

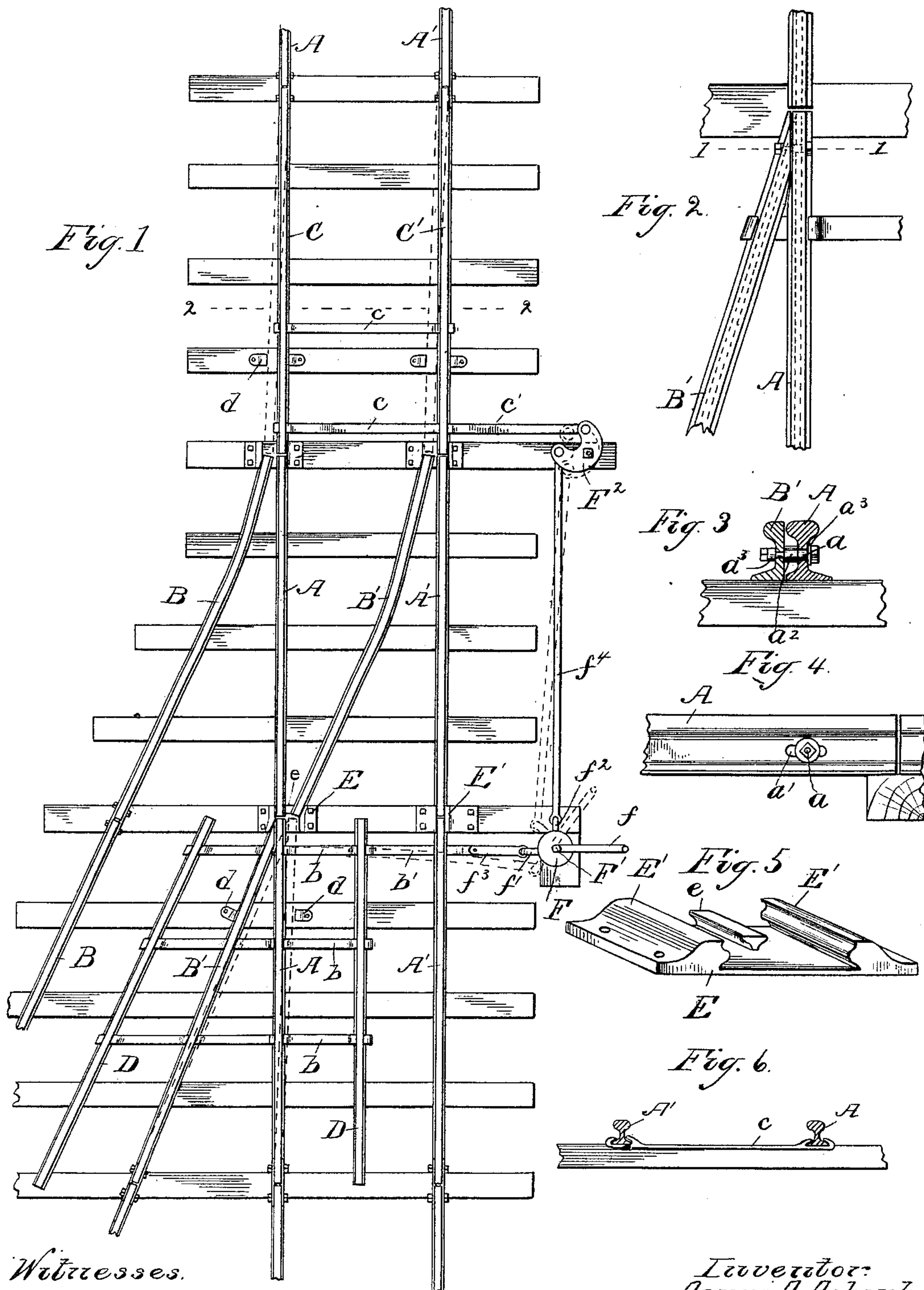
(No Model.)

2 Sheets—Sheet 1.

A. A. ACKERLY.  
RAILWAY SWITCH.

No. 405,976.

Patented June 25, 1889.



Witnesses.

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Inventor:  
Aaron A. Ackery  
By C. O. Burn V. Thacher  
Attys.

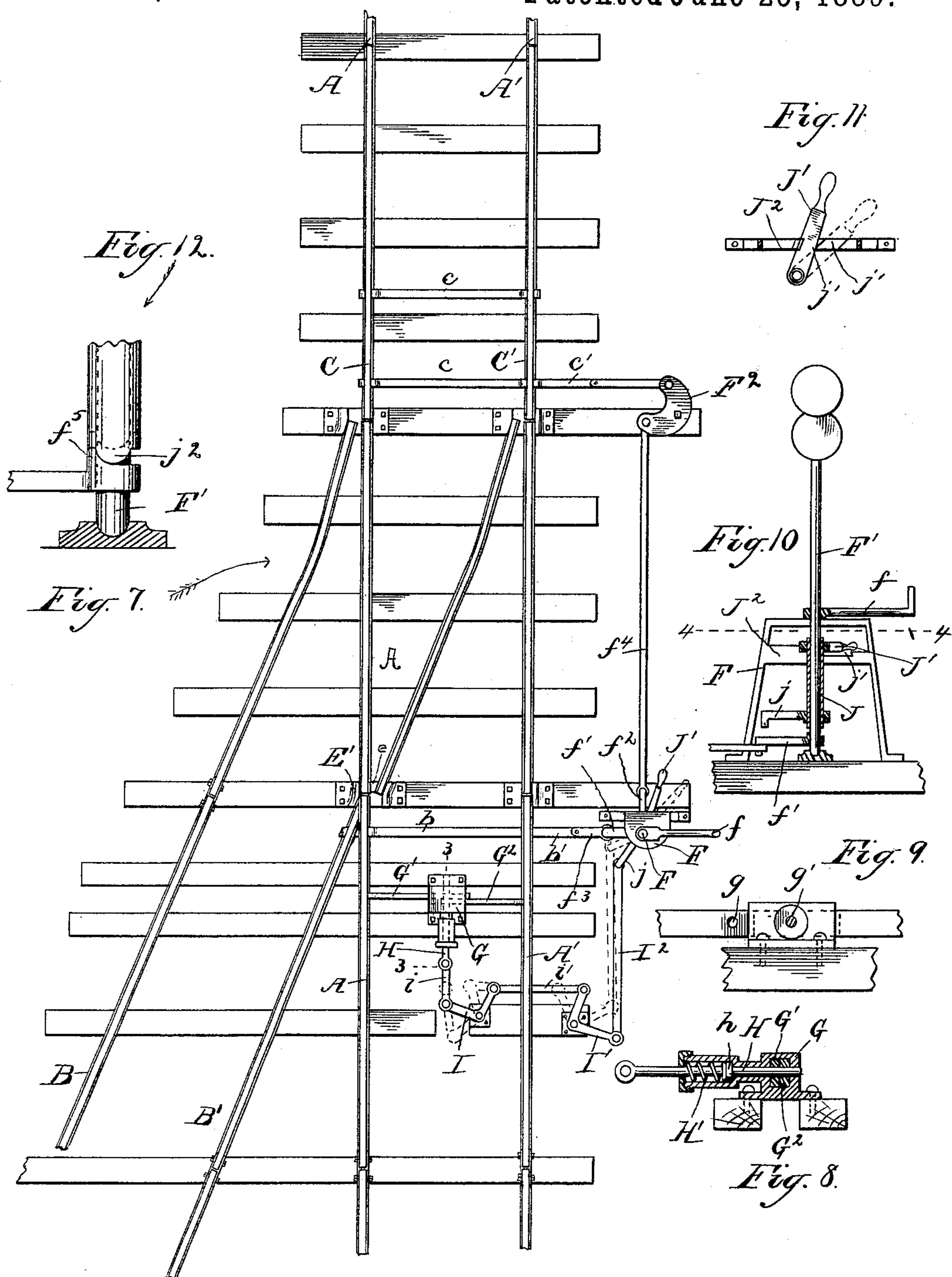
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# UNITED STATES PATENT OFFICE.

AARON A. ACKERLY, OF CHICAGO, ILLINOIS.

## RAILWAY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 405,976, dated June 25, 1889.

Application filed July 11, 1888. Serial No. 279,636. (No model.)

*To all whom it may concern:*

Be it known that I, AARON A. ACKERLY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Railway-Switches, which is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

10 Figure 1 is a plan view of a construction embodying my invention; Fig. 2, an enlarged view of a portion thereof; Fig. 3, a detail sectional view taken on the line 1 1 of Fig. 2; Fig. 4, a detail side elevation of the construction shown in Fig. 2; Fig. 5, a detail perspective view of one of the saddles or chairs; Fig. 6, a detail sectional view taken on the line 2 2 of Fig. 1; Fig. 7, a similar view illustrating the application to the construction shown in  
20 Fig. 1 of a locking device; Fig. 8, a detail sectional view taken on the line 3 3 of Fig. 7; Fig. 9, an elevation of a portion of the locking device; Fig. 10, an elevation of the switch-stand, portions of the operating mechanism being shown in section; Fig. 11, a detail plan view taken on the line 4 4 of Fig. 10, and showing the lock-operating lever; and Fig. 12, a detail view of the lower end of the switch-stand.

Like letters refer to like parts in all the figures of the drawings.

30 My invention relates to railway-switches, and has for its object to provide a construction whereby the frog which is usually employed as a track-crossing in connection with railway-switches may be dispensed with.

To this end my invention consists in certain novel features, which I will now proceed to describe and will then particularly point out in the claims.

40 In the drawings, in Figs. 1 to 12, I have shown a construction in which my invention is practically carried out in one form. In this construction A and A' represent, respectively, the two rails or series of rails composing the main line, and B and B' the two rails or series of rails composing the branch line or siding. The switch-rails for connecting the main line with either of these lines may be either a split switch or a stub-switch, and in the present instance I have shown the latter form. In this  
50 construction C and C' represent the switch-

rails, which are free to move laterally in the manner usual in switches of this construction, being connected by means of tie-bars c, as shown more particularly in Fig. 6 of the drawings. One of these tie-bars c is prolonged, as shown at c', in order to provide a means for operating the switch-rails. 55

It will be observed that the main-line rails A and siding-rails B' meet each other in pairs at the point where the track-crossing is located, and where, in the ordinary construction, a frog is employed to effect this crossing. In order to dispense with this frog, I make one of these pairs of rails laterally movable, and in the construction shown in Figs. 1 to 12 I have shown that pair as movable which is located farthest away from the switch. The movable main-line rail A is continued to a point opposite the fixed main-line rail A', while the movable siding rail B' is beveled off at its end to fit against the side of the main-line rail, as clearly shown in Figs. 1 and 2. To allow for the differential movement which occurs between these rails during their lateral movement, I connect them by means of a bolt a, passing through suitable apertures in the two rails, one of said apertures being elongated into a slot, as shown at a', said slot being preferably located in the main-line rail A. 80

In order to prevent a frictional contact between the rails which would tend to hinder this free movement, I mount upon the bolt a between the rails a thimble a<sup>2</sup>, and employ elastic washers a<sup>3</sup> upon the bolt a to hold the rails in position. Suitable tie-rods b connect the movable rails A and B', one of said tie-rods being prolonged, as shown at b', to provide a means for operating these rails. The tie-rods b may also be prolonged sufficiently to serve for the attachment of auxiliary rails D, which are free to move laterally along with the rails A and B', and which serve by their weight to hold the said rails down in position upon the ties. Suitable stops d are employed to limit the lateral motion of the rails A and B'. At the point of meeting of the rails A and B' there is located a saddle or chair E, suitably secured to one of the ties and provided with a level surface, upon which the four ends of the meeting rails rest. Between the fixed rails A and B' there is mounted on this sad- 100



dle a projection  $e$ , which fills the space between the said rails and which bears upon the flanges thereof. The saddle is also provided upon its outer sides with projections  $E'$  of a height equal to the height of the rails, and of a contour which adapts them to fit against the sides of the same, as shown in Fig. 1, and thus form a continuous rail, upon which the tread of the wheel may travel when passing from one rail to the other. It will be observed that the fixed rails  $A$  and  $B'$  do not quite meet, a space being left between them at their ends for the passage of the flange of the wheel.

Any suitable mechanism may be employed to move the switch and crossing rails into proper position. In the present instance I have shown a switch-stand  $F$ , provided with a vertical rock-shaft  $F'$ , having a handle-lever  $f$ , by means of which it may be operated, and with two crank-arms  $f'$  and  $f''$ . This switch-stand is preferably arranged at a point opposite the ends of the crossing-rails  $A$  and  $B'$ , and is connected to the rod  $b'$  thereof by means of a link  $f^3$ , pivoted to said rod and to the crank-arm  $f'$ . A connecting-rod  $f^4$  is pivoted to the crank-arm  $f''$ , and extends to a bell-crank lever  $F^2$ , to one arm of which it is connected, the other arm being connected to the operating-rod  $c'$  of the switch-rails  $C$  and  $C'$ . By this means the switch-rails and crossing-rails may be simultaneously moved into proper position to leave either the main line or siding open, as shown in full and in dotted lines, respectively, in Fig. 1 of the drawings.

In Figs. 7 to 12 of the drawings I have shown a locking device for securing the rails in position. A suitable box or keeper  $G$  is mounted on the ties between the main rails, and is provided with a transverse aperture, through which passes and slides a bar  $G'$ , attached to the movable main-line rail  $A$ , said bar  $G'$  being provided with apertures  $g$  and  $g'$ . A similar bar  $G^2$ , attached to the fixed rail  $A'$ , also enters said box or keeper.

$H$  represents a locking-bolt playing longitudinally through the box or keeper  $G$ , which is suitably apertured to receive the same, and also through a suitable aperture in the bar  $G^2$ . This bolt is provided with a collar  $h$  to limit its forward motion, and a spring  $H'$ , bearing against the said collar, to force the bolt normally forward. A link  $i$  connects the bolt  $H$  to a bell-crank lever  $I$ , which is in turn connected by means of a link  $i'$  to a second bell-crank lever  $I'$ .

$I^2$  indicates an operating-rod connected to the bell-crank lever  $I'$  at one end, its other end being connected to a crank-arm  $j$  on a sleeve  $J$ , mounted loosely on the rock-shaft  $F'$  of the switch-stand. This sleeve is not only free to rotate independently of the rock-shaft  $F'$ , but also free to move slightly in a vertical direction. It is provided with a hand-lever  $J'$ , by means of which it is operated, and the cross-bar  $J^2$  of the switch-stand is provided with two notches or seats  $j'$ , in

either one of which the said hand-lever rests when at the end of its movement. In order to raise the said hand-lever out of its seat to permit it to be turned, I form on the lower end of the sleeve  $J$  a projection  $j^2$ , and I form upon the rock-shaft  $F'$  a corresponding cam  $f^5$ , over which the said projection travels. The parts being in the position shown, the main line is open, and when it is desired to close the line and open the siding the hand-lever  $J'$  is turned into the position shown in dotted lines, the sleeve  $J$  rising during the turning thereof, and thus unlocking the lever. By this turning of the lever the locking-bolt  $H$  is withdrawn sufficiently to clear the aperture  $g'$  in the bar  $G'$ . The switch-lever  $f$  may then be turned to throw the switch-rails and crossing-rails into the position necessary to open the siding. During this operation the bolt  $H$  has been held back against the spring  $H'$  by the locking of the lever  $J'$  in its seat  $j'$ . The turning of the rock-shaft  $F'$  causes the cam  $f^5$  to lift the sleeve  $J$  and free the lever  $J'$  from the seat  $j'$ , when the spring  $H'$  will act to force the bolt  $H$  forward, and when the aperture  $g$  in the bar  $G$  comes in line with said bolt the spring will force the bolt through said aperture, and thus lock the crossing-rails in position. The same series of operations takes place, of course, when the rails are shifted back to their original position.

As hereinbefore stated, I prefer to have that pair of crossing-rails farthest from the switch-rails movable; but it is obvious that said pair may be stationary and the other pair movable.

I prefer to locate the switch-stand, as shown, at a point opposite the ends of the crossing-rails, for the reason that it is customary to throw the switch as soon as the rear wheels have passed the switch-stand, and if the stand were located, as is usual, opposite the ends of the switch-rails, the switch might be turned and the crossing-rails thrown out of position before the last wheels had passed the crossing. I do not, however, limit myself to this position of the switch-stand, as the same may be located at any desired point, and any suitable operating mechanism for actuating the rails may be employed.

It is obvious that various modifications in the details of construction may be made without departing from the principle of my invention, and I therefore do not wish to be understood as limiting myself strictly to the precise details hereinbefore described, and shown in the drawings.

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

1. The combination, with the crossing-rails  $A$  and  $B'$ , one pair of which is laterally movable, of the saddle or chair  $E$ , provided with projections  $E'$ , located one on each side of the crossing and each having a height substantially equal to that of the rails, whereby a



bearing for the tread of the wheels is formed in both positions of the movable rails, substantially as and for the purposes specified.

2. The combination, with the crossing-rails 5 A and B', one pair of which is laterally movable, of the saddle E, having a bearing-surface for the said rails, a central projection *e* to fit between the fixed rails, and lateral projections E', these latter being both of a height 10 substantially equal to that of the rails, substantially as and for the purposes specified.

3. The combination, with the crossing-rails arranged in pairs, one of which pairs is movable, of an arm attached to said movable pair, 15 a locking device arranged immediately adjacent thereto to positively engage said arm and lock the movable rails, the switch-stand provided with a lever and connecting devices to move the said crossing-rails laterally, and a 20 separate lever and separate connecting devices, whereby said locking device may be operated from the switch-stand, substantially as and for the purposes specified.

4. The combination, with the movable crossing-rail, of an apertured bar secured thereto, 25 a keeper through which said bar slides, a

spring-controlled locking-bolt for actuating said apertured bar, and operating mechanism for actuating said bolt, substantially as and for the purposes specified.

5. The combination, with the movable rail 30 A, having apertured bar G', of the fixed rail A', having apertured bar G<sup>2</sup>, the box or keeper G, to receive said bars, and the locking-bolt H, substantially as and for the purposes specified. 35

6. The combination, with the laterally-movable crossing-rails and the rock-shaft F', for operating the same, said rock-shaft being provided with a cam, of the sleeve J, mounted on said rock-shaft and free to move vertically on 40 and around the same, the handle-lever and its bar provided with seats for locking the same, and the spring locking-bolt connected to said sleeve and operated thereby, whereby the rotation of the rock-shaft will free the locking- 45 bolt, substantially as and for the purposes specified.

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Witnesses:

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