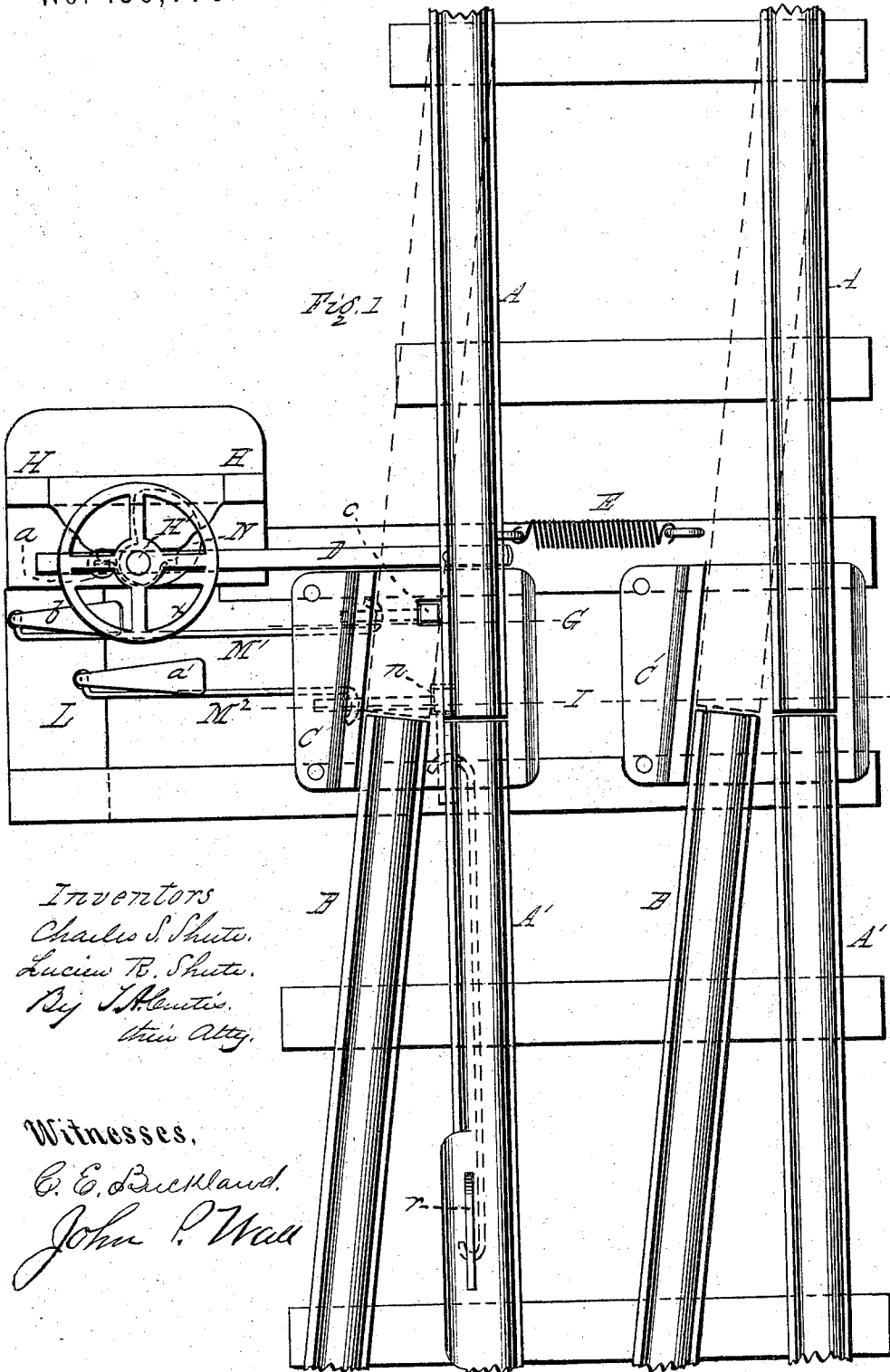


C. S. & L. R. SHUTE.
Railroad Switches.

No. 136,776.

Patented March 11, 1873.



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By J. H. Curtis.
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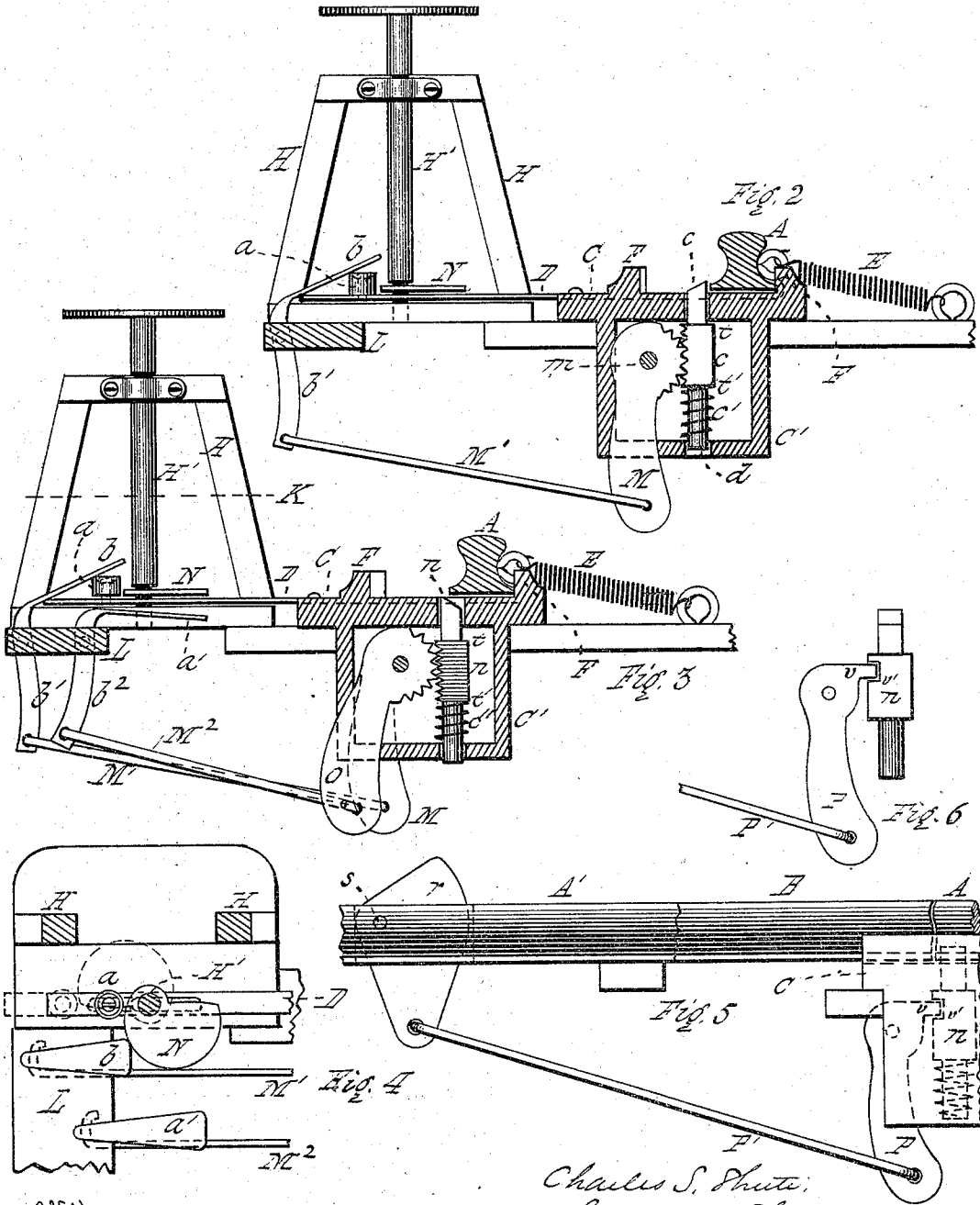
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UNITED STATES PATENT OFFICE

CHARLES S. SHUTE AND LUCIEN R. SHUTE, OF SPRINGFIELD, MASS.

IMPROVEMENT IN RAILROAD SWITCHES.

Specification forming part of Letters Patent No. 136,776, dated March 11, 1873.

To all whom it may concern:

Be it known that we, CHARLES S. SHUTE and LUCIEN R. SHUTE, of Springfield, in the county of Hampden and State of Massachusetts, have invented a new and useful Improvement in Railway Switches; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon, in which—

Figure 1 is a plan view of my invention. Fig. 2 is a transverse section through line G of Fig. 1. Fig. 3 is a transverse section through line I of Fig. 1. Fig. 4 is a horizontal section through line K of Fig. 3, showing a plan view of the switch-rod and the cam which moves it. Fig. 5 is a side view of the mechanism attached to the track by which the stop or bolt which locks the switch-rail to the siding is operated by the wheel of the locomotive of an approaching train to unlock the same, and Fig. 6 is a side view, showing a modification of the stop or bolt and the pivoted arm which operates the same.

Our invention relates to a railway switch provided with certain mechanism whereby the switch-rails may be automatically connected with the main track, if they are not so connected, by a railway train as it approaches the switch, and whereby, also, the rails are moved by hand by the switchman in making the connection on the main track, and also the connection between the main track and the siding; and our invention consists, first, of a rod extending from the switch-frame to the rails, to which the rod is attached, and which is operated by a cam secured to a vertical shaft, which, when rotated, drives the cam against a projection upon the rod. The rails are moved in one direction by this rod and cam, and in the opposite direction by a spring properly secured and bearing against the switch-rails; and our invention also consists of a chair, upon which one of the swinging switch-rails rests and moves, and in which chair are arranged two upright stops or bolts which project up through the chair to hold the rail in the position into which it may be moved, and these bolts are held in that position by springs attached thereto, but which bolts are forced down, when it is desired to change the position of the rails, by means of a pivoted arm

connected with the stop, and connected also by rods with pedals or foot pieces located near the hand-shaft and cam by which the rails are moved, so that by pressing down on these foot pieces the stops or bolts are drawn down and the rails may be changed in their position. One of the bolts has two pivoted arms connected therewith, one of which is so connected by a rod with a piece pivoted in the rail of the main track that, when the stop or bolt is protruding up through the top of the chair to hold the switch-rail in connection with the siding, the pivoted piece is projecting above the main-track rail, so that the tread of the wheel of the locomotive of an approaching train will pass over it and, pressing it down, withdraw the stop or bolt downward from against the switch-rail, and permit the spring to force the rail into connection with the main track.

That others skilled in the art may be able to make and use our invention, we will proceed to describe its construction and operation.

In the drawing, A' represents the main track of a railway, and A the switch-rails, which are properly connected together in the usual manner, and which, as shown in Fig. 1, effect the continuity of the main track; and B represents the siding or switch-track. C represents a chair, upon which the end of one of the switch-rails rests and moves, and D is a rod, which is attached to the switch-rails and extends to the switch-frame H, which supports the vertical shaft H', having a cam, N, upon its lower end; and the rod D, which extends along beneath said shaft, has a stud, a, thereon, which projects upward sufficiently to permit the cam to impinge against it when the shaft H' is turned. The chair C is provided with two vertical stops or bolts, c and n, which are placed beneath the rails, as shown in Figs. 2 and 3, and a spring, E, is secured to one or both of the switch-rails A, at one end, and to a suitable timber at the other, in such manner that the switch-rails, if released from their connection with the siding B, will be forced by said spring into connection with the main track A'. The stop or bolt c is beveled at the top, as shown in Fig. 2, and has a shoulder at t, to prevent it from being forced up too high by the action of the spring c', which bears up against the lower shoulder t, and said bolt is provided with one or more teeth, which en-

gage with one or more teeth upon the upper end of the lever M pivoted at *m*. A rod, *M*¹, connects the lower end of said lever M with the lower end of a foot-piece, *b*, pivoted in the piece L; and the bolt *c* is so located with reference to the switch-rail A, that when the latter is in a position to form the connection with the main track the upper end of said bolt *c* projects up through the bed of the chair C and by the side of the said rail A, serving to hold said rail firmly in that position; and when the bolt is in that position the foot-piece *b* is held by the rod M in an elevated position, as shown in Fig. 2. The bolt *n* is also beveled at the top, but in an opposite direction, as shown in Fig. 3, and is also connected, by one or more teeth, with a pivoted lever, O, the lower end of which is connected with the lower end of a pivoted foot-piece, *a'*, by a rod, *M*²; and this bolt is so located in the chair C with reference to the switch-rail A that when the latter is in position shown in dotted lines, connecting the main track with the siding, the upper end of the bolt *n* projects up through the bed of the chair by the side of the rail, serving to hold the rail in that position, to form the connection with the siding, and when the bolt is in that position the foot-piece *a'* is in an elevated position; but when the bolt is down to permit the rail to move back into a position to form the connection with the main track the foot-piece *a'* is down also, as shown in Fig. 3. The bolt *n* is also connected, by one or more teeth, with another pivoted lever, P, which vibrates in a direction lengthwise the rails, but which is otherwise similar in arrangement and operation with the other pivoted levers hereinbefore described; and the lower end of this lever P is connected, by a rod, *P*¹, with a pivoted arm, *r*, which is secured to the main rail A' in such manner that it may vibrate upon its pivot in a direction lengthwise the rail; and the connection between the said bolt *n* and the pivoted arm *r* is such, that when the bolt is up in its position to hold the switch-rail in connection with the siding, as shown in dotted lines in Fig. 5, the upper part of the arm, which is pivoted to the rail, is in an elevated position, and may be depressed by the wheels of an approaching train, as shown in Fig. 5.

The operation of our invention is as follows: If the switch-rails are in the position to make the connection with the main track, as shown in Fig. 1, and it is desired to connect them with the siding B, or move them into the position shown by the dotted lines in Fig. 1, the switchman presses down the foot-piece *b* with his foot, which, by means of the rod *M*¹ and pivoted lever M, draws the bolt *c* down so as to permit the rail A to slide laterally upon the bed of the chair C, and he then turns the upright shaft H', by means of the common hand-wheel, or by a lever, thereby turning the cam N around against the projection *a*, upon the switch-rod D, and drawing the rod

and the switch-rails into the position shown in Figs. 1 and 4. While the rail A was in a position to form a connection with the main track the other bolt, *n*, was just beneath the rail, and was held down by the latter; but after the rail A has been drawn over to form a connection with the siding, as shown in dotted lines in Fig. 1, the bolt *n* is quickly forced up by the action of its spring *c''*, and through the medium of the pivoted lever O and rod *M*², elevating the foot-piece *a'*, by drawing upon its lower end, and the bolt *n* then operates to hold the rail in its position connecting the siding with the main track. The rail A, in changing its position, moved over and upon the other bolt *c*, thereby holding it down, as well as the foot-piece *b*, with which it is connected; and said bolt *c* remains in that depressed position until the rail A is restored to its former position in connection with the main track A'. By turning the cam N against the projection *a* upon the rod D and depressing the foot-piece *a'*, thereby drawing down the bolt *n* and turning the shaft H' back, the spring E forces the switch-rails back into their position in connection with the main track A', the cam N letting them back gradually, as fast as the shaft H' is turned, and when in position, the bolt *c*, no longer held down by the rail, quickly rises by the action of its spring *c'*, and holds the rail securely in that position, while the other bolt *n* is held down by the rail. When the switch-rails A are in connection with the siding B, as indicated in dotted lines in Fig. 1, and the bolt *n* is raised by its spring *c''* to hold the rail in that position, the foot-piece *a'* is raised, and the piece *r* pivoted to the rail A', and which is connected with the bolt *n* in the same manner as is the foot-piece *a'*, also projects up above the rail A', and the cam N having been turned slightly past the projection *a*, as shown in dotted lines, if a train be approaching the switch upon the main track A', the tread of the wheel of the locomotive passes over the piece *r* and depresses it, drawing down the bolt *n* when the spring E quickly forces the switch-rails back to their position in connection with the main track A', and the train passes over in safety. It will thus be seen that with this arrangement it will be impossible for a train to run off the track from the switch being accidentally left misplaced, as, if coming from one direction, the train would pass on to the siding B if the switch was misplaced; and if coming from the other direction the train itself would trip the bolt and allow the spring E to shift the switch-rails into connection with the main track. It is, however, intended that the same arrangement of lever P, rod *P*¹, and pivoted piece *r* shall extend from the switch along the main track, in a direction opposite that shown in Fig. 1, and operate in the same manner, except that, instead of being pivoted to the rail of the main track, the piece *r* shall be pivoted to a timber, properly secured, and the said piece *r* be depressed by some attachment up-

on the locomotive; so that, if the switch-rails A were connected with the siding B, instead of running upon upon the siding, the engineer could permit the attachment upon his engine to strike the pivoted arm and depress it, thus tripping the bolt *n* and causing the switch-rails to be changed into connection with the main track.

The manner of connecting the bolts with their pivoted or tripping levers may be by teeth, as shown in Figs. 2 and 3, or by a point, *v*, and corresponding recess *v'*, as shown in Figs. 5 and 6, either way being equally operative. It is evident that only one chair, C, needs to be provided with the bolts *c* and *n*, as one set is quite sufficient to operate the rails properly; and the other chair C' may have an ordinary flat bed, and both are provided with flanges F to limit the movement of the rails, and assist in keeping them steady and firm in either position. The spring E may be either a spiral spring, or it may be of any other suitable form, having sufficient strength and elasticity to force the rails to their proper position; and by using the cam N and projection upon the switch-rod instead of a crank, the rod is free to move back quickly without operating the shaft H'.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The bolt *c*, whereby the switch-rail is held secure in its position in connection with the main track, in combination with the pivoted lever M, rod M², and pivoted foot-piece *b*, whereby said bolt is operated, substantially as described.

2. The lever O, rod M², and foot-piece *a'*, in combination with the bolt *n*, whereby the switch-rails are released from their position in connection with the siding, substantially as described.

3. The piece *r*, rod P', pivoted lever P, and bolt *n* provided with a spring, C'', in combination with a spring, E, or its equivalent, whereby the switch-rails may be placed in connection with the main track automatically by an approaching train, substantially as herein set forth.

4. The combination of the shaft H' provided with the cam N, the switch-rod D provided with the projection *a*, and the spring E, or its equivalent, as a means of moving the switch-rails in both directions, substantially as herein described.

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