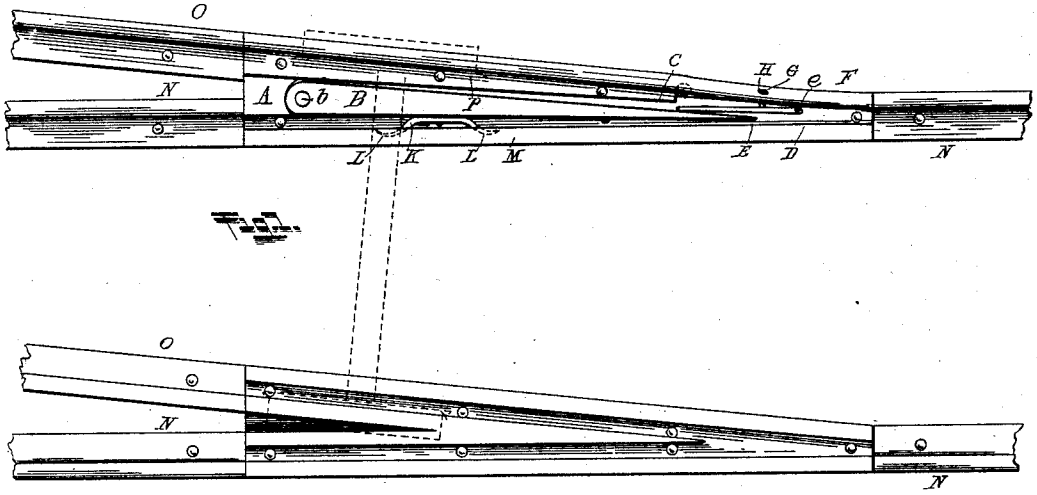
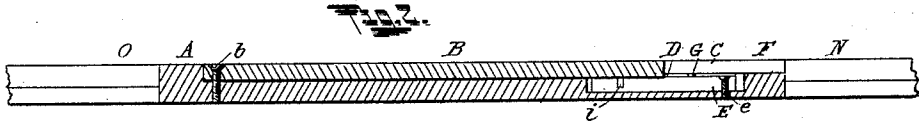
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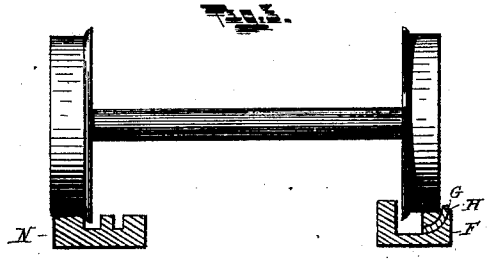
J. HOPE, Jr.

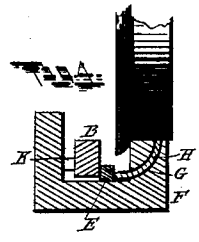
AUTOMATIC SWITCH FOR STREET RAILWAYS.

No. 362,158. Patented May 3, 1887.











Witnesses,
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UNITED STATES PATENT OFFICE.

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AUTOMATIC SWITCH FOR STREET-RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 362,158, dated May 3, 1887.

Application filed December 28, 1886. Serial No. 222,814. (No model.)

To all whom it may concern:

Be it known that I, JOHN HOPE, Jr., of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Automatic Switches for Street-Railways; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention relates to that class of street-railway switches which are made to operate automatically, and, like my patent, No. 351,440, of October 26, 1886, the switch is operated by the wheels of the car. In my present improvements, however, the switch-tongue is adapted to be slid so as to open the switch by means of the car-wheels passing over and thus pressing down a curved or arched plunger against a lever, which in its turn slides the tongue; and my improvements also consist in certain details of construction, all as more particularly hereinafter described, and illustrated in the drawings.

In the accompanying drawings, Figure 1 illustrates a plan view of my improved switch with the switch-tongue slid back and the switch open, and showing in dotted lines the front wheels of the car passing onto the side track. Fig. 2 illustrates a longitudinal section through the frog and switch-tongue. Fig. 3 is a transverse section through the frog, lever, and plunger, showing the plunger raised or in its normal position and with the switch closed. Fig. 4 is a similar section, enlarged, to Fig. 3, except that the plunger is depressed by the car-wheel and the switch is open; and Fig. 5 illustrates detail views of the arched plunger.

Similar letters represent like parts in all the figures.

A is an ordinary street-railway frog, and B is the switch-tongue, pivoted to the same at *b*.

C is the recess in the frog in which the switch-tongue rests and slides. This recess C is extended several inches—say five—beyond the end of the tongue B, and deepened a little way (say an inch) from this extended end to a short distance below the end of the tongue B. In the deeper recess, D, a small lever, E—say about twelve inches long—rests, and is pivoted at the end farthest from the tongue at *e*. The recesses C and D are made wide enough to allow full play for the tongue B and lever E. (See Fig. 1.)

In the outer track, F, of the frog is an arched cavity, G, extending from the top of the rail to the inner surface of the same and opposite the side of the lever E. In this arched cavity rests a correspondingly-arched piece of metal, H, preferably of steel, so that its lower end will abut against the side of the lever E. This cavity and piece of metal, which acts as a plunger, may be made elliptical, circular, square, triangular, or any other appropriate form in cross-section; but I prefer to make them elliptical in cross-section. The upper opening of the cavity G should be far enough distant from the inside of the rail to allow the flange of the car-wheel to escape the arched plunger H when the wheel is passing over the main track of the switch.

At the end of the tongue B, and extending below the same, is a pin or projection, *i*, against which the free end of the lever E rests, as in Fig. 2. It is evident, however, that this pin may be omitted and the lever made thick enough to rest against the tongue B itself, as in Figs. 1 and 4.

K is an arched spring, which bears against the inner side of the tongue B to force it outward, and thus tend to keep the switch closed. This will be the normal position of the switch, leaving the main track open until the switch-tongue is moved in the opposite direction by the plunger H. Slots or recesses L are made in the inside of the inner flange, M, of the frog, in which the ends of the spring K are held. These recesses are made wide enough to allow of the proper action of the spring without being so wide that the spring is apt to slip out.

The operation of the switch is as follows: The switch-tongue being in its normal position—that is, forced over by the spring K so as to close the switch—and with the upper end of the plunger H projecting a little above the track F, (see Fig. 3,) when the cars moving over the tracks N N from right to left are desired to be moved to the side tracks, O O, the horses are pulled a little to the right, when the

right wheels of the car will pass over the upper end of the plunger H and force it down, and thus move the lever E, and consequently the switch-tongue B, to the opposite side of the frog, and so close the space to the left of the tongue and leave that on the right of the tongue open, or, in other words, open the switch. The flanges P of the right wheels (see dotted lines, Fig. 1) will then enter the recess C on the right of the tongue, and the wheels will pass over to the side tracks, O. As soon as the wheels have passed over the frog the spring K will force the tongue B back to its normal position to the right, and thus close the switch. If it be desired to move the car right along on the main tracks N N, the switch being closed and the space to the left of the tongue being free, the horses are pulled slightly to the left, and the wheels will just avoid the plunger H, passing to the left of it, and the flanges P, entering the space to the left of the tongue B, will pass onto the main tracks N N.

What I claim as new, and want to secure by Letters Patent, is—

1. An automatically-movable switch consisting of the pivoted switch-tongue, a short lever for sliding said tongue, and a curved plunger having its lower end abutting against the side of said lever and its upper end projecting above the surface of the track when the switch is closed, and adapted to be driven down by the car-wheel passing over the same, and thus push the lever and consequently slide the tongue to open the switch, all substantially as described.

2. An automatically-movable switch consisting of the pivoted switch-tongue having a pin projecting from its free end below the same, a short lever bearing against said pin, and a curved plunger having its lower end abutting against the side of said lever, and its upper end projecting above the surface of the track when the switch is closed, and adapted to be driven down by the car-wheel passing over the same, and thus push the lever and consequently slide the tongue to open the switch, all substantially as described.

3. The combination of the curved plunger H, the lever E, the switch-tongue B, and the spring K, all combined and operating substantially as shown and described.

JOHN HOPE, JR.

Witnesses:
IRVING C. HOOD,
JOHN B. BLACK.