

No. 855,156.

PATENTED MAY 28, 1907.

A. W. BARTHEL.
RAILWAY SWITCH.

APPLICATION FILED NOV. 7, 1905.

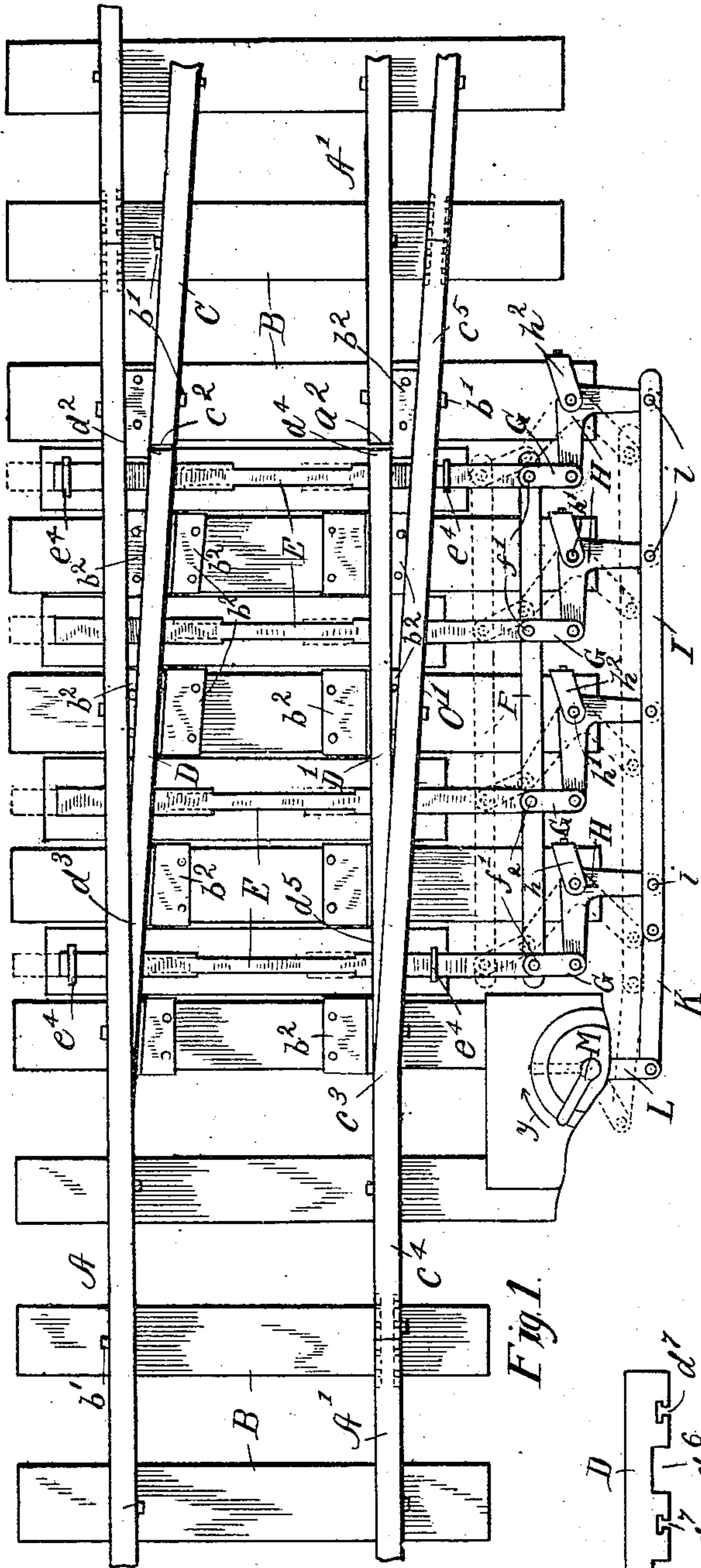


Fig. 1.

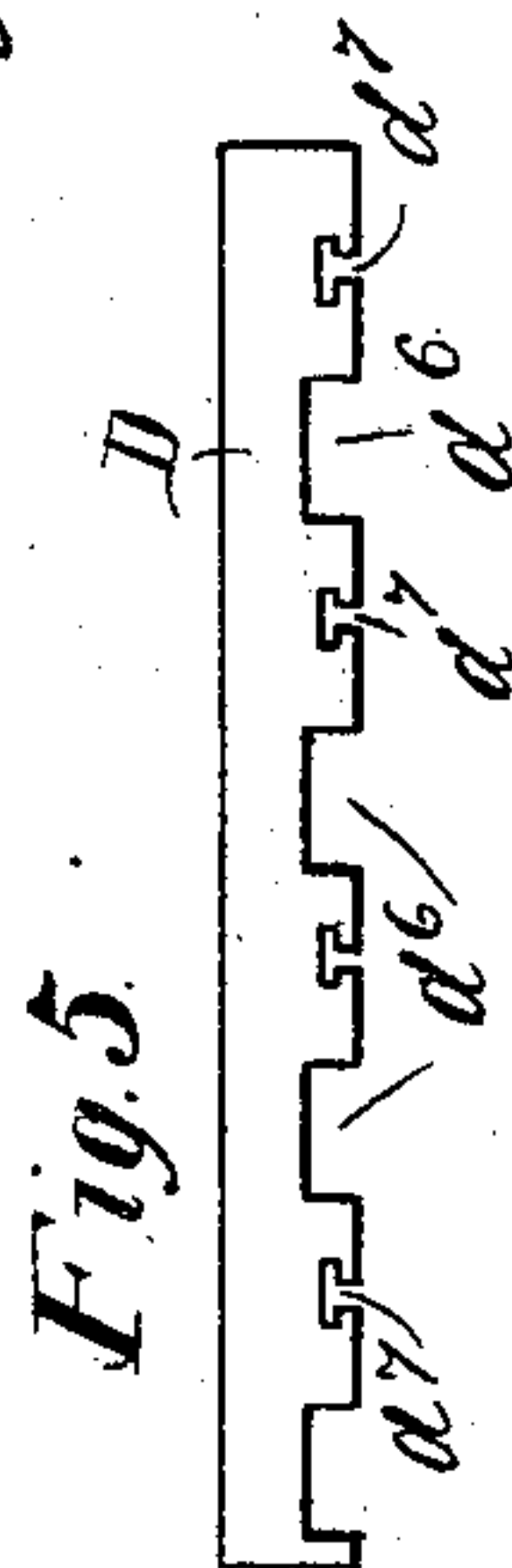


Fig. 5.

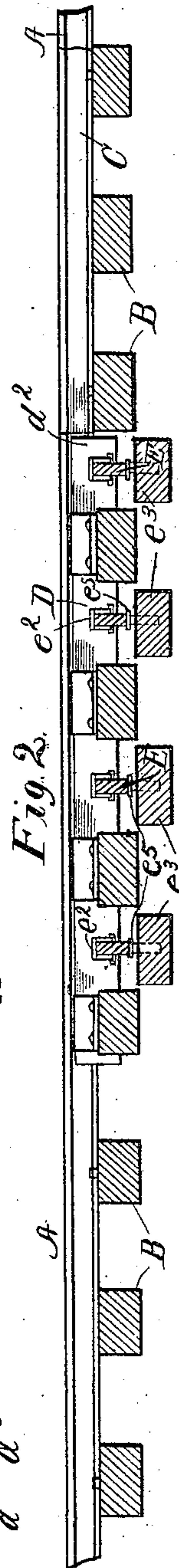


Fig. 2.

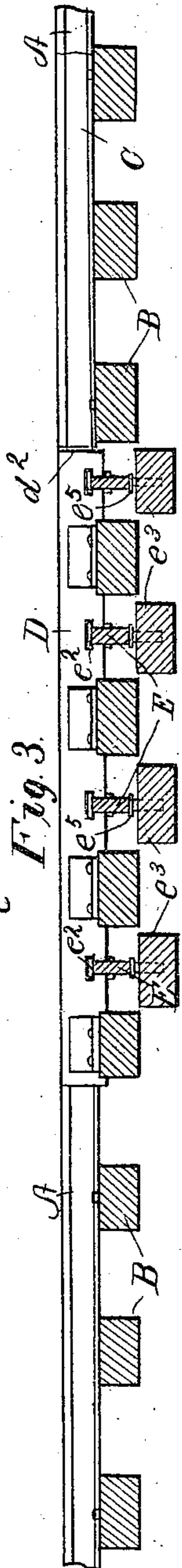


Fig. 3.

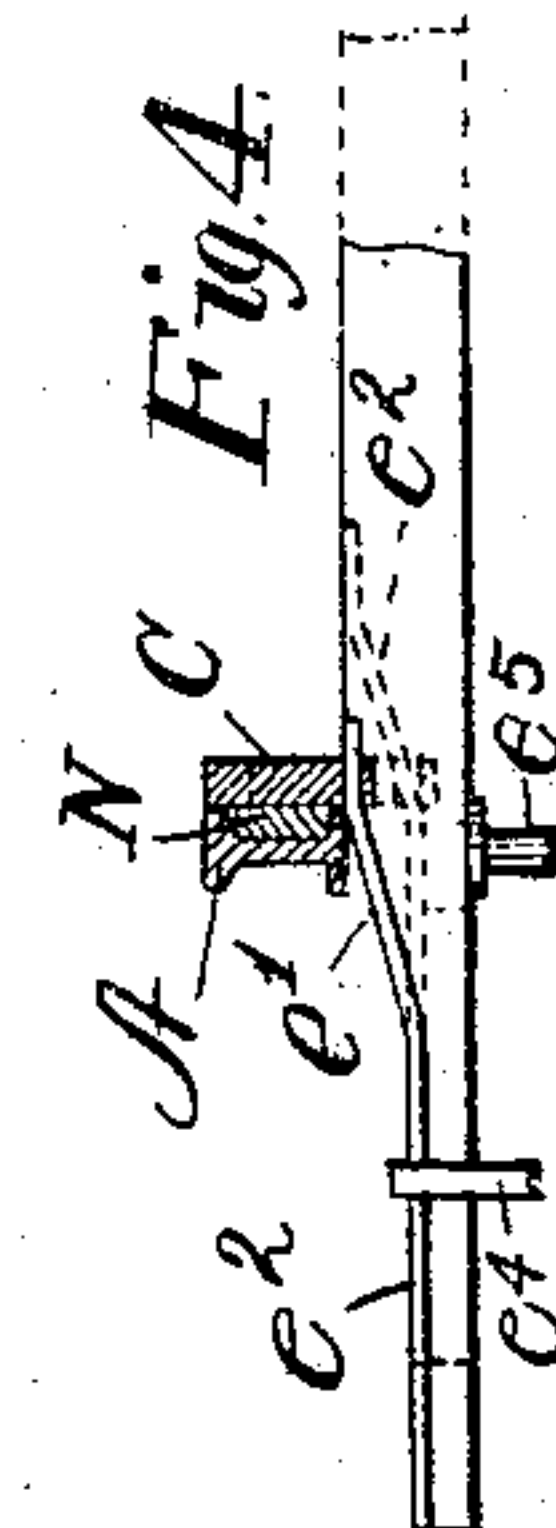


Fig. 4.

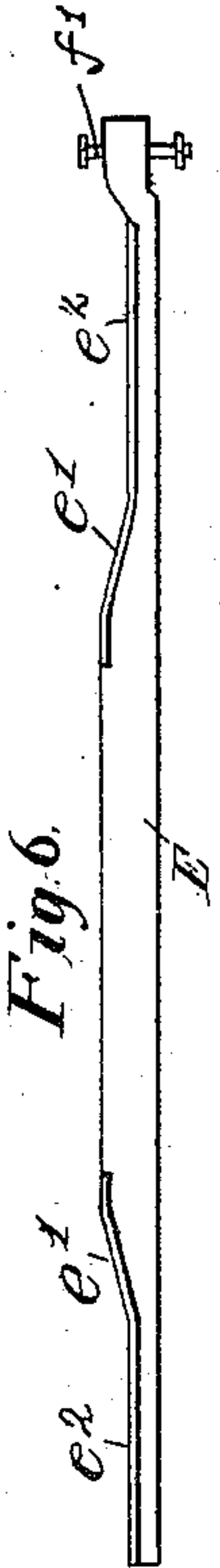


Fig. 6.

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RAILWAY-SWITCH.

No. 855,156.

Specification of Letters Patent.

Patented May 28, 1907.

Application filed November 7, 1905. Serial No. 286,224.

To all whom it may concern:

Be it known that I, ALVIN W. BARTHEL, a citizen of the United States, residing at Viroqua, in the county of Vernon and State of Wisconsin, have invented certain new and useful Improvements in Railway-Switches, of which the following is a specification.

My invention relates to railway switches and its objects are to provide a more substantial structure than the forms in general use; to insure greater safety to passing trains; to permit the switch to be thrown when the car or engine is in close proximity thereto; and to reduce to a minimum the power required to manipulate the switch parts. I accomplish these objects and others of general utility by means of the construction hereinafter described and illustrated by the accompanying drawings, in which:—

Figure 1 is a plan view of a part of the main line of a railway including a portion of a side track equipped with my improved switch; Fig. 2 is a longitudinal section midway between the rails of the main track showing one of the switch rails in depressed position for the passage of trains on the main track; Fig. 3 is a view similar to Fig. 2 but with the switch rail elevated to its position for the passage of trains to the side track; Fig. 4 is a fragmentary view showing the main rail and connecting switch rail in cross section; Fig. 5 is a side elevation of one of the switch rails, and Fig. 6 is a side elevation of one of the cam rods.

Referring to the drawings, A, A¹, represent the rails of the main line, B the ties, and C, C¹ the rails of a side or switch track. The rails A, A¹ and C, C¹ are secured to the ties B by spikes b¹ in the ordinary way. The inside switch track rail C terminates before it reaches the main rail A, its end c² being cut at a right angle to its length in the usual manner. The space thus left between the end of the rails C and the rail A is closed by a connecting switch rail D, having one end d² squared to abut the square end c² of the rail C, the other end d³ being tapered to engage the inside face of the main rail A. The outside switch track rail C¹ is bent at an obtuse angle at c³ the part c⁴ on one side of the angle being in alinement with the rails A¹ of the main line, the part c⁵ on the other side of the said angle serving as the outer rail of the switch track. Between the bend c³ and the rail A¹ of the main line is placed a connecting switch rail D¹ which differs from the above described

switch rail D only in the relative position of the tapered face. Its square end d⁴ abuts the end a² of the said rail A¹ of the main line, its opposite end d⁵ being tapered in the outer surface to engage the inner face of the portion c⁵ of the rail C¹ adjacent to the bend c³. The connecting rails D, D¹, are provided along their lower edges with transverse notches d⁶ corresponding in length to the width of the ties thus permitting the said connecting rails to be depressed below the level of the main rails in a manner hereinafter described, and between the notches d⁶ are transverse T-shaped slots d⁷. Arranged below the said connecting rails D, D¹, are a plurality of cam switch bars E which lie between the ties parallel thereto, having their upper surfaces e¹ near each end inclined for a short distance in opposite directions and provided with flanges e² for engagement with the T-shaped slots d⁷ in the connecting switch rails D, D¹. The said bars E are supported on blocks e⁵ and held down by strap bolts e⁴ which prevent side motion but allow a longitudinal movement to said bars and vertical adjustment is provided for by bolts e⁵.

A link bar F is arranged transversely of the cam-bars and pivotally connected to the ends of said bars by means of bolts f¹, and said cam bars are respectively connected by links G to one arm of a series of bell-cranks H which are pivoted at h¹ to angle-irons h² bolted to the ties B. A switch rod I is pivoted to the other arm of the bell cranks H by bolts i and connected by means of a link K to the crank arm L of the switch lever M.

The connecting switch rails D, D¹ are held from lateral displacement by strong angle irons b² firmly spiked or bolted to the ties but which allow a vertical movement of said rails. The distance between the cam surfaces e¹ bears such relation to that between the switch rails, that when the highest part of the cams of one side are under the corresponding rail, the lowest part of the cams on the other end will lie under the companion rail, and it will follow that a reciprocating movement of the said cam bars E will cause the switch rails to alternately rise and fall to the limit of the cam action and when one switch rail is elevated the other will at the same time be depressed.

In Fig. 1 the position of the operating mechanism when the main line is open is shown in full lines, the switch rail D being depressed sufficiently to allow the flanges of

the wheels to clear it in passing over, as seen in Fig. 2, at the same time the rail D^1 is elevated so as to form a continuous track between the portion c^4 of the rail C^1 and the main track rail A^1 . If now, the switch lever M is thrown in the direction of the arrow y , the operating levers will take the position shown by dotted lines and the rail D , which now normally depressed, will be elevated to the position shown in Fig. 3, thus forming a continuation between the main rail A and the inside or switch track rail C and at the same time, the companion switch rail D^1 will be depressed sufficiently below the level of the angled rail C^1 to allow the wheel flanges to pass over it, thus affording a continuous connection between the main line and the side track.

In order to insure a free movement between the sides of the rails which are in opposition at d^3 and d^5 a filler N is inserted in the groove of the rails A , A^1 , formed between the head and base flange.

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

1. A railway switch including the rails of a main track and a side track, connecting switch rails adapted to be vertically reciprocated and provided with notches, a plurality of cam rods arranged transversely to said switch rails and engaging said notches and means for reciprocating said cam rods.

2. A railway switch including a main track and a side track, connecting switch rails adapted to be vertically reciprocated and provided with a plurality of T-shaped notches, a plurality of cam rods arranged transversely to said switch rails and provided with inclined surfaces and lateral flanges adapted to engage said slots in the switch rails and means for reciprocating said cam rods longitudinally.

3. A railway switch including a main and a side track, connecting switch rails adapted to be vertically reciprocated, guides for said switch rails, T shaped notches in the lower margin of said rails, a plurality of cam rods arranged transversely to said rails, said cam rods provided with a plurality of oppositely inclined surfaces and lateral flanges adapted to interlock with said notches and means for reciprocating said cam rods longitudinally.

4. A railway switch including a main and a side track, connecting switch rails adapted

to be vertically reciprocated, lateral guides for said rails secured to the sleepers, filling members interposed between the said switch rails and their adjacent fixed rails, rectangular notches formed in the lower margin of each switch rail and adapted to engage the sleepers, T-shaped notches in the lower margin of the switch rails, a plurality of cam rods arranged transversely to said rails, said rods having oppositely inclined surfaces and lateral flanges adapted to interlock with said T-shaped notches and means for simultaneously reciprocating said cam rods longitudinally.

5. A railway switch including a main track and a side track, switch rails connecting the rails of the main and side tracks, a plurality of series of notches in said rails, a plurality of rods arranged transversely to said switch rails and provided with cams adapted to engage one of said series of notches and means for reciprocating said rods.

6. A railway switch including a main and a side track, switch rails connecting the rails of the main track with the rails of the side track and provided with T-shaped notches in their lower margins, a plurality of cam rods arranged transversely to said switch rails and provided with cams adapted to engage the said T-shaped notches, means for reciprocating said rods, said means consisting of a plurality of bell crank levers connecting said cam rods with an actuating lever.

7. A railway switch including a main and a side track, switch rails connecting the rails of the main track with the rails of the side track and provided with two series of rectangular and T-shaped notches formed in their lower margins, one of said series of notches adapted to engage the ties, a plurality of cam-rods arranged transversely to said switch rails and provided with cams adapted to engage the other of said series of notches, means for reciprocating said cam rods, said means consisting of a plurality of bell crank levers arranged in series, having link attachment with said cam levers, and pivotal connection with an actuating lever.

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

ALVIN W. BARTHEL.

Witnesses:

J. H. CHASE,

WM. G. WEBB.