No. 792,647. PATENTED JUNE 20, 1905.

J. H. BYRON.

RAILWAY CROSSING.

APPLICATION FILED JAN. 16, 1905.

2 SHEETS—SHEET 1.

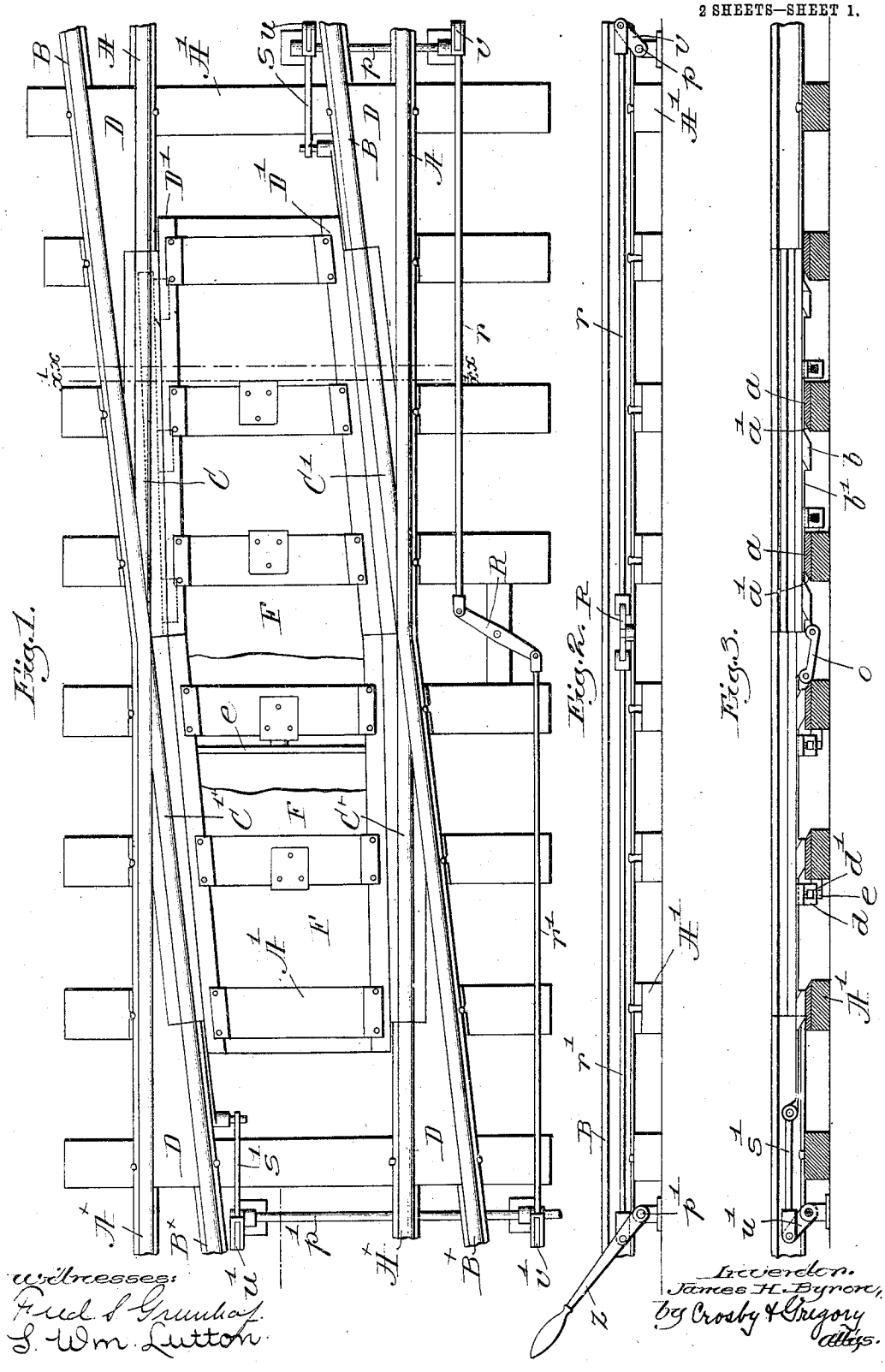


Fig. 1.

Fig. 2.

Fig. 3.

Witnesses:
Fred. S. Grundy
S. Wm. Lutton

Inventor.
James H. Byron,
by Crosby & Gregory
Attys.

No. 792,647. PATENTED JUNE 20, 1905.

J. H. BYRON.

RAILWAY CROSSING.

APPLICATION FILED JAN. 16, 1905.

2 SHEETS—SHEET 2.

Fig. 4.

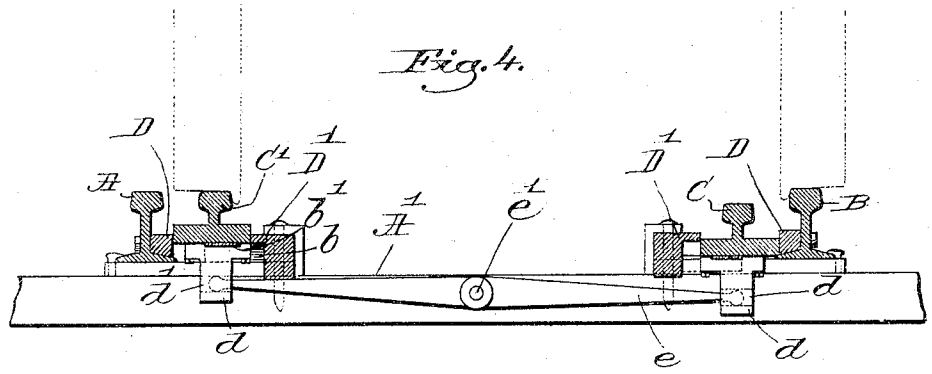


Fig. 5.

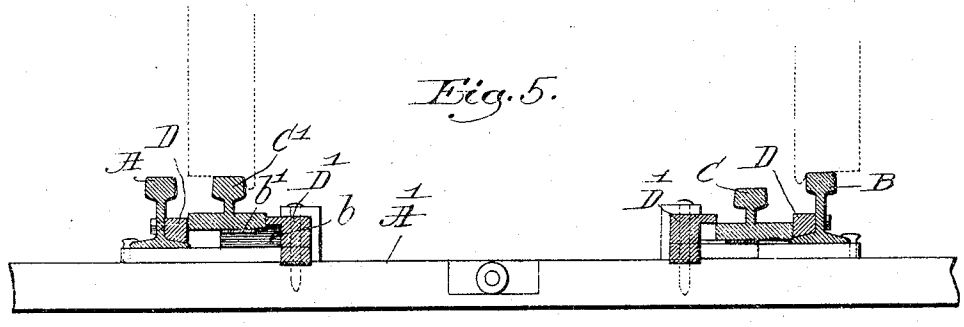


Fig. 6.

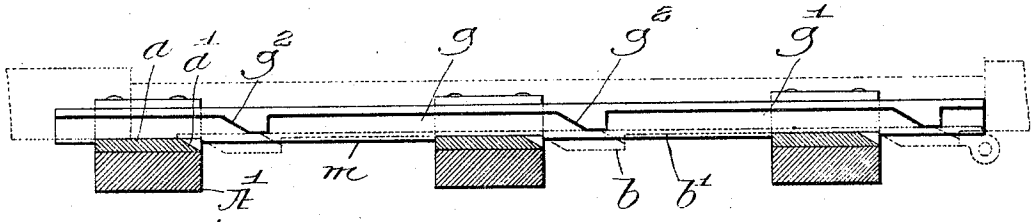
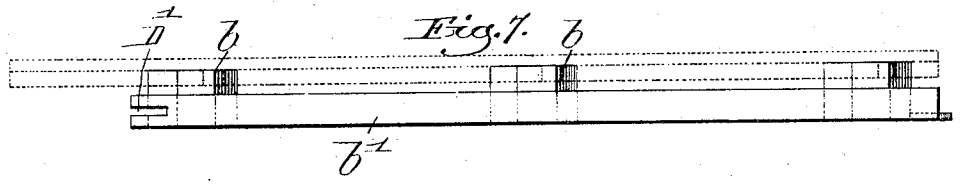


Fig. 7.



Witnesses:
Fred. S. Grumbach.
S. Wm. Lutton.

Inventor.
James H. Byron,
by Crosby & Gregory
Attys.

No. 792,647. Patented June 20, 1905.

UNITED STATES PATENT OFFICE.

JAMES H. BYRON, OF BOSTON, MASSACHUSETTS, ASSIGNOR OF ONE-THIRD TO CHARLES WAGNER, OF BOSTON, MASSACHUSETTS.

RAILWAY-CROSSING.

SPECIFICATION forming part of Letters Patent No. 792,647, dated June 20, 1905.

Application filed January 16, 1905. Serial No. 241,184.

To all whom it may concern:

Be it known that I, JAMES H. BYRON, a citizen of the United States, residing at Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Railway-Crossings, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to a railway or other track crossing, and embodies features of the invention in a switch for which I filed application, Serial No. 189,072, on January 13, 1904, in which application broad claims have been made for these features. As in the case of my prior application, I make use herein of switch-points for controlling the passage of the car-wheels on the desired tracks, and these points are moved vertically rather than laterally.

The invention relates particularly to that class of track structure where it is desired to pass the cars along one line of track intersecting another line at an angle, and more especially at an acute angle, without requiring the car-wheels to pass over a break or opening in the rails.

The precise nature of the invention will best be seen from the accompanying drawings and description, and the essential features will be pointed out in the appended claims.

In the drawings, Figure 1 represents a plan view of a sufficient portion of the crossing to illustrate the invention. Fig. 2 is a side elevation of the structure shown in Fig. 1 looking in the direction of the arrow on Fig. 1. Fig. 3 is a view, partially in cross-section, of the structure shown in Fig. 1, showing the mechanism for elevating and depressing the switch-points. Fig. 4 is a cross-section on the line x in Fig. 1. Fig. 5 is a cross-section on the line x' in Fig. 1. Fig. 6 is an enlarged detail view showing the slide for raising the point and adjacent parts. Fig. 7 is a top plan view of the parts shown in Fig. 6.

Referring to the drawings, what may be termed the "main" track is made up of the straight pairs of rails A $A^{\times}$ and A $A^{\times}$ and what may be termed the "crossing-track" is made up of the pairs of rails B $B^{\times}$ and B $B^{\times}$, although it is of course evident that either track may be considered as the main track and the other as the crossing-track. These rails are sustained in the usual manner on a series of sleepers A′ of any usual shape and material. The outermost rails $A^{\times}$ $B^{\times}$ at one side of the intersection abut against or are formed continuous with the outer rails A B at the other side of the intersection. Switch-points C C′ $C^{\times}$ $C'^{\times}$, of similar construction to those described in my aforesaid application, are provided. One switch-point, as C, abuts against the inner main rail A and has its tapering end contacting with the outer rail B near the junction. The point C′ abuts against the inner rail B and has its tapering point contacting with the outer rail A near the junction. In a similar manner the point $C^{\times}$ abuts against the inner rail $A^{\times}$ and has its tapering point contacting with the outer rail $B^{\times}$, and the point $C'^{\times}$ abuts against the inner rail $B^{\times}$ and has its tapering point contacting against the outer rail $A^{\times}$ near the junction. These points are moved vertically at the proper time and in the proper order to make either a continuous main track or a continuous crossing-track. For example, assuming that the car is approaching the crossing along the main track over the rails A A, if now the point C be elevated and the point $C'^{\times}$ depressed the rail A and the rail $A^{\times}$ will be made continuous by the point C, and if the point C′ is depressed and the point $C^{\times}$ elevated the other rail A $A^{\times}$ will be made contiunous over the point $C^{\times}$. The car can thus pass freely along the main track without jar and practically as if the track were unbroken. If the car approaches the crossing along the side track, a correspondingly-opposite elevation and depression of the required points will be made— for example, the points $C'^{\times}$ and C′ being raised and the points $C^{\times}$ and C being depressed.

The points themselves are preferably made from rails having substantially the same width of flange and tread as the rails

A B $A^{\times}$ $B^{\times}$; but the web of the point-rail is preferably of considerably less height than the web of the track-rails.

The means for lifting each point is substantially as shown in my aforesaid application. Each sleeper is provided with a shoe *a*, shown as composed of metal, preferably shaped to hook over the sleeper and having an inclined portion *a'*. A point-lifter *b'* is provided beneath each point and formed as a long bar provided with depending beveled projections *b*, adapted to coöperate with the inclined portions *a'* of the shoes *a*. It will thus be seen that as the point-lifter is moved longitudinally beneath the switch-point the point-lifter will act to raise or lower the switch-point.

The under side of each point will have connected with or forming part of it a series of pocket-pieces *d*, having holes *d'* for the reception of actuators *e*, (see Fig. 4,) represented as a series of levers mounted each on a stud *e'*, the opposite ends of said levers entering pockets connected with opposite switch-points, as *c c'* or $c^{\times}$ $c'^{\times}$, so that when one of these switch-points is put into its operative or elevated position the levers will aid in putting the opposite switch-point into its depressed or inoperative position. The pocket-pieces are so constructed as to leave a space between their upper sides and the under side of each switch-point, in which space the respective point-lifters *b'* are free to slide.

Each switch-point is embraced at its opposite side by guides D D', preferably of cast metal. The guide D is wedge shape, and that side of it which contacts with the outer rails A B $A^{\times}$ $B^{\times}$ (shown in Fig. 1) is somewhat rounded to fit into the concaved recesses of said rails between the under sides of the tread and the flange; but the opposite side of said guide next the switch-point and the inner side of the guide D' is provided with a series of spaces *g g'*, (see Fig. 6,) separated by inclines g^2. When the edges of the feet *b*, extended from the sides of the point-lifter beyond the lower flange of the point, enter the spaces *g*, the point-lifter is in position to maintain the switch-point in its operative or elevated position, and when said point-lifter is moved so that the edges of said feet are drawn off the shoes *a* of the sleepers down the inclines g^2 the point-lifter holds the switch-point in its inoperative or lowered position.

The space between adjacent sleepers on which are located the levers *e* will have covers F. (Shown in Fig. 1.) These covers, together with the depending flanges *m* of the guides D', fitting between the sleepers, prevent snow and dust entering between the sleepers in obstruction of the movement of the levers *e*.

The slotting of the end of each point-lifter nearer the abutting end of the rail enables the point-lifter when the switch-point is raised to operative position to embrace the web of the rail, overlap the flange of the rail, and thus insure the level of the contiguous ends of the switch-point and rail.

Other details of the construction of these features are not necessary to describe, since they are explained fully in my prior application.

The switch-points at the same end of the sleepers or on the same side of the track as C and $C'^{\times}$ on one side and C' and $C^{\times}$ on the other side must be raised and depressed alternately and not together—that is, for example, when the point C is raised into operative position the point $C'^{\times}$ must be lowered into inoperative position. To secure this, the inclines *a'* of the shoes *a* and the inclines of the point-lifters on one side of the junction of the crossing are oppositely arranged from those on the other side and the point-lifters are connected by links *o*. It will thus be seen that whenever the point C is raised the point $C'^{\times}$ will be depressed, and vice versa, and when the point C' is raised the point $C^{\times}$ will be depressed, and vice versa. As before stated, the levers *e* secure the reverse operation of the points on the same side of the junction.

For operating the entire system of points I provide rock-shafts *p p'*, preferably located, as shown, at each end of the crossing, although the location of these shafts is simply a matter of convenience. The shaft *p* has at one end a crank-arm *u*, connected by a link *s* with the end of the point-lifter C', and the other shaft *p'* has a similar crank-arm *u'*, connected by a link *s'* with the end of the diagonally opposite point-lifter $c'^{\times}$. The shafts *p p'* must of course operate simultaneously, but in opposite directions, and to secure this a centrally-pivoted lever R is mounted, preferably, near the junction of the crossing, and opposite ends of the lever R are connected by links *r r'*, respectively, with crank-arms *v* on the shaft *p* and *v'* on the shaft *p'*. A suitable handle Z is provided on one of the shafts, as *p'*, whereby the shifting mechanism may be operated.

From the foregoing description the operation of the entire structure will be apparent. By simply swinging the switch-handle Z the desired switch-points are raised and depressed and either the main track or the crossing-track made continuous, so that the trucks may pass directly across the one track or the other without having a break in the rail and the consequent jar and wear resulting from running the trucks over an open rail.

It will be obvious that this invention is not limited to the exact mechanism shown and that I consider as within the scope of my invention equivalent mechanism to that illustrated and described.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A railway-crossing comprising intersecting tracks, the exterior rails of the main and crossing track being formed or joined continuous, a switch-point for each of the inner rails of the main and crossing track at both sides of the junction, said switch-point abutting against the end of its rail and extending therefrom with its tapered end contacting with the adjacent rail of the other track near the junction, means for simultaneously elevating one diagonal pair of said switch-points and lowering the other diagonal pair, and vice versa, whereby either the main or crossing track may be made continuous.

2. A railway-crossing comprising intersecting tracks, the exterior rails of the main and crossing track being formed or joined continuous, a switch-point for each of the inner rails of the main and crossing track at both sides of the junction, said switch-point abutting against the end of its rail and extending therefrom with its tapered end contacting with the adjacent rail of the other track near the junction, means for simultaneously elevating one diagonal pair of said switch-points and lowering the other diagonal pair, and vice versa, whereby either the main or crossing track may be made continuous, a series of centrally-pivoted levers joining the pair of switch-points on each side of the crossing to insure the simultaneous raising and lowering of the switch-points joined by the levers.

3. A railway-crossing comprising intersecting tracks, the exterior rails of the main and crossing track being formed or joined continuous, a switch-point for each of the inner rails of the main and crossing track at both sides of the junction, said switch-point abutting against the end of its rail and extending therefrom with its tapered end contacting with the adjacent rail of the other track near the junction, means for simultaneously elevating one diagonal pair of said switch-points and lowering the other diagonal pair, and vice versa, said means comprising a sliding point-lifter located beneath each switch-point, whereby either the main or crossing track may be made continuous.

4. A railway-crossing comprising intersecting tracks, the exterior rails of the main and crossing track being formed or joined continuous, a switch-point for each of the inner rails of the main and crossing track at both sides of the junction, said switch-point abutting against the end of its rail and extending therefrom with its tapered end contacting with the adjacent rail of the other track near the junction, means for simultaneously elevating one diagonal pair of said switch-points and lowering the other diagonal pair, and vice versa, said means comprising a sliding point-lifter provided with beveled surfaces located beneath each switch-point and coöperating beveled surfaces on each sleeper beneath the point-lifter, whereby either the main or crossing track may be made continuous.

5. A railway-crossing comprising intersecting tracks, the exterior rails of the main and crossing track being formed or joined continuous, a switch-point for each of the inner rails of the main and crossing track at both sides of the junction, said switch-point abutting against the end of its rail and extending therefrom with its tapered end contacting with the adjacent rail of the other track near the junction, a sliding point-lifter beneath each switch-point, means for simultaneously raising one diagonal pair of said point-lifters and lowering the other diagonal pair, and vice versa.

6. A railway-crossing comprising intersecting tracks, the exterior rails of the main and crossing track being formed or joined continuous, a switch-point for each of the inner rails of the main and crossing track at both sides of the junction, said switch-point abutting against the end of its rail and extending therefrom with its tapered end contacting with the adjacent rail of the other track near the junction, a sliding point-lifter beneath each switch-point, means for elevating said switch-point lifter when it is slid in a direction away from the junction, and depressing said switch-point lifter when it is slid in a direction toward the junction, connections between the adjacent ends of said switch-point lifters on each side of the crossing, means for simultaneously moving in reverse directions a diagonally-arranged pair of said switch-point lifters, whereby one diagonal pair of said switch-points is raised and the other diagonal pair lowered, or vice versa, to make either the main or crossing track continuous.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES H. BYRON.

Witnesses:
GEO. W. GREGORY,
MABEL PARTELOW.