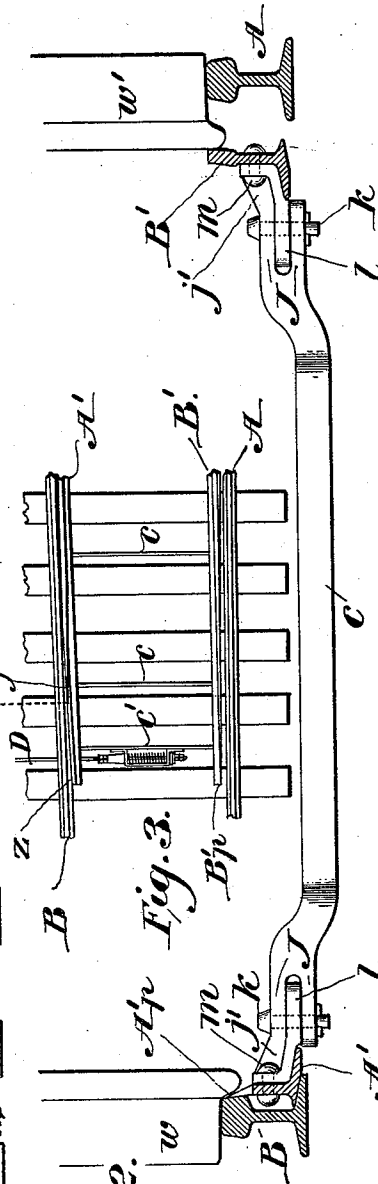
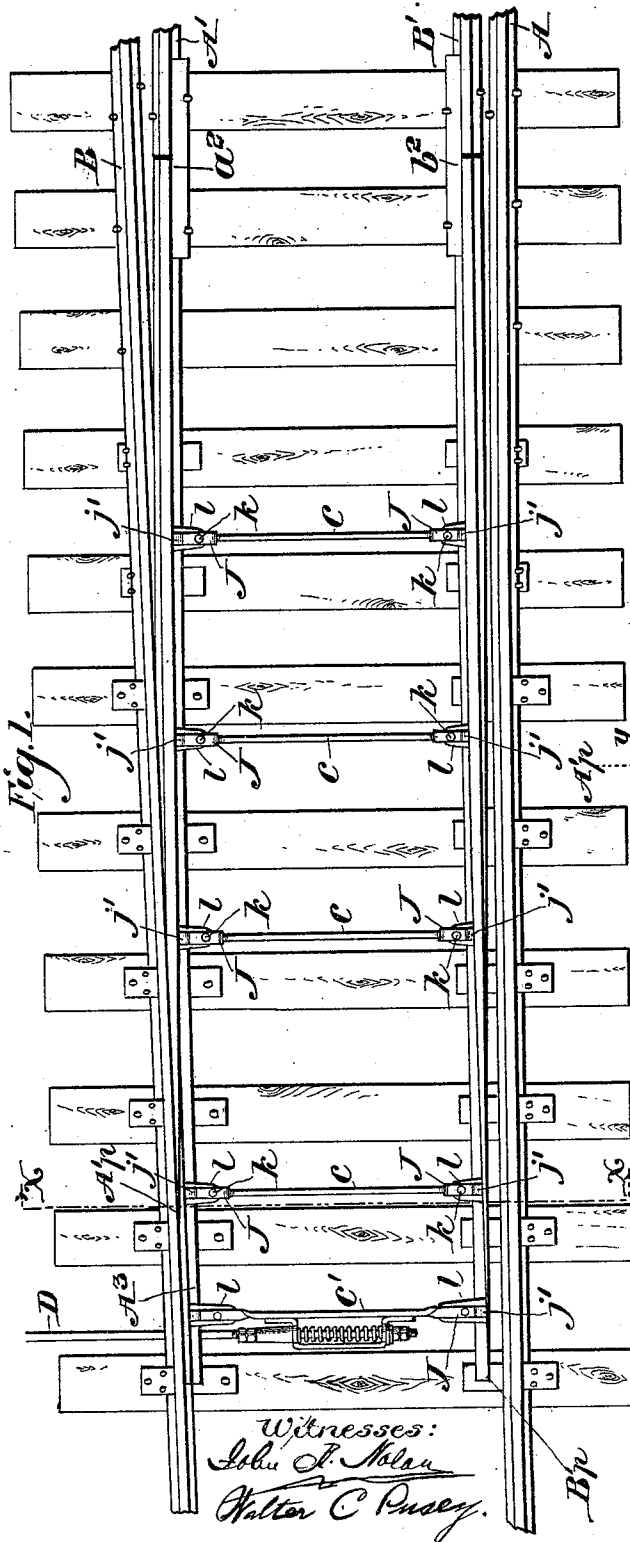


(No Model.)

D. F. VAUGHAN.
RAILWAY SWITCH.

No. 521,743.

Patented June 19, 1894.



UNITED STATES PATENT OFFICE.

DAVID F. VAUGHAN, OF HADDONFIELD, NEW JERSEY.

RAILWAY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 521,743, dated June 19, 1894.

Application filed December 15, 1893. Serial No. 493,733. (No model.)

To all whom it may concern:

Be it known that I, DAVID F. VAUGHAN, a citizen of the United States, residing at Haddonfield, in the county of Camden and State of New Jersey, have invented certain new and useful Improvements in Railway-Switches, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, in which—

Figure 1, is a plan view, the switch being set for the main track; Fig. 2, a section enlarged on the line xx , looking in the direction of the arrow, Fig. 1, the tie being omitted. Fig. 3, is a plan view showing the switch partially thrown.

This invention relates to that class of railway switches which are known as movable "point" switches, and its object is to provide a switch of this kind so constructed and proportioned as to prevent, in a simple yet reliable manner, without requiring the use of guard-rails, the derailment of cars, which, as is well known, frequently occurs where the switch is not fully adjusted, owing to carelessness or to obstruction, or clogging, by dirt, snow, or the like, and thus causes the car-wheels to straddle the switch-rails and so fly the track-way.

The invention consists in the combination with the fixed main-track rail on the one side and the fixed siding-rail on the other side, of connected pivoted switch-rails,—one being the main-track switch-rail, the other the siding-switch-rail,—the point of one of the switch-rails being some distance in advance of the point of the other switch-rail, the construction and relative arrangement of the parts being such, as hereinafter described, that the flanges of the car-wheels on the same axle, in moving facing the switch are obliged to pass the points of both switch-rails on the same side; that is, both wheels to the right or both to the left, thereby making straddling of the switch-rails impossible, as the wheels, passing the advanced point of the one switch-rail, must continue either on the main-track rails or run upon the siding-rails.

The invention consists also in certain details which tend to improve the construction and operation of switches of the class recited.

These will be hereinafter clearly described and duly pointed out.

Referring to the annexed drawings, which form a part of this specification, and which show a left-hand turn-out, A, is the fixed main-track rail, B the fixed siding-rail, A' the main-track switch-rail, pivoted at a^2 , and B', the siding switch-rail, pivoted at b^2 , substantially opposite the pivot of rail A'. The switch-rails are connected together at suitable intervals by tie-rods, c, c' .

A' p and B' p are the points, respectively, of switch-rails A' and B'; one of the same, B' p , being some distance in advance of the other (A' p), say about thirty inches, more or less. The head and part of the web of the rail A' are cut away, as shown, so as to leave an extension, A³, in advance of point A' p , which extension is below the plane of the top of the said point, so as to be out of possible contact with the flange of a passing car-wheel. The purpose of this extension is to serve as a point of connection for one end of the first tie-rod, c' , to which the usual spring-controlled rod, D, is attached for shifting the switch; the other end of the said rod being connected to the point, B' p .

The relation of the switch-rails to the fixed rails is such—as illustrated in Fig. 2—that the transverse distance between the inside of the point, A' p , of the main track switch-rail and the outside of the head of the other switch-rail, B', is equal to, or somewhat greater than, the distance from the outer side of the flange of one car-wheel, w , to the inner side of the flange of the opposite wheel, w' , on the same axle: in other words, this distance should be substantially the usual wheel-gage, less the thickness of a wheel-flange, allowing, however, a slight excess, or margin, for safety and certainty.

By reason of the described construction and arrangement, the wheels of a car advancing toward, that is, facing the switch points must always pass either to the right or to the left of the point, B' p , and so of the point, A' p ; in other words, the wheels must continue on the main track or else run on the siding, and thus they cannot straddle the switch-rails, although the switch, owing to some inter-

posed obstacle, or otherwise, be only partially thrown. Fig. 3 shows the switch in the latter position. Now as the car approaches, and the flanges of the wheels, on that side, reach the point B'^p, said wheels must—if the space between the extremity of the point and the adjacent rail, A, be sufficient, as in Fig. 1—continue on the main-track rail, and those upon the opposite side must, obviously, upon reaching the point, A'^p, run upon the main-track switch-rail A'. If the space between the point, B'^p, and the rail, A, be less than the thickness of the wheel-flange, then the wheels will pass on the inside of said point, and the opposite wheels must pass on the outside of the rail, A', that is, on the rail, B, and so the car will run on the siding. As the extremities of the points of the switch-rails which are usually of suitable steel, are acute or thin and flexible or elastic, the wheel-flanges cannot ride up on the same, but if the flange of a wheel should strike the extremity of the advance point, B'^p, the switch will be shifted to one side, or the other, as it may happen, before the opposite wheel shall reach the other point, A'^p. So that whatever partly closed position the switch may be in, the car will be directed to the main track or to the siding. It will be observed that in the construction shown the safety of the main-track depends upon the advance point, B'^p, of the siding switch-rail being open instead of the point, A'^p, of the main track switch-rail being entirely closed as in previous constructions of switches.

If the switch be thrown for the siding and a stone, ice, or other obstruction, should get between the siding switch-rail and the main-track rail, A, above the first switch-rod tie, c', the flexibility of the long thin point, will allow its extreme end, or point, to bend in toward the main-track rail and thus permit the car-wheels to run onto the siding. If, however, the obstruction which prevents the switch-rail from being thrown against the main-track rail should be at, or near, the free end of the point, the wheels will then pass onto the main-track rails. Further, if the switch be thrown for the main track, and the obstruction be between the main-track switch-rail, A', and the fixed siding-rail, B, at about the point of said switch-rail, as at y, Fig. 3, then, by reason of the elasticity of the point, and also of the extension, A³, of the main-track switch-rail, the point of the siding switch-rail will be drawn inwardly, i. e., away from the main-track rail, by the stress of the switch operating rod and thus the main-track will be open. A similar result will occur if an obstacle, as at, z, be between the free end of the extension, A³, and the siding-rail.

The connection of the switch-rails by means of the tie-rods, c, c', which are provided with jaws, J, into which extend the usual lugs, l, one limb of which is entered

between the jaws and is secured by a pivot bolt, k, the other or vertical limb being fastened to the web of the rail by means of rivets, m, is generally similar to the construction usually employed. To this I have, however, added an improvement, which I shall now proceed to describe. In the aforementioned usual construction, the tendency of the joint or connection of the tie-rods and lugs has been to buckle inwardly, owing to the comparatively long reach between the lug connections and the consequent leverage, whereby the switch-rails,—especially the points thereof,—were liable to be forced from the proper vertical position by the passing car-wheels. To obviate this defect, I have extended the upper one of the jaws of the tie-rods and given its free end, j', an upward projection, whereby it will bear against the upper portion of the web of the switch-rail, or rather as, in the present instance, shown in the drawings, against the side of the vertical limb of the lug, l. This forms a stay against inward stress which would otherwise deflect the rail from the proper or vertical position.

I do not broadly claim as new a pivoted point switch having the point of one of the rails thereof in advance of the point of the other rail, as various forms of such switches had been described and patented previous to my invention.

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

1. In a railway switch of the class recited, the combination with the fixed main track and siding-rails of the pivoted switch-rails, the point of one of said switch-rails being in advance of the point of the other switch-rail, and the transverse distance between the inner side of the point of the main-track switch-rail and the outside of the head of the siding switch-rail being equal to, or a little more than, the gage of the wheels adapted to run on the track-way, less the thickness of the wheel-flange, whereby when the switch is partially closed the wheels on one side of the axles will be caused to pass on the outside of one of the switch-rails and the wheels on the opposite side, on the inside of the other switch-rail; the wheels on one side running upon one of the fixed rails, and those on the opposite side upon one of the switch rails substantially as and for the purpose set forth.

2. In a railway switch of the class recited, the combination with the fixed main-track and siding-rails of the pivoted switch-rails, the point of one of said switch-rails being in advance of the point of the other switch-rail, the latter rail having the extension, A³, beyond its point, together with the tie and switch-rod, connected to the point of the first mentioned switch-rail and to the said extension, substantially as and for the purpose specified.

3. In a pivoted point railway switch, the

combination with the switch-rails, of the lugs, the tie-rods having the jaws in which said lugs are pivoted, and the upper jaw of said rod extended so as to stay the upper portion
5 of the web of the switch-rail, substantially as described.

In testimony whereof I have hereunto af-

fixed my signature in the presence of two subscribing witnesses.

DAVID F. VAUGHAN.

Witnesses:

WALTER C. PUSEY,
JOHN R. NOLAN.