

(No Model.)

2 Sheets—Sheet 1.

A. J. MOXHAM.
RAILROAD SWITCH.

No. 318,645.

Patented May 26, 1885.

Fig. 1

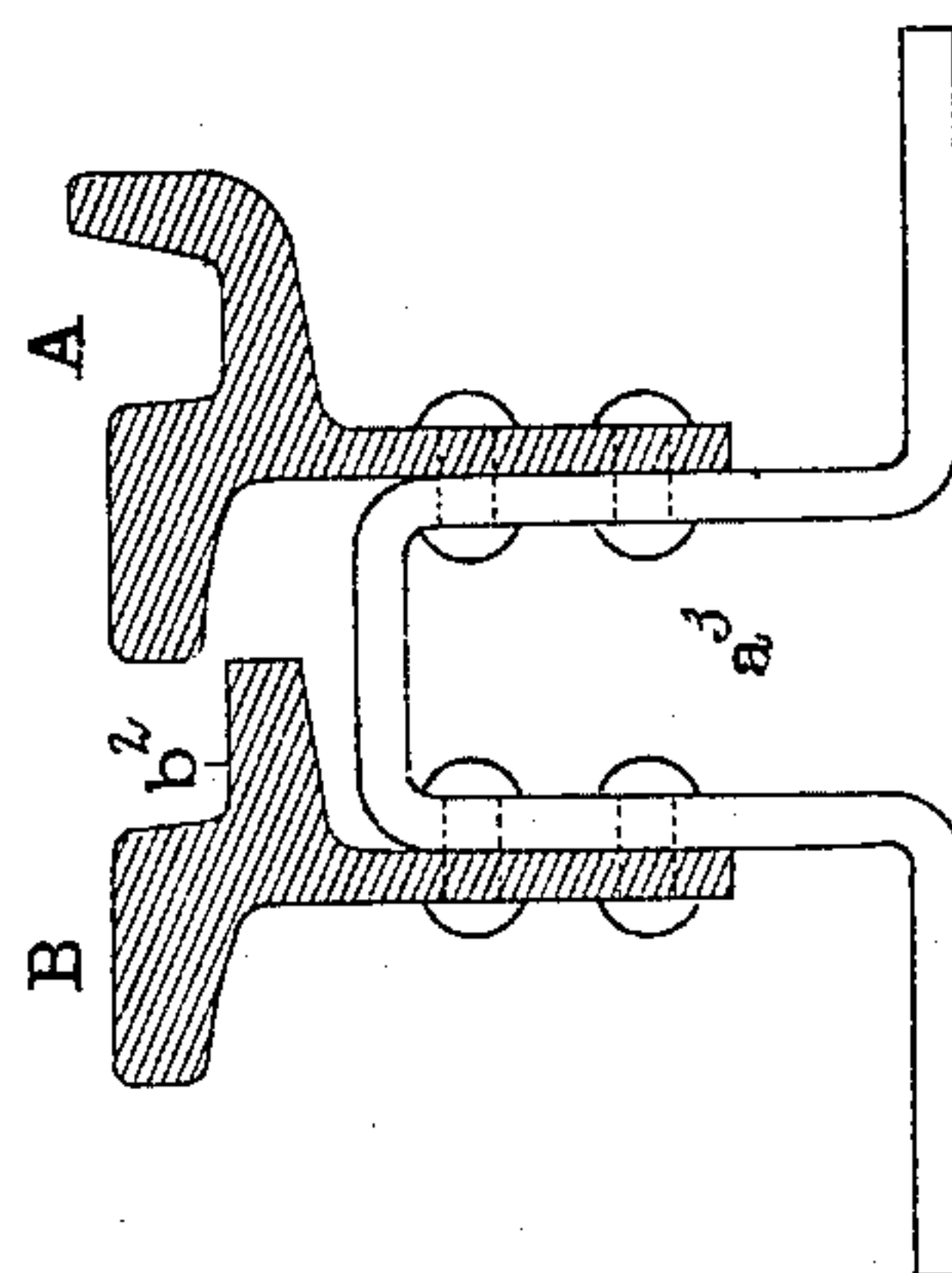
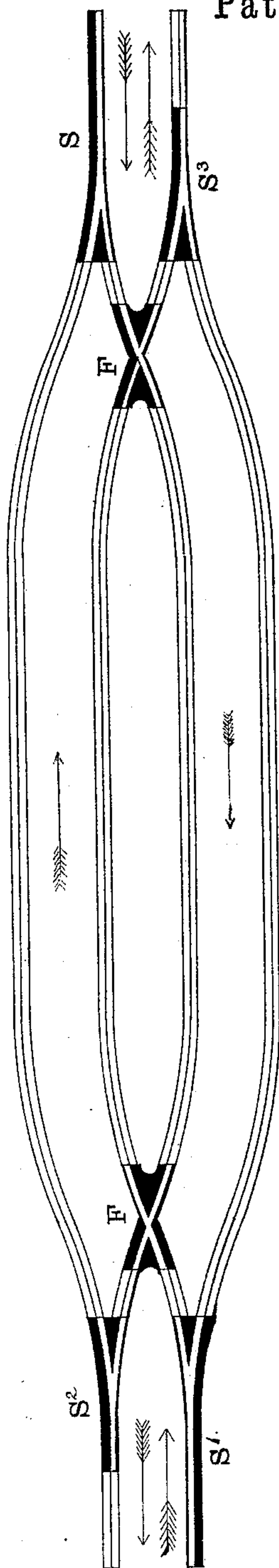


Fig. 9

WITNESSES:
James E. Keese
Francis P. Reilly

Inventor:
A. J. Moxham,
by R. R. Voorhes
Att'y.

(No Model.)

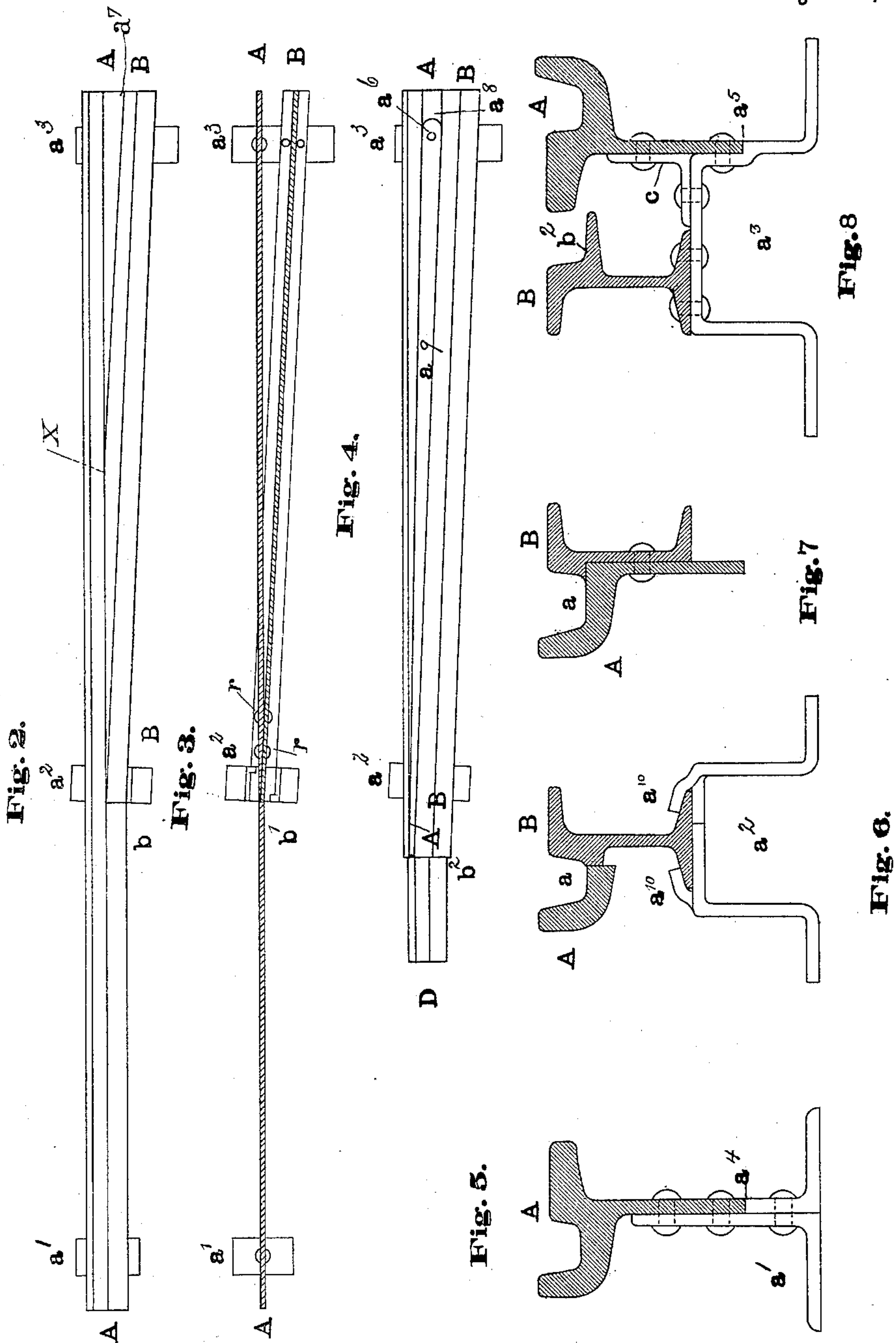
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James E. Keese
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INVENTOR
A. J. Moxham
By R. A. Voorhes
Attorney

UNITED STATES PATENT OFFICE.

ARTHUR J. MOXHAM, OF JOHNSTOWN, PENNSYLVANIA.

RAILROAD-SWITCH.

SPECIFICATION forming part of Letters Patent No. 318,645, dated May 26, 1885.

Application filed March 10, 1885. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR J. MOXHAM, of Johnstown, in the county of Cambria and State of Pennsylvania, have invented a new and useful Improvement in Railroad-Switches, which invention or improvement is fully set forth and illustrated in the following specification and accompanying drawings.

The object of this invention is to provide a form of switch, more particularly for street-car tracks, which shall be made of girder-rails capable of being connected by splice-bars or otherwise to the rails which are used for the rest of the track.

The invention consists of the combinations of parts, as hereinafter described, and set forth in the claims.

In the accompanying drawings, Figure 1 is a general plan of an entire turnout or passing switch for a railroad-track, in which the letters $S^2 S^3$ indicate two side switches devoid of movable tongues, and $S S'$ two main switches, having either fixed or movable tongues, as may be preferred. The arrows indicate the directions in which the cars would move in passing each other. Each guard-rail on one side of each switch which the car leaves is prolonged to act as a guard to the flange of the car-wheel, as shown at S on the right and S' on the left. Fig. 2 is a plan of the switch. Fig. 3 is a horizontal sectional plan of the switch, showing the heads of the rails removed and their webs exposed in section. Fig. 4 is a view in plan of the switch provided with a movable tongue. Fig. 5 is an end view of one end chair, to which a single guard-rail (seen in cross-section) is secured. Fig. 6 is an end view from the left of an intermediate chair, showing the parts of the switch-rails in section which touch over said chair, the web of one rail being cut away. Fig. 7 is a cross-section, viewed from the left, taken at the same point as in Fig. 6, but showing the webs of both rails uncut, as hereinafter described. Fig. 8 is an end view from the right of an end chair, showing the switch-rails in different form of cross-section, and secured to said chair near their divergent ends, which ends are united to the main rails of the track (not

shown) by splice-bars, or in any suitable manner. Fig. 9 presents a similar view to Fig. 8, but shows both rails of similar cross-section, the guard part being cut off from one at the line of section taken.

In said figures the several parts are indicated by letters as follows: The rail A has its head and part of its web planed off or otherwise cut away from the point b to the point a' , Fig. 2, on a straight line extending from point to point; or, if desired, the web of the rail A can be left solid, in which case the web of rail B does not extend beyond the solid web of the rail A , as seen in cross-section at Fig. 9, in which case the webs of the two rails are preferably riveted together at this point. The chair may then be dispensed with, for the web of the rail A being left of full strength there is no need of additional support at this point. The rail B has its flange b^2 , Fig. 8, cut away, so that when the two rails A and B are placed together their respective inner cut surfaces just mentioned are in line at the point b , Fig. 2, and touching, as seen at a , Fig. 6. The cut-away portion of the flange b^2 thus approaches the planed side of the guard of the rail A , so as to leave a groove of sufficient width for the passage of the wheels on the rail B , as seen at said point a . The web of the rail A , as well as its head, is thus entirely cut away at the point b' , Fig. 3, and a little beyond said point, as seen at a , Fig. 6. The webs of the respective rails are riveted together near the point at which the web of rail A is cut away by rivets $r r$.

Near the extreme divergence of the rails they are connected and supported upon the same chair, a^3 , as shown in Fig. 8, by bolts or rivets, and the rail A braced and further connected to the chair by an angle-piece, c ; or, if the two rails A and B are of the same form of cross-section, the chair will have the form shown in end view at a^3 in Fig. 9, in which the angle-piece c is dispensed with, as is also the offset shown at a^5 in Fig. 8, for without said offset and angle-piece the chair shown in Fig. 9 may be amply secured to each rail by rivets alone, as shown in said Fig. 9. The chairs a^2 are provided with lugs $a^{10} a^{10}$, as shown in Fig. 6,

connecting only with the lower flanges of the rail B, as heretofore explained. The chairs a' , as shown at Fig. 5, are of T shape with an offset, a^4 , and need no further description.

5 The part of the rail A from the chair a' to the point b should be of sufficient length to exceed the length of wheel-base of the car, preferably about seven feet long. This pro-
10 longation of rail is only needed on one side, as heretofore explained in referring to the parts S S', Fig. 1. The dimensions otherwise for good proportion of parts are about as follows: width of head of each rail, from one and three-quarters to two and one-quarter inches;
15 width of grooves, from one and one-half to two inches; height of head above the bottom of grooves, about one inch; height of guard above the bottom of grooves, from one and three-eighths to one and three-quarters inch.
20 A plate or beveled bridge (not shown for the sake of clearness of illustration) may be let into the grooves to protect the point x , similar to the bridge-plate described in another application herewith filed.

25 In Fig. 4 is shown in plan a movable tongue-switch thrown over to permit of the passage of the car to the rail B. This switch is identical with the stationary switch except in the following details: All, instead of a portion,
30 of the head of the rail A is cut away from the point b to the point a^8 , Fig. 4, thus leaving a smooth bed between said points. The tongue a^9 is substituted in place of this cut-away part of rail A, and hinged by the bolt a^6 . It is ob-
35 vious that the movement of the point of said tongue to one side or the other will switch the car in either direction desired. It is of importance to observe that it is necessary that the length of this tongue should exceed the
40 distance from the point x to the point a^7 , Fig. 2, in order to insure the passage of the flange of the wheel on the opposite side of the car clear of the point x . It will also be seen that the end of the switch, as shown at b^2 , Fig. 4,
45 is a little wider than the true cross-section of the rail. By this means, on connecting the short piece of rail shown at D, a recess is left on either side of the groove at the end of the switch. This recess serves to take in the point
50 of the movable switch-tongue a^9 . In this way the point of said tongue can be left of substantial thickness without being exposed to contact with the wheel of an approaching car instead of being shaped to a feather-edge, as
55 would otherwise have to be done. The difference in width between the groove in the end of the switch at A and in the rail D can be such as to secure a substantial and good wear-
60 ing-point to the movable tongue a^9 .

Where the tongue-switch is subject to heavy traffic, a considerable amount of strain is thrown on the pivot-bolt a^6 . In such cases the strength of this hinge can be increased by riveting a solid block of metal to the webs of
65 the rails at this point, with a hole in said

block for the pivot-bolt to enter. Said bolt may be keyed or otherwise fastened in said hole, so as not to easily work up, and said fast-
70 ening should preferably be beneath the lower part of the block.

For connecting the ends of these switches to the main track any of the various known forms of splice-bars can be used. It is preferable to rivet those parts of the splice-bars which are
75 in contact with the switch-rail than to depend upon bolts, as the switch-rail is devoid of the lower flange, which forms one of the vertical bearings for the splice-bar. Moreover, if bolts
80 be used they are apt to work loose. If desired, that part of the splice-bar in contact with the switch-rail can be drawn and flattened out, so that a double line of rivets can be used.

Some of the advantages of this method of
85 construction will now be set forth.

Heretofore crossings, switches, and frogs used in street-railway tracks have been made of cast-iron and of a flat under surface adapted to be used on stringers; but the use of such
90 castings in conjunction with rolled steel rails has been found to be practically of great disadvantage. Owing to the requirements of the case, the work done, and consequent wear at these points is very great, (and particularly
95 at the switches,) for it is at such points that the change in direction of the moving cars occurs. Cast-iron when exposed to the friction of this work rapidly wears away. Efforts to utilize cast-steel for this purpose have failed
100 of success, because of the unreliable character of such material.

In constructing the switches as herein described the whole line of track becomes of one uniform material—namely, rolled steel—when
105 used in connection with the frogs herein shown at F, Fig. 1, and the webs of the girder-rails used, which imparts stiffness to the whole structure, are utilized to connect the one part with the other, making a system of homogene-
110 ous structure. A strong and durable set of switches of uniform design and material is thus furnished for any given line of track, adding greatly to the efficiency of the railway and saving much loss of time and consequent direct
115 expense in outlay as well as loss of revenue in effecting repairs such as would be required were less durable materials and constructions used.

I do not herein claim the frogs shown at F, Fig. 1, as the same are claimed in another ap-
120 plication herewith filed, bearing the Serial No. 158,306.

Having thus fully described my said improvements, as of my invention I claim—

1. A railway-switch for street-car tracks,
125 composed of one rolled girder guard-rail and one rolled girder-rail, cut and fitted together at the necessary angle to deflect the car, secured together at their junction, and at their divergent ends to the main rails of the track,
130 substantially as and for the purposes set forth.

2. In combination with the main rails, a
railway-switch for street-car tracks composed
of one rolled girder guard-rail and one rolled
girder-rail, cut and fitted together at the nec-
5 essary angle to deflect the car, secured to-
gether at their junction, and provided with a
movable hinged tongue near their divergent

ends, whereby the car is deflected in either
of two directions, as may be desired, substan-
tially as and for the purposes set forth.

ARTHUR J. MOXHAM.

Witnesses:

A. MONTGOMERY,
W. J. MURPHY.