(No Model.) 3 Sheets—Sheet 1.

# S. CURLIN.

## RAILWAY SWITCH.

No. 316,336. Patented Apr. 21, 1885.

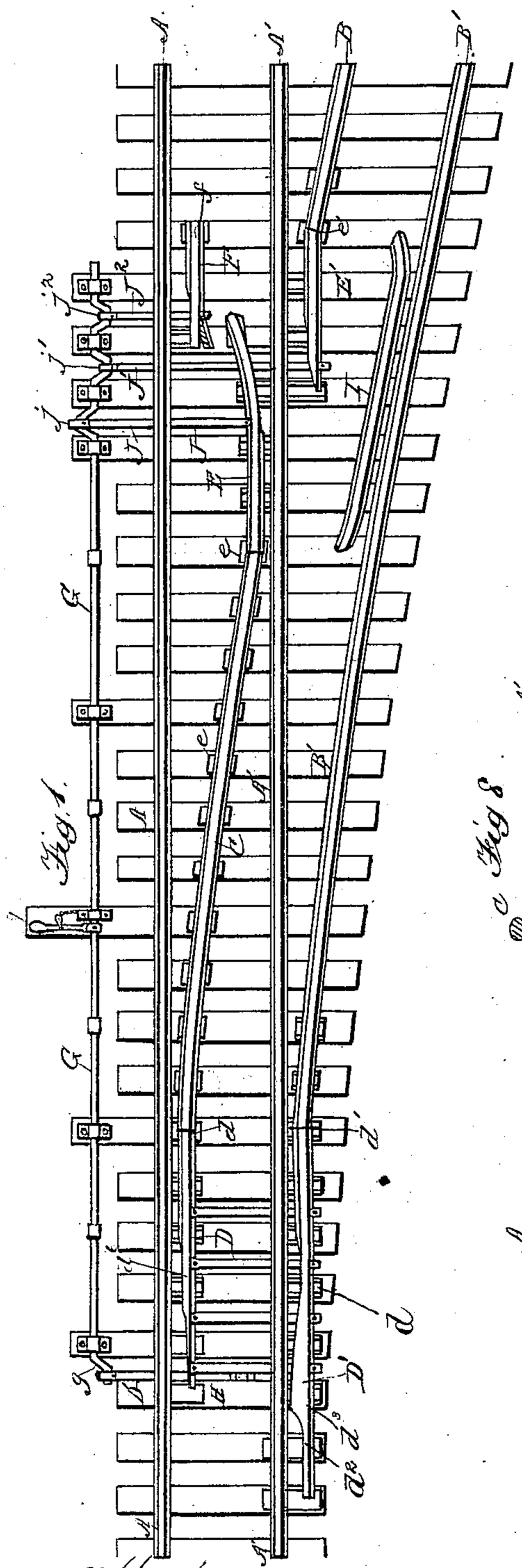

Fig. 1.

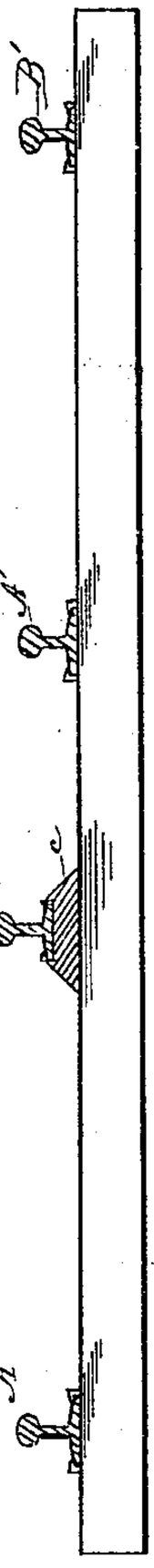

Fig. 8.

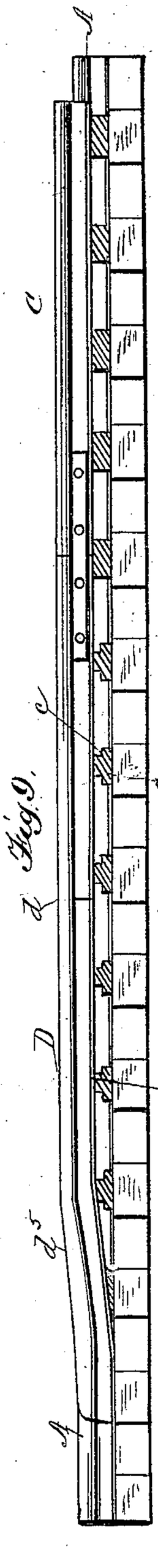

Fig. 9.

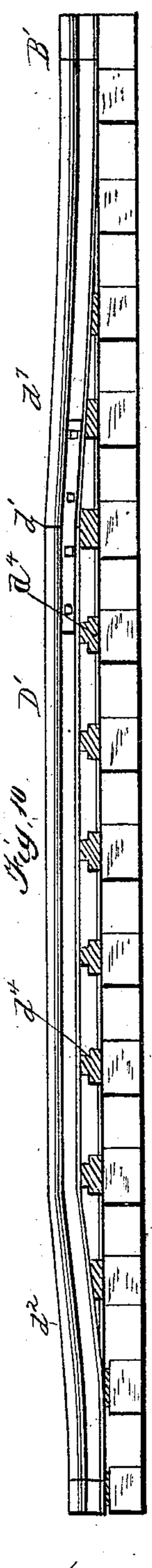

Fig. 10.

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(No Model.) 3 Sheets—Sheet 2.

# S. CURLIN.

## RAILWAY SWITCH.

No. 316,336. Patented Apr. 21, 1885.

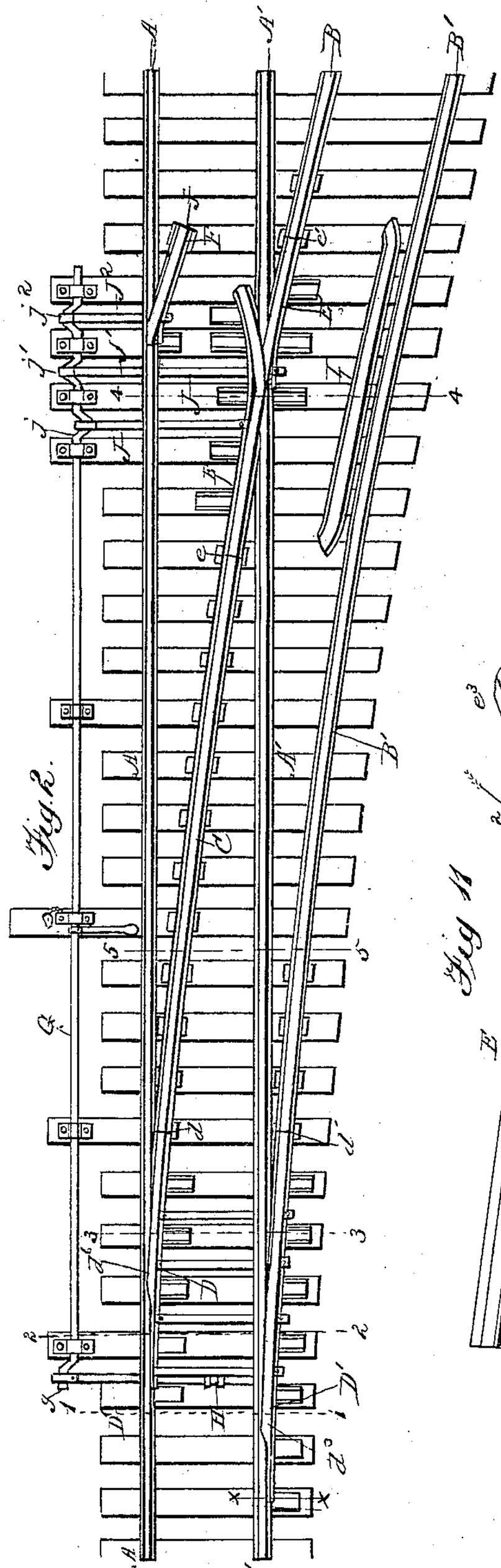

Fig. 1.

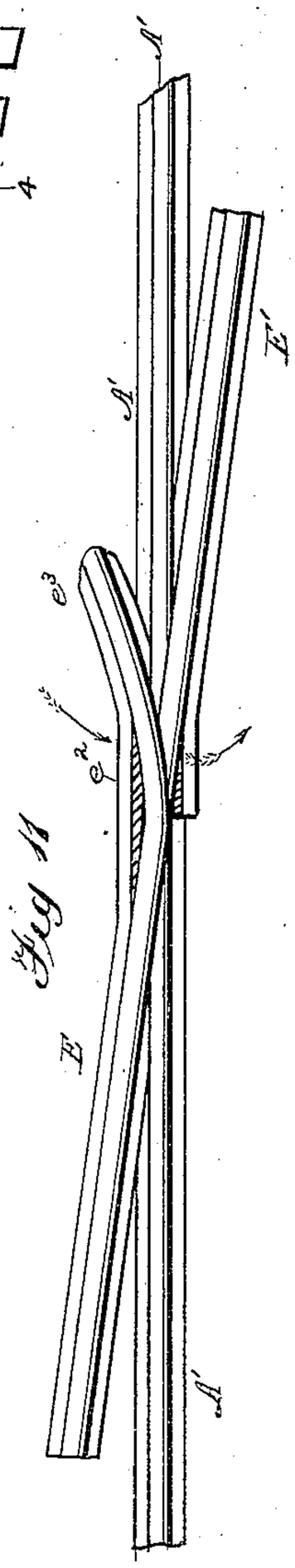

Fig 11

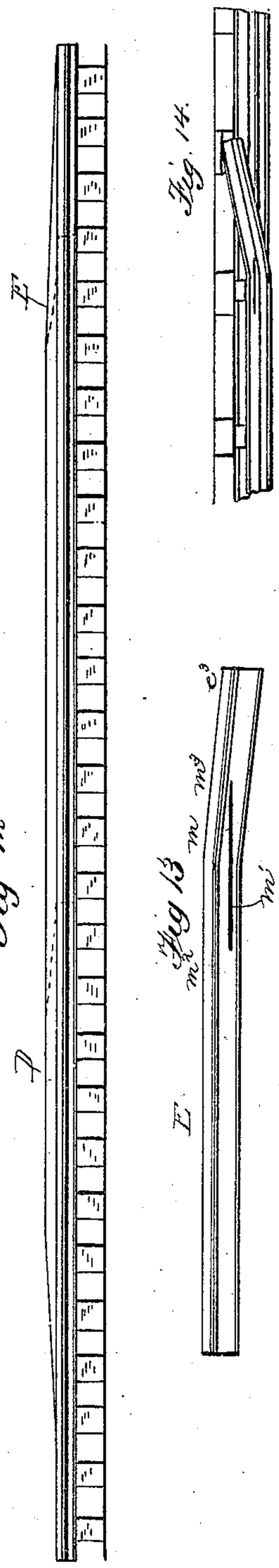

Fig 12



Fig. 14.



Fig 13

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(No Model.) 3 Sheets—Sheet 3.

# S. CURLIN.

## RAILWAY SWITCH.

No. 316,336. Patented Apr. 21, 1885.

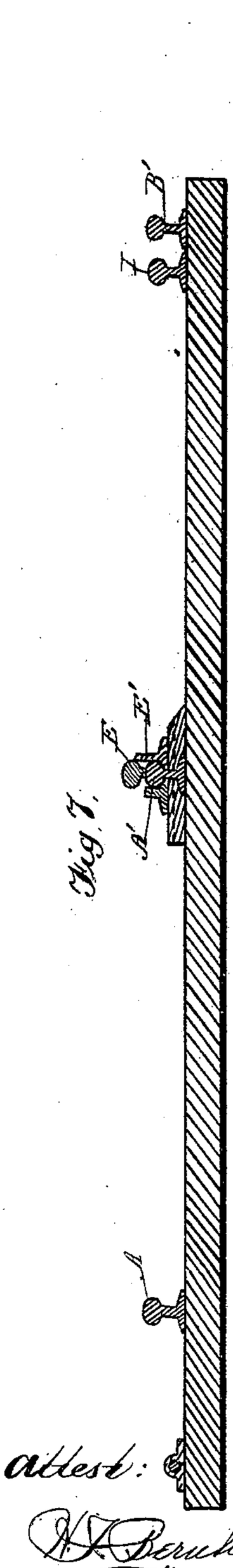


Fig. 7.

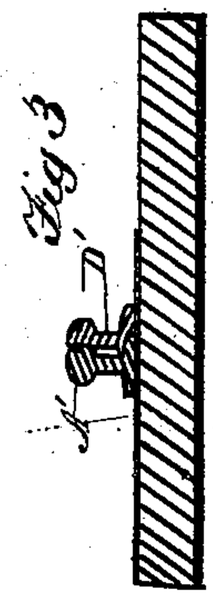


Fig. 3


Fig. 4.

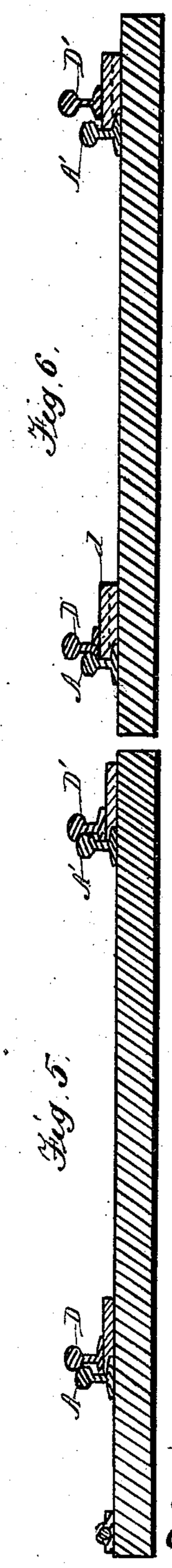


Fig. 6.




Fig. 5.

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Inventor:

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Edson Bros.

Attorneys.

# UNITED STATES PATENT OFFICE.

SETH CURLIN, OF COVINGTON, TENNESSEE.

## RAILWAY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 316,336, dated April 21, 1885.

Application filed November 22, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, SETH CURLIN, a citizen of the United States, residing at Covington, in the county of Tipton and State of Tennessee, have invented certain new and useful Improvements in Railway-Switches; and I do declare the following to be a full, clear, and exact description of the invention, such as 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 the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to railway-track switches; and the novelty consists in the construction, arrangement, and adaptation of parts, as will be more fully hereinafter set forth, and specifically pointed out in the claims.

My invention designs to have the main track perfect in its strength and uses when the switch is "off," and to make the switch and connections auxiliary to said track without impairing its normal condition as to strength and security when the switch is "on." I provide that the car-wheels shall pass over the main rails without contact therewith, and I obtain additional strength and security by my peculiar construction and adaptation to moving parts. I provide for automatic opening of the switch by a passing train, and also for the simultaneous engagement and disengagement of all the parts necessary to place the switch on and off relatively to the main track whether the same is done by hand from a single lever or by the passing train.

For convenience and a better understanding of the important features of the invention, I have illustrated and will describe the same as applied to a single track and siding; but it will be obvious that various advantages would accrue to an equal extent in other combinations and relations.

In the accompanying drawings, Figure 1 is a diagram of the railroad at the switch, the same being a top plan view, showing all movable parts off, the siding closed, and the main track clear. Fig. 2 is a similar view showing the movable parts on, the siding open with the main track, and the main track closed. Fig. 3 is a transverse section taken on line *x x* of Fig. 2, and upon an enlarged scale. Fig. 4 is an enlarged section of both tracks taken on the transverse line 1 1 of Fig. 2. Fig. 5 is a similar view taken on the line 2 2 of Fig. 2, and Fig. 6 is a similar view taken on the line 3 3 of Fig. 2. Fig. 7 is an enlarged transverse section taken on the line 4 4 of Fig. 2, and Fig. 8 a transverse section taken on the line 5 5 of Fig. 2. Fig. 9 is a side elevation of the stationary rail arranged between the main tracks, showing its elevation above the said main rails, and Fig. 10 is a similar view of the siding-rails and movable switch-rail. Fig. 11 is a top plan view of a portion. Fig. 12 is a side elevation showing in dotted lines the points at which the switch and siding rails again assume a position horizontal with the main rails. Fig. 13 is a detail view showing the slit and bent portion of one of the switch-rails. Fig. 14 is a detail view looking in the direction indicated by the arrow in Fig. 11.

Referring to the drawings, A designates the outer main rail, and A′ the inner main rail, or that main rail nearest the siding.

B designates the inner rail of the siding, and B′ the outer siding-rail.

C designates the stationary rail which lies between the rails A A′ of the main track, and which is in substance a continuation of the siding-rail B.

To one end of the stationary rail C is pivoted the switch-rail D, and to the rail B′, at *d′*, is pivoted the fellow switch-rail D′. Of these two rails D and D′, which move together and at all times retain similar positions relatively to each other, the rail D may be said to be the guiding-rail, as that rail engages the flange of the car-wheels and directs the train upon the siding, while the rail D′ acts merely as a carrier, to elevate the car and conduct it over the rail A′ without contact.

At *e*, upon the opposite end of the rail C, is pivoted the movable rail E, and at *e′* to the siding-rail B is pivoted the movable rail E′. These rails E and E′, while they serve, when in position as shown in Fig. 2, to complete the siding rail, are only carriers in the sense of elevating and conducting the car-wheels over the main rail A′.

It will be observed from the arrangement of tracks thus far described that in order to

convey the cars from the main track upon the siding all the wheels have to pass over or across the track A′. This I design to do without having the flanges of the wheels come into contact with the said rail A′ and without cutting, weakening, or in any way changing the strength or form of the main track.

I am aware that it is not broadly new with me to elevate and conduct cars over rails without allowing their contact therewith. My construction of the parts has peculiarities which are valuable in giving additional strength and security to the parts which have heretofore been subject to strain and accident. To this end the switch-rail D is the only rail which serves to guide or direct the cars, the rails D′, E, and E′ being simply carriers.

The rail D′ has an incline at $d^2$, which serves to elevate the car above the main rail when said rail D′ is thrown over into contact with the main rail A′, and this incline extends into a heavy overlap, $d^3$, which rides over and rests upon the main rail A′. Except at the point, the movable rail D′ is supported upon chairs $d^4$, and the overlap $d^3$ is of a thickness slightly greater than the depth of the wheel-flange. This portion of the rail D′—that is to say, the incline $d^2$ and overlap $d^3$—is arranged upon the main track at a point beyond the throw of the guiding-rail D, so that the wheels upon that side shall have been elevated and the wheel-flanges held above contact with the main rail A′ before the rail D shall have acted to change the direction of the car. (See Fig. 4.) The switch-rail D has also an incline, $d^5$, and a more limited overlap, as seen at $d^6$. When this rail is thrown into contact with the main rail A, the side of the rail engages the wheel-flange and the incline to elevate the car upon that side, the flange-engaging portion being opposite the overlap of the rail D′. The rails D′ and B′ have a decline, as seen at $d^7$, Fig. 10, so that that side of the car settles below the plane of the opposite side, which is still supported on the elevated rail C. The distance along which the rails D′ and B′ are elevated is only sufficient to carry the flanges of the wheels upon that side over the main track A′ as the car is forced to the right by the engagement of the wheels upon the opposite side with the incline of the switch-rail D. The track C, however, continues in an elevated plane until the wheels upon that side are also carried over the track A′, and this difference in the height of the rails upon this curve agrees with the curve and assists to prevent the cars from overturning or becoming derailed.

The movable rail E is of peculiar adaptation and construction. It is pivoted at $e$ upon the same elevation as the rail C, and is secured, as shown at $e^2$, and its free end bent downward, as shown at $e^3$. A horizontal slit is made in the web of this rail either, after it is bent or otherwise, so that the distance between the tread of the rail and the slit at the part nearest the free end of the rail is less than at any other point along the slit. The head of the rail is forced out laterally until the upper surface of the severed web finds a bearing upon the top of the main rail A′. In Fig. 13 the rail E is shown in detail. The slit $m'$ is equidistant from the tread from that point marked $m^2$ to the point $m$, which is about the distance necessary to carry the wheel-flanges over the track A′, and from the point $m$ to the point $m^3$ the said distance grows gradually less to form a decline upon that side, which is continued by the movable rail E′ until the wheels reach the siding-track B at the same plane with that of the track B′.

The split rail is a feature in another application for patent by me, Serial No. 110,055. In the present case I attach importance to a split rail when formed and adapted for use substantially as shown and described.

The rail E′, when in contact with the track A′, extends considerably above the plane of the said track, in order to approach the descending arms $e^3$. The form and adaptation of these rails E E′ in their relation to each other and to the main track A′ are important, as the curved and downwardly-bent arm $e^3$ retains a bearing for the tread of the wheel in the descending plane until the wheel obtains a bearing upon the rail E′, and at the same time the further approach to the free end lies so beneath the plane of the opposite portion of the rail E′ that the wheel of a car coming in the opposite direction, or to the left, as illustrated, will have a bearing squarely upon the arm $e^3$ before it entirely leaves the rail E′.

The switch-rails D and D′ are coupled together by cross-bars H, and a rod, H′, connects these rails with a crank, $g$, formed upon a rock-bar, G, journaled in bearings arranged along the line of the track, as shown. This rock-bar G is provided with a lever, G′, by means of which it may be operated by hand; but I provide means by which all of the movable parts of my switch shall be operated simultaneously, whether the same is done by hand, through the lever G′, or otherwise.

The movable rail E is connected by rod J to crank $j$, and the rail E′ by rod J′ to crank $j'$ on the said rock-bar. These cranks are arranged differentially, in order that a single movement of the rock-bar will throw the proper rails in different directions. Thus the cranks which operate the rails D, D′, and E′ are arranged opposite to that which operates the rail E, the necessity of which is apparent from the fact that the latter rail, whether in closing or opening the switch, moves in a direction opposite the direction taken by the other three rails mentioned.

I provide for the automatic opening of the switch by a passing train by means of a stub-rail, F, which is pivoted to one of the cross-ties at $f$, and is adapted to be thrown into contact with the inner side of the rail A, when the switch is closed by the action of a crank, $j^2$, on the rock-bar G, and a connecting-rod, $J^2$, as shown.

It will be understood that if the switch is closed, as seen in Fig. 2, a train passing to the right will run upon the siding. Without any manipulation of the switch a train passing in the opposite direction would come, by its wheel flanges, into contact with the stub-rail, and the movement of this rail inward would rock the bar G to open every other movable part of the switch.

I am aware that it is not new with me to provide such elevated rails as will carry a car over the main track without allowing the wheels to come into contact therewith.

I attach importance to my arrangement of inclines and declines, to the means for operating all the parts simultaneously, to the construction of the rail E, and to the peculiarities of the rails D and D′.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. In a switch substantially as described, the movable rail E, curved and bent as shown, and having a slit, as *m′*, arranged at different distances from the tread of the rail, the head being forced laterally so that the severed web shall have a bearing upon the main rail A′, arranged and adapted to serve with a main rail and a siding or switch rail, as set forth.

2. In a switch as described, the combination, with the movable rail E, slit and bent as described, of the movable rail E′, beveled and inclined and adapted to serve with the main rail A, and the arm $e^3$ of the rail E, as and for the purposes set forth.

3. The combination, with the movable rails D D′ and E E′, constructed and arranged as shown, of the rock-bar G, having cranks *g j j′*, arranged at different angles, and connections, as H H′ J J′, as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

SETH CURLIN.

Witnesses:
H. T. BERNHARD,
JOS. FORREST.