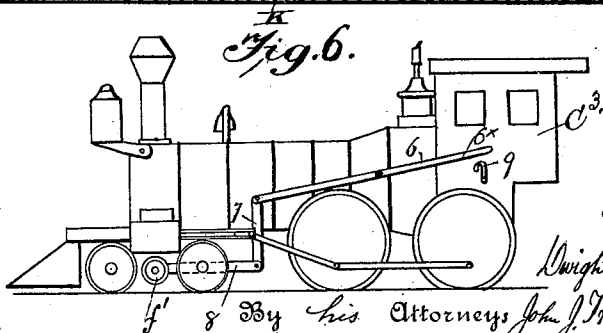
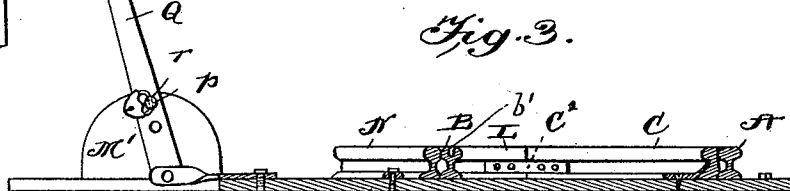
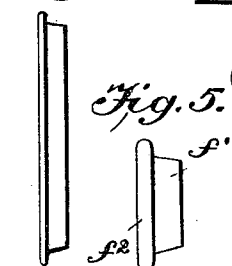
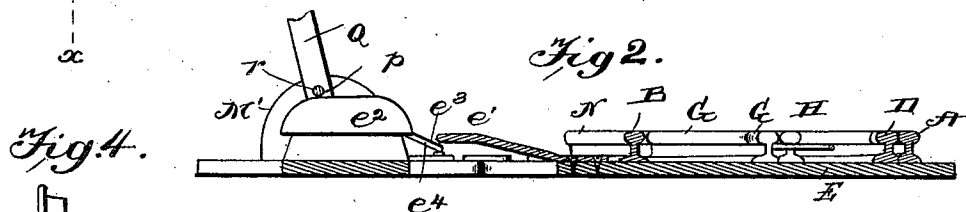
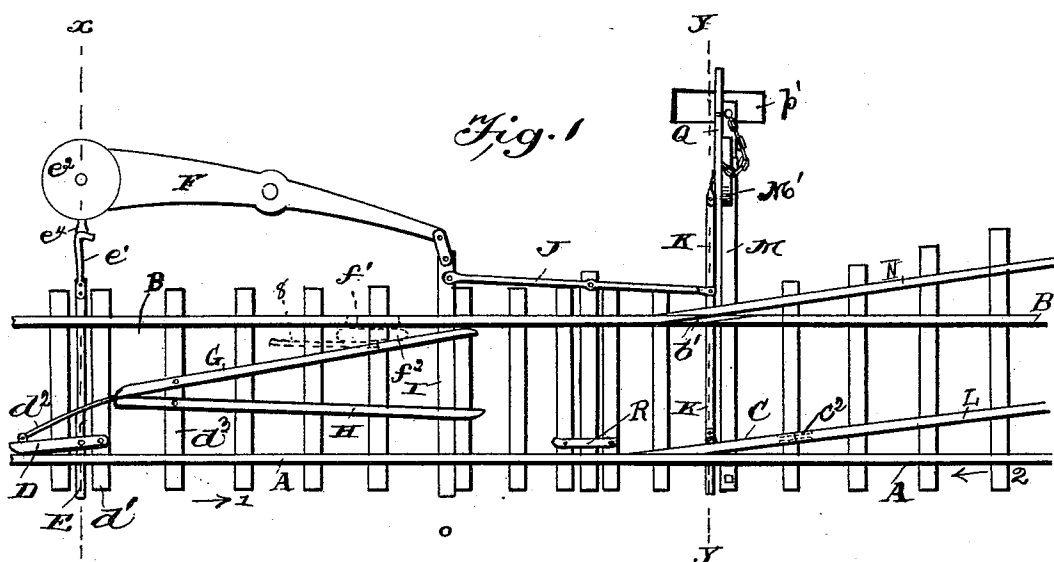


(No Model.)

D. M. CHURCH.
RAILWAY SWITCH.

No. 464,061.

Patented Dec. 1, 1891.



Witnesses
John Imrie
[Signature]

Inventor
Dwight M. Church
By his Attorneys *[Signature]*

UNITED STATES PATENT OFFICE.

DWIGHT M. CHURCH, OF WILLIMANTIC, CONNECTICUT, ASSIGNOR OF
FIFTEEN TWENTY-FOURTHS TO ARTHUR C. ANDREW, OF WINDHAM,
CONNECTICUT, AND EDGAR B. FOSS, OF BAY CITY, MICHIGAN.

RAILWAY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 464,061, dated December 1, 1891.

Application filed May 14, 1891. Serial No. 392,649. (No model.)

To all whom it may concern:

Be it known that I, DWIGHT M. CHURCH, of Willimantic, in the county of Windham and State of Connecticut, have invented certain
5 new and useful Improvements in Railway-Switches; 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
10 make and use the same, reference being had to the accompanying drawings, and to letters and figures of reference marked thereon, which form a part of this specification.

My invention has among its objects the better prevention of accidents from switches and fixing of the responsibility where it belongs when an accident caused by a switch occurs; and it consists in a novel combination, with the main tracks or rails and with sidings, of
15 a single switch-point, in special means whereby this switch may be operated by the engineer in charge of the train, and in other particulars presently to be described.

In the drawings which serve to illustrate
25 my invention, Figure 1 is a plan view of sufficient of a main track and of side tracks branching therefrom to show my invention applied thereto. Fig. 2 is a cross-section in the line *xx* of Fig. 1; Fig. 3, a cross-section,
30 enlarged, in the line *yy* of Fig. 1; Fig. 4, an edge view, enlarged, of an ordinary car-wheel; Fig. 5, an edge view, enlarged, of the switch-opening wheel. Fig. 6 illustrates one way of operating from the locomotive my novel
35 switching devices.

A B indicate parts of two straight parallel main rails, neither of which is, as has heretofore been the practice, bent out of its straight course in order to form one of the rails of the
40 side track. Rail B has in its upper face or tread a shallow diagonal groove *b'*, adapted to receive the flange of a car-wheel, and as neither rail is severed or bent both can be spiked down immovably, like any ordinary
45 rail which has no relation or proximity to a switch.

C is the single and only switch-point used in my invention, and it is rigid throughout and has a flexible connection with a siding-
50 rail.

D is a lever fulcrumed at one end on a cross-tie *d'* and connected to a slide-bar E, which is arranged to slide beneath the track-rails, and which has at its extremity outside
55 of the track a projection *e'*, adapted, when the slide is pushed outward, to put into action in any suitable manner an alarm-bell *e*². A simple means for effecting this is for the projection to bear, when pushed outward on an incline *e*³, on a lever *e*⁴, which lever may
60 either directly act as a bell-clapper within the bell or release any detent, which will allow a clock-work or other mechanism within the bell to come into action to ring the bell. The bell is on one end of a lever F, which is
65 connected to slide I beneath the track-rails, as shown. A light spring *d*² serves to retract the lever D and restore it to its normal position. I will here state somewhat in advance that the object of this lever D is that
70 when the single-pointed switch C is closed against the inner side of its adjacent rail A and a car comes along moving in the direction of the arrow marked 1 the side flange of the locomotive-wheel enters between lever
75 D and the inside of the rail, and thereby moves the slide E and rings the bell, thus announcing to the ear of the engineer that the switch ahead of him is closed, whether he had
80 been aware of it or not from any visible signal ahead of him which appeals to the eye only. The engineer, being thus apprised that the switch is closed, now works downward any suitable lever provided on the locomotive and
85 on the end of which is a small wheel *f'*, having a flange *f*², like but somewhat thicker than those of the car-wheels, and this flange, entering between a lever G and its adjacent rail B, forces the switch C open. This is effected as follows: Levers G and H are pivoted
90 at one end on a cross sleeper or tie *d*³ and are both connected to the same slide-bar I, which, like slide E, is arranged to move between the cross-sleepers of the main track, and in one position of these parts lever G is nearer the
95 inner side of one main rail B and in the other position lever H is nearer the inside of the other main rail A. Another lever J, centrally fulcrumed, is pivoted at one end to the same slide I, and its other end is pivoted to a slide K, 100

also working between the cross-sleepers, and this slide K is connected to and actuates the single switch-rail. The flange f^2 of wheel f' , entering between lever G and the rail B, causes
 5 slide I to move lever J, which in turn actuates slide K, and thus opens the switch. If the switch C be open and it be desired to close it by the act of the engineer on the locomotive, he lets down a similar small flanged
 10 wheel, like f' , at the opposite side of the car between the lever H and rail A, and this, by the same mechanism just described, will close the switch C and simply guide the car from the main to the side tracks L N. The bell indicates to the engineer the position of the switch,
 15 even though there be no switch-signal to appeal to his eye, or even if it be too dark or foggy to see a signal, or if the switch-light be extinguished and hence invisible, or even if
 20 visible but out of its proper position, and he could hear the bell before he could get near enough to see a signal, even if the latter be all right.

The switch-rail C is connected to the fixed
 25 part L of the siding-rail in any well-known manner, preferably by long fish-plates C², which can yield enough to allow the requisite small movement of the switch.

Another very important advantage resulting from my single switch-point (as compared with the usual two switch-points, both of which require a simultaneous and coinciding lateral swing or movement) is as follows: In such usual construction if a train be moving
 30 in the direction of arrow 2, while the left-hand wheels of the locomotive and cars would bear with their superimposed weight on the continuous integral rail A, (and as they do also with my invention,) yet the right-hand wheels
 35 in such ordinary construction, together also with the weight of the locomotive and cars, would bear on the gradually-diminishing breadth and strength of the usual right-hand switch-point, and which too often proves too
 40 weak and unequal to the demand thus made upon it, and which also tends to wear it out rapidly; besides which, as the left-hand one of the double switch-points is forced open by the action of the flange of the left-hand locomotive-wheel, it is evident that the right-hand
 45 switch-point, weak as it is and unfit for supporting a great weight, must, in addition to bearing the weight and burden of the locomotive, act also as a carriage to move or shift
 50 the locomotive sidewise. My invention obviates and avoids all this when the train is running on the main line, as there is no switch-point to uphold the locomotive, the latter always resting with all its wheels on the two
 55 strong continuous rails A B.

With my single switch-point, if the train be running rapidly on the main track in the direction of arrow 2, there is nothing but this strong main track to support the locomotive
 60 and train, and consequently no customary weak, thin, or tapering switch to receive or support at any time the train or any part of

it. The rail B being integral and continuous, the tread of the car-wheel, in whichever direction the train is running, passes smoothly
 70 over it, just the same as if it were not grooved, so that the wheels cannot in any wise be disturbed while passing over that portion of the route where my single switch-point is located.

In my invention snow and ice offer no impediments beyond ordinary constructions, but
 75 lessen them, as there is but one switch-point to be moved. I also avoid the use of any spring connected to the switch-point, its movement being always positive, and, as already
 80 stated, the responsibility for an accident can always be traced and fixed upon the negligent or guilty employé.

In my invention I have also devised means whereby, even when the switch-signal is
 85 locked, the switch-point may be operated either by the action of the engineer while on the locomotive or by a switchman, provided one be employed, but yet such that it cannot be operated by a tramp or meddler. These
 90 novel means are as follows: The signal-lever Q is pivoted on an upright projection M' on a bar M, extending under the rails and cross-wise of the tracks. The same pin p which serves to lock the signal-lever Q in a well-known manner—as, for instance, by fasten-
 95 ing a padlock in the hole r of the pin—also serves, when so wanted, to fasten slide M to a tie timber or sleeper or other convenient fixed part, as indicated at p' in Fig. 1, this
 100 slide being of iron and so heavy that when not so locked or fastened down it can only be slid either by means of levers G H, by the action of the engineer, or by unlocking the switch-lever and fastening the slide M
 105 by the same pin p to the timbers or sleepers, as above stated. The switchman can then operate the switch by means of the signal-lever Q. As each and all of the parts E I K M slide beneath the rails, they are secure
 110 against rising upward or getting out of order.

When, as heretofore, two switch-points are employed and the cars are moving toward such points, either the crooking of an axle or the wobbling of a car-wheel, or a flange of a
 115 wheel when worn to a sharp edge, or a small bit of dirt accidentally lodged between one of the switch-points and the rail, often allows a forward truck to run along on the main track and forces a following one to run off on the
 120 side track, thus causing serious accidents and the overturning of the cars. By my improvement these are entirely prevented.

If groove b were made deep enough to reach the web of the rail, or even to sever the rail
 125 entirely through, the invention would work with equal efficiency; but I prefer the shallow groove b' , as it preserves substantially all the strength and integrity of the rail.

The fixed side track N as applied in my
 130 construction serves firmly to brace the rail B, as seen, abutting, as it does, directly against its side.

R is a short stationary guard fastened to

the sleepers to prevent the wheels going wrong—that is, to guard their flanges so as to prevent their entering where they should not.

Fig. 7 illustrates one way in which the wheel 5 f' may be put into action by the engineer from the locomotive. A lever 6, whose treadle or handle extends into the cab C^3 , is connected by a link 7 to a lever 8, which carries the small wheel f' , and the engineer may operate lever 10 6 by foot or by hand, as preferred; and if it be desired to keep this wheel f' down and running on the track all the time its handle or treadle end 6^x may be held by a hook 9.

I claim—

15 1. In combination with a single switch-point, the described means whereby the engineer on the locomotive may operate the same, consisting of a lever on the locomotive

and carrying a wheel having a flange thicker than those of car-wheels, levers F G H J, and 20 slides I K, all substantially as set forth.

2. In combination with lever D, slide E, lever F, and a bell on lever F, the combination being and operating substantially as set forth.

3. In combination with the single switch- 25 point C and lever Q, the slide K, connecting said lever and switch, and the bar M, on which the switch-lever is pivoted, the combination permitting the switch to be operated by the action of the thick flanged wheel, even when 30 the switch-lever is locked.

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