restore it to the proper elevation vertically, as well as to press it backward to the starting-point, after its forward vibratory movement. Under the construction shown the spring M serves both these purposes, one end engaging with the lever and the other being secured to the timber N on which the rail rests. For convenience I sometimes make the lever J in two parts, one fitting within the other, as in Figs. 2 and 5, where the lower part is shown as a sleeve pivoted to the timber, and the upper part slides vertically within it. If preferred, the sleeve may constitute the upper sliding portion. The upper part may be made reversible, so as to be turned about when worn unduly. In Fig. 7 the lever is in one piece, and is slotted at its lower end to move vertically upon the fixed pivot K. There may be two or more points for attachment of the pawl H to the lever, so as to vary the throw of the pawl according to its distance from the pivot K, as in Figs. 5 and 7. The spring-actuated lever is vibrated or moved forward by means of an oblique bar O, Fig. 5, hinged beneath the car, and arranged to be depressed at the proper moment by the driver's foot upon a treadle and to be raised by a spring connected to the car. The tip of this bar O strikes behind the lever H, as indicated in dotted lines, Fig. 5, and moves it sufficiently to actuate the switch.

In the modification shown in Fig. 8 the lever and pawl are made integral, the heel of the combined lever R extending up through the track-slot far enough to be engaged by the part O when depressed from the car-plat-

form. The forward end of the lever R rotates the ratchet and cam, as already described concerning the pawl H. The rear end has an oblique slot S and a pin or stud T through the same, so that a combined forward and downward movement results in the same effect as when the lever J is actuated. The lever R has a vertical slot also, permitting it to be depressed when required, the spring M restoring it to proper position after either movement.

I claim as my invention—

1. In a switch-operating mechanism, the switch-tongue having at one end a vertical pivot, and about midway a depending rigid stud or fork, in combination with a ratchet-wheel and cam engaging such stud or fork, and with a pawl and a spring-pressed lever protruding above the surface through a suitable slot, substantially as and for the purpose set forth.

2. In a switch-operating mechanism, the vibrating lever H, protruding above the street-level, and the horizontal pawl connected thereto below the surface, in combination with the rotatable cam actuated by said pawl, and the switch-tongue engaging by its depending stud with such cam, substantially as and for the purpose set forth.

3. The lever H, pivoted at its lower end, protruding at its upper end above the street surface, and arranged both to vibrate and reciprocate in a vertical plane, in combination with a push bar or pawl connected to said lever, a ratchet-wheel having teeth engaged by said pawl, and a sinuous cam rigidly secured to said ratchet-wheel, substantially as set forth.

4. The lever H, made in two parts, with its lower member pivoted to provide for vibration, and its upper part sliding therein or thereon to provide for depression and elevation, in combination with a spring or springs adapted to restore said lever to its working position, substantially as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 19th day of March, A. D. 1889.

CHAS. W. STETSON.

Witnesses:
A. H. SPENCER,
THOS. J. KENNY.