

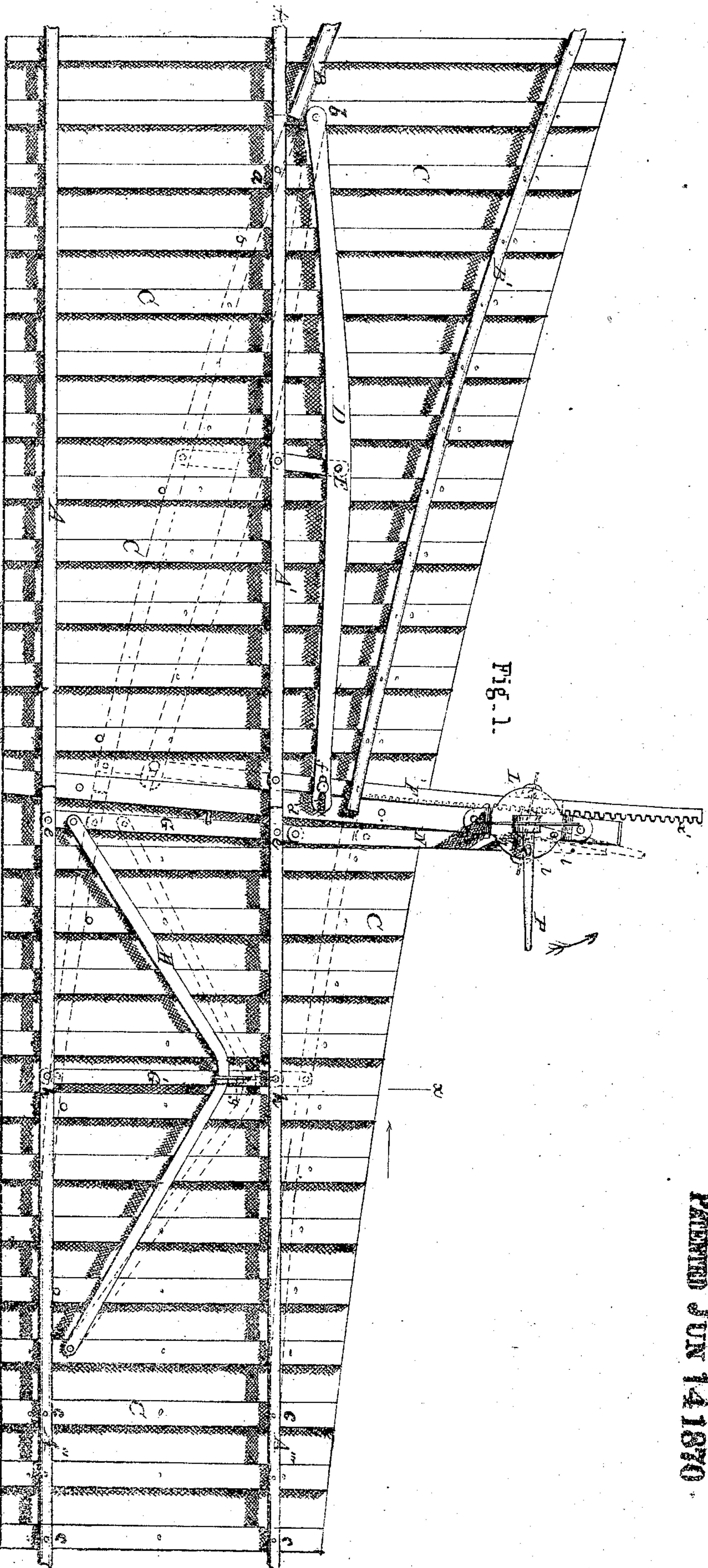
104156

Julius R. Howell - Rail-way Switch.

PATENTED JUN 14 1870

Sheet 1.

Fig. 1.



Witnesses.

Attest
Charles H. Davis

Inventor

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Atty.

UNITED STATES PATENT OFFICE.

JULIUS R. HOWELL, OF ATLANTA, GEORGIA.

IMPROVEMENT IN RAILWAY-SWITCH.

Specification forming part of Letters Patent No. **104,156**, dated June 14, 1870.

To all whom it may concern:

Be it known that I, JULIUS R. HOWELL, of Atlanta, in the county of Fulton, and in the State of Georgia, have invented certain new and useful Improvements in Railroad-Switches; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, making a part of this specification, and in which—

Figure 1 is a plan view of my improved device. Fig. 2 is a cross-section of the same on the line *x x* of Fig. 1. Fig. 3 is a side elevation of the signal-shaft and the device for changing the position of the switch-rail, and Fig. 4 is a horizontal section of the same on the line *y y* of Fig. 2.

Letters of like name and kind refer to like parts in each of the figures.

My invention has for its object the improvement of that class of railroad-switches in which the use of frogs is dispensed with; and it consists, principally, in the employment of a guide-bar, so pivoted to the ties and to the movable rail of the main track as to cause said rail to occupy a straight or a curved position, as is hereinafter set forth.

It further consists in the employment of a stirrup-bar attached to the switch-rails of the main track, substantially as and for the purpose hereinafter shown.

In the annexed drawing, A and A' represent the rails forming the main track, and B and B' the diverging rails of the side track, all being secured to the upper side of suitable ties C of the ordinary form. The fixed rail A of that portion of the main track adjoining the side track is rigidly secured in place upon the ties, while the movable or parallel rail A' is pivoted at *a* to or upon the ties near its inner end. A flat metal bar, D, corresponding in length with the rail A', is placed upon the outside of and at a little distance from said rail, their centers being attached together by means of a pivoted connection, E, while the rear or inner end of said bar is pivoted to or upon a cross-tie. A shifting-bar, F, is pivoted at one end to the forward or free end of the movable rail A', from whence it extends outward beneath the guide-bar D, to which it is also connected by means of a pin or stud, *f*, passing upward through a slot, *d*, that is placed longi-

tudinally within the forward end of said guide-bar. The switch-rails A'' and A''' of the main track are firmly attached to the ties from their inner ends outward about one-fourth of their length, and are connected together and their relative positions insured by means of two cross-bars, G and G', pivoted to said rails at their outer ends, *e e*, and at points *h h* midway between the same and the outer points, *c*, of their attachment to the ties. A stirrup-bar, H, having the form shown in Fig. 1, is pivoted at its front end to or upon the cross-bar G near the rail A'', and from thence, extending rearward and inward, passes through a loop, *g*, secured to the face of the bar G', and, from thence extending outward, has its opposite end pivoted to a cross-tie near the rail A'' at its point of attachment to the ties. The bar F outside of the rails is provided with a series of cog-teeth, *x'*, which correspond to and mesh with the teeth of a pinion, I, which is secured upon a vertical shaft, K, suitably journaled at its lower end, and extending upward through a brace, L. A second and smaller pinion, M, is secured upon the shaft K immediately above the pinion I, and caused to mesh with the teeth of a rack-bar, N, pivoted at its inner end to the end of the cross-bar G. The rack-bars F and N are placed upon opposite sides of the shaft K, and held in engagement with the pinions by means of two studs, *o*, which project upward from the plate O, and are provided with horizontal grooves for the reception of the outer edges of said rack-bars. Pivoted loosely to and extending horizontally outward from the shaft K a short distance above the brace L is a lever, P, used for rotating said shaft and for locking it in position, the latter operation being accomplished by means of a slot passing vertically through said lever, and engaging with one of two studs, *l*, projecting upward from said brace.

The switch is now ready for use, and is operated as follows: All parts being in the position shown in Fig. 1, the lever P is raised so as to release it from engagement with the pins *l*, and the shaft rotated in the direction of the arrow one and one-fourth times, by which means the large pinion I, operating through the rack-bar F, will carry the free end of the rail A' inward until it occupies the position shown by the dotted lines, with its rear end

in line with the end of the switch-rail B, while at the same time the smaller pinion M will draw outward the rails A'' and A''' until their outer ends coincide with the rails A' and B', in which position the main and side tracks are united and made continuous.

The action of the guide-bar D upon the rail A' is such as to hold the latter in a straight line when forming a portion of the main track, and to give it the exact curve required when forming a part of the side track, which result is obtained in the following manner: The rail being pivoted to the tie in advance of the point at which the bar is pivoted, and the relative positions of their outer ends insured, any inward motion of said bar and rail would bring their pivoted ends nearer together, and in a corresponding degree lessen the distance between the same at their centers, were it not for the connecting-bar E, which, by preserving the relative positions of said bar and rail when they would otherwise draw nearer together, causes the latter to spring in the right direction. To insure the correct curvature of the rail, it only becomes necessary to vary the relative positions of the pivots and the distance between the free ends of the bar and rail.

The stirrup-bar H serves to bring the rails A'' and A''' into a straight line when the switch is closed, its operation being directly opposite to the guide-bar D.

The shaft K has secured to its upper end a thin sheet of metal, R, having any desired form, and so placed as to occupy a position at a

right angle with the track when the main track is closed, and in a line with said track when it is open, thus affording a reliable indicator or signal as to the position of the switch.

Having thus fully set forth the nature and merits of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the pivoted rail A', the pivoted guide-bar D, the connection E, and the bar F, substantially as shown, and for the purpose set forth.

2. Also, in combination with the rail A' and guide-bar D, constructed and arranged as shown, the rails A'' and A''', rigidly secured to the ties at their inner ends and operated at their outer ends, substantially as and for the purpose specified.

3. Also, the stirrup-bar H, constructed as shown, and connected to the rails A'' and A''' and to the ties, in the manner and for the purpose specified.

4. Also, the combination of the rack-bars T and U, the pinions I and M, and the shaft K with the rails A', A'', and A''', and the guide and stirrup bars D and H, substantially as and for the purpose set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 20th day of April, 1870.

JULIUS R. HOWELL.

Witnesses:

W. A. WILLIAMS,
JAMES MILNER.