F. P. COOK.

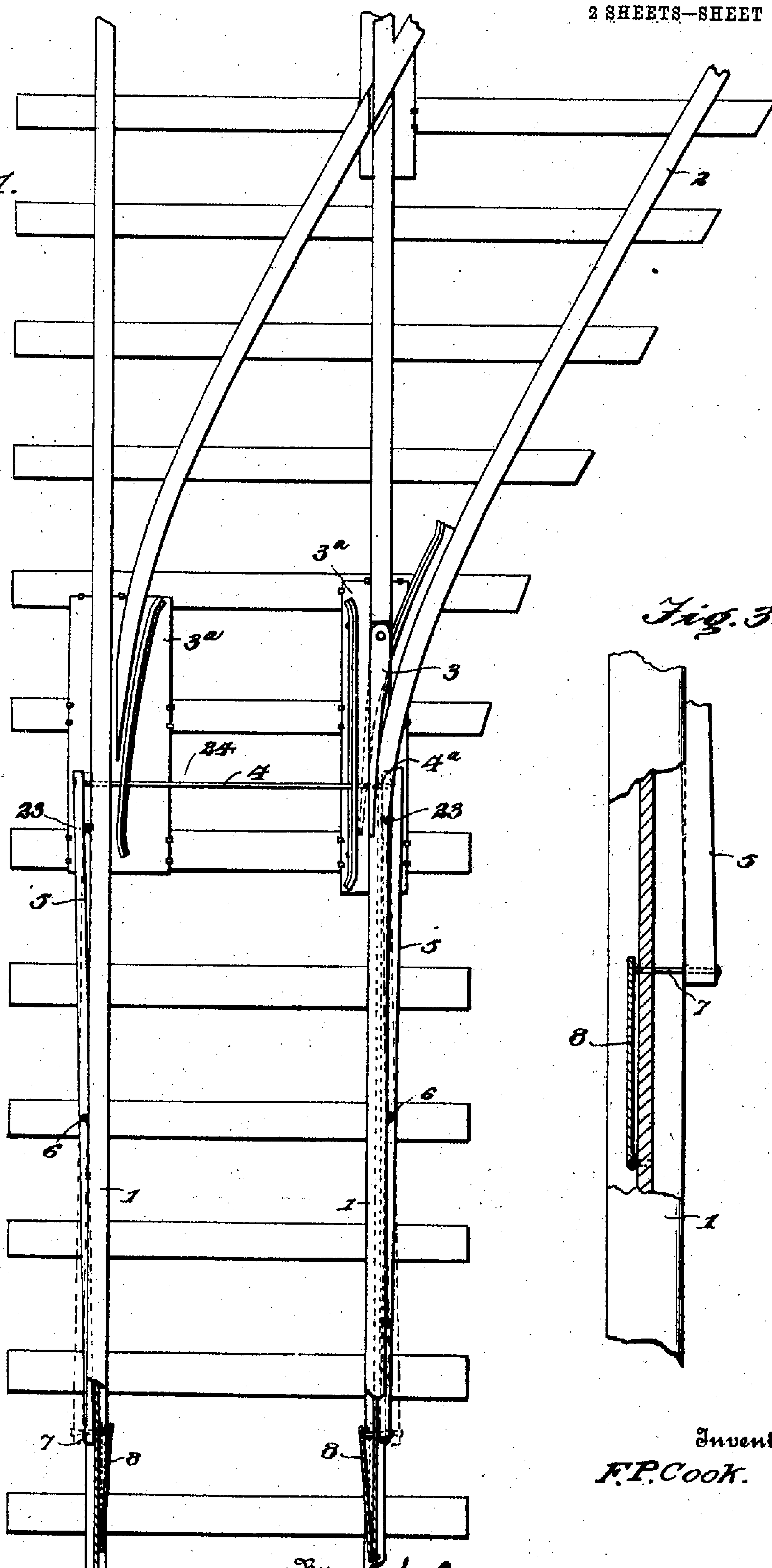
AUTOMATIC SWITCH THROWER.

APPLICATION FILED DEC. 11, 1907.

905,656. Patented Dec. 1, 1908.

2 SHEETS—SHEET 1.

Fig. 1.



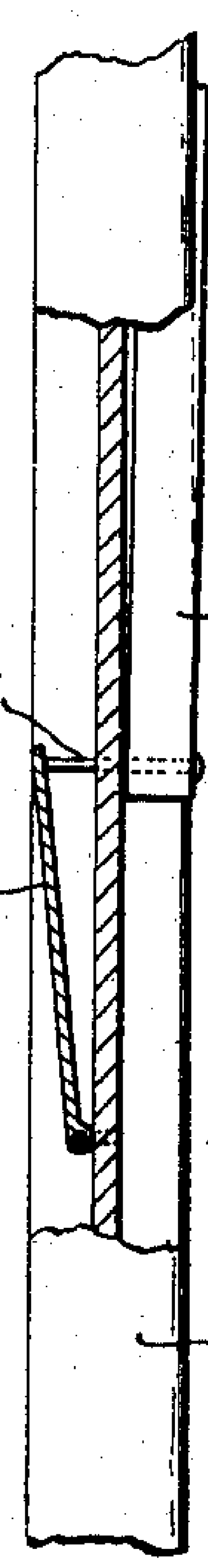


Fig. 2.

Fig. 3.

Witnesses

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2 SHEETS—SHEET 2.

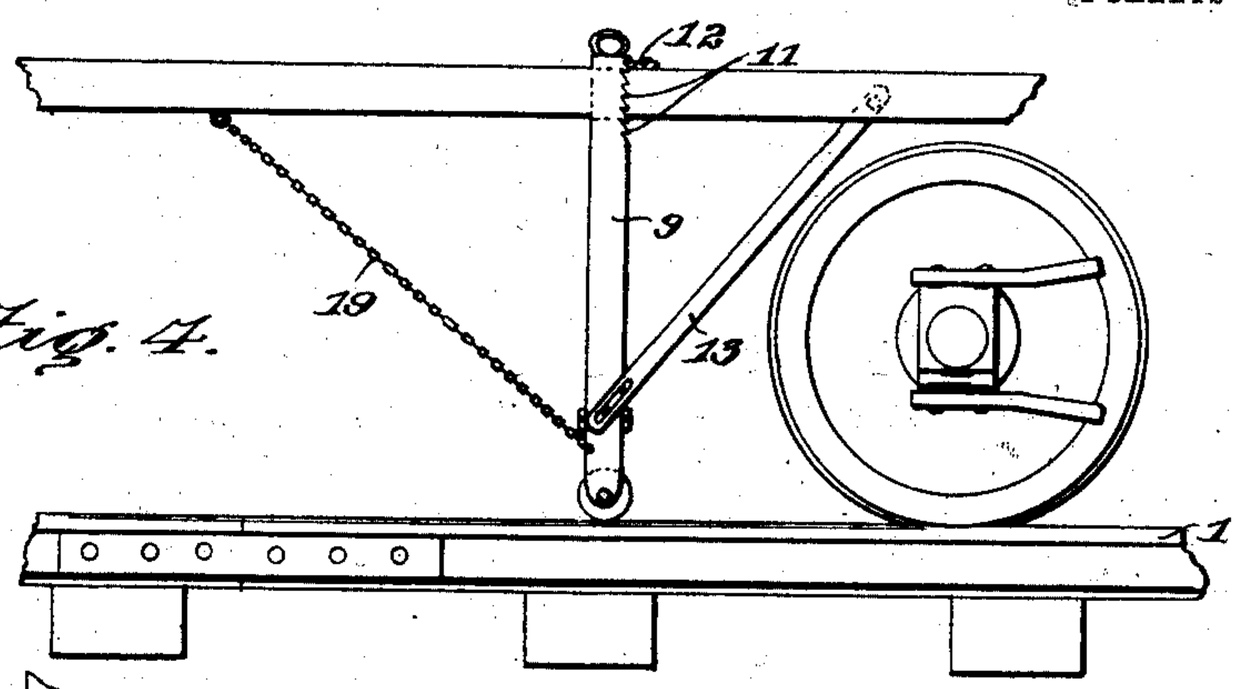


Fig. 4.

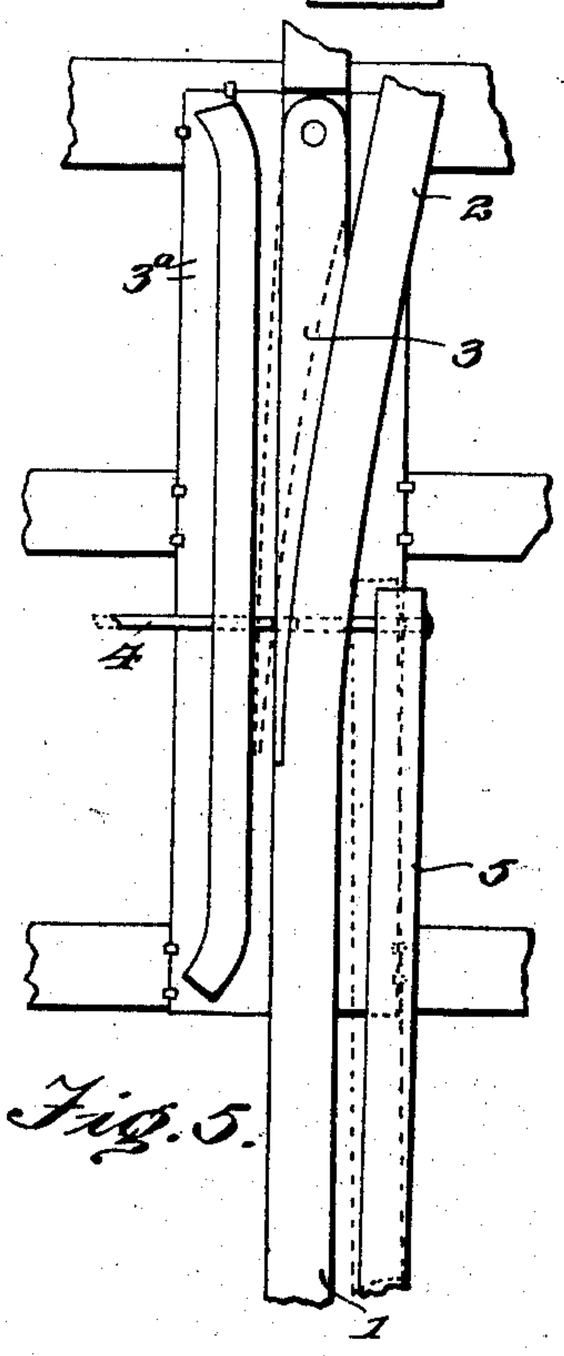


Fig. 5.

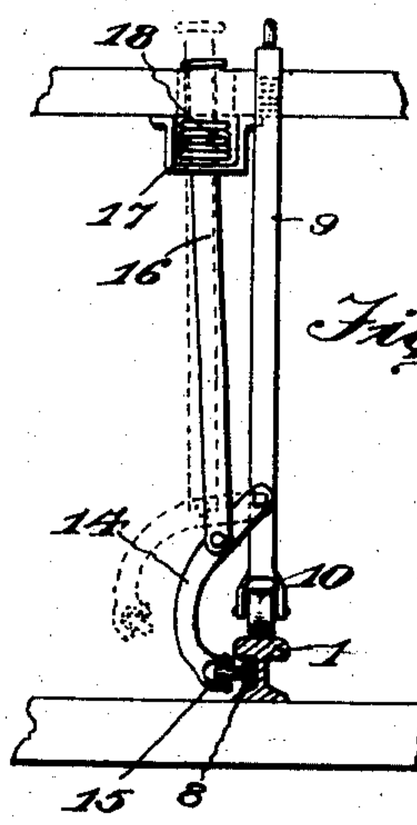
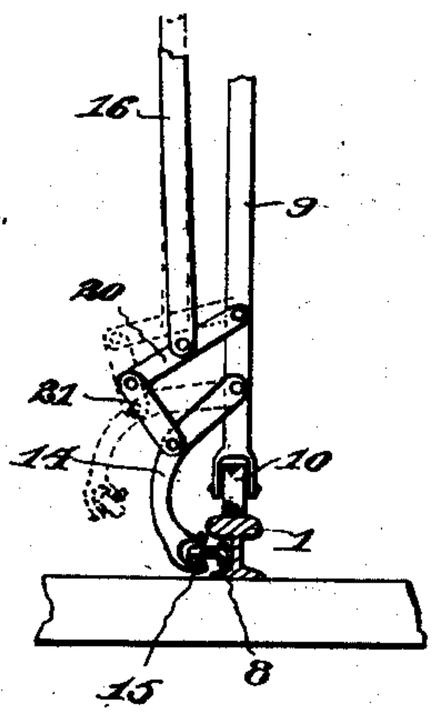


Fig. 6.

Fig. 7.



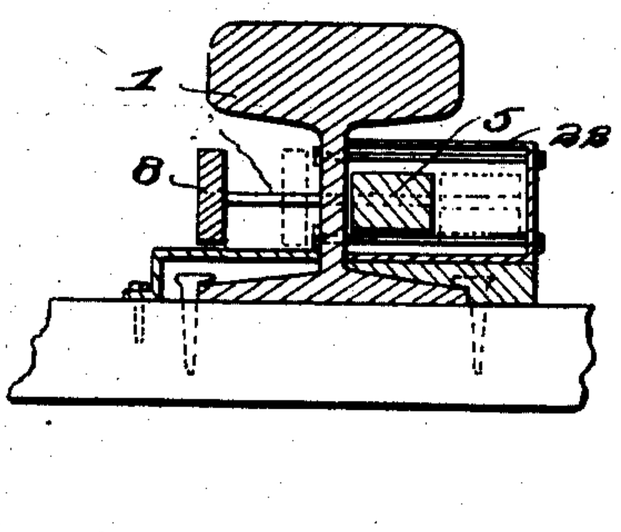


Fig. 8.

Witnesses

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UNITED STATES PATENT OFFICE.

FRANK P. COOK, OF SPOKANE, WASHINGTON.

AUTOMATIC SWITCH-THROWER.

No. 905,656. Specification of Letters Patent. Patented Dec. 1, 1908.

Application filed December 11, 1907. Serial No. 406,080.

To all whom it may concern:

Be it known that I, FRANK P. COOK, citizen of the United States, residing at Spokane, in the county of Spokane and State of Washington, have invented certain new and useful Improvements in Automatic Switch-Throwers, of which the following is a specification.

The present invention relates to railways, and more particularly to a novel mechanism whereby the switch can be operated from the car or rolling stock, thereby obviating the necessity either of employing a special attendant for the switch or stopping the car and dismounting to operate the same.

The object of the invention is to design an automatic switch throwing device of this character which can be readily installed upon the car and will operate in a positive manner to throw the switch as desired.

For a full description of the invention and the merits thereof and also to acquire a knowledge of the details of construction and the means for effecting the result, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a plan view of a portion of a track having the switch throwing device applied thereto. Fig. 2 is an enlarged sectional view through a portion of one of the rails of the main track showing the swinging leaf applied to the web thereof. Fig. 3 is a similar view of the rail upon the opposite side of the track, showing the swinging leaf moved inwardly toward the rail. Fig. 4 is a side elevation of the trip mechanism mounted upon the car. Fig. 5 is an enlarged detail view of the switch point and adjacent members. Fig. 6 is an end elevation of the standard and swinging arm carried by the car. Fig. 7 is a similar view showing a modification. Fig. 8 is an enlarged sectional view through one of the rails of the track showing a further modification.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

Referring to the drawings the numeral 1 designates the main track and 2 the branch track, frogs 3^a being located at the juncture of corresponding rails of the two tracks and a switch point 3 of the conventional construction being mounted upon one of the said frogs. Extending along opposite sides of the main track 1 are the longitudinally disposed operating levers 5 which are pivotally mounted at an intermediate point as indicated at 6 and are shown in the present instance as located upon the outside of the track rails. One end of each of the operating levers 5 is provided with a pin 7 extending laterally through the web of the adjacent rail and loosely engaging a swinging leaf 8. These swinging leaves 8 are designed to be swung against the web of the respective rails for the purpose of operating the levers 5 and throwing the switch as will be hereinafter more fully described, and are normally moved away from the webs of the rails by means of springs 23 interposed between the rails and the opposite ends of the operating levers. One of the said operating levers is provided at its opposite end with a lateral projection or rod 4^a and in a somewhat similar manner the other operating lever is provided with a laterally extending member or rod 4, the latter projecting across the track and being shown as housed within a pipe 24 whereby it is protected from injury. The extremities of these lateral rods 4 and 4^a are adapted to be thrown across the flange receiving space of the frog 3^a and to engage opposite sides of the switch point 3 for the purpose of moving the same in the desired direction. It will be observed however that these members 4 and 4^a are normally held in a retracted position by means of the springs 23 and are only thrown into an operative position when one of the swinging leaves 8 is engaged by a member carried by the rolling stock and forced inwardly against the web of the rail. It will also be observed that the said projections 4 and 4^a are mounted to move the switch point in opposite directions and that by causing the member upon the rolling stock to engage either one of the leaves 8 the switch point can be set in the required position.

The invention further contemplates a novel mechanism adapted to be mounted upon the car or rolling stock for coöperating with the leaves 8 to automatically throw the switch point in the desired manner without the necessity of stopping the car. One of these mechanisms is designed to be mounted upon each side of the car and either of the same may be moved into an operative position according to the direction in which it is desired to throw the switch. Each of these mechanisms comprises an upright standard 9 adjustably carried by the car body and provided at its lower end with a roller 10 de-

signed to engage the head of the corresponding rail. The upper end of this standard 9 passes loosely through an opening in the floor of the car and is provided with a plurality of notches 11, any selected one of which is designed to engage a projection 12 to hold the standard in an adjusted position. For the purpose of retaining this standard in an upright position and preventing the same from being deflected rearwardly when moved downwardly into engagement with the track a diagonal brace member in the nature of a strut 13 is utilized, the upper end of the strut being pivotally connected to the car body in the rear of the standard while the lower end thereof has a pin and slot connection with the standard to admit of the adjustment previously described.

Pivotally connected to the lower end of each of the standards 9 is a laterally swinging arm 14 the outer end of which is curved downwardly and provided with a roller 15 designed to engage the corresponding leaf 8 and move the same inwardly against the web of the rail so as to throw the switch. For the purpose of controlling this swinging arm 14 a plunger 16 is utilized, the lower end of the plunger being pivotally connected to the arm while the upper end thereof passes loosely through the floor of the car and a bracket 17 pendent therefrom. A coil spring 18 surrounds the plunger 16 and is interposed between the said bracket and a projection upon the plunger so as to normally hold the same in an elevated position with the arm 14 swung outwardly away from the rail. When it is desired to throw the switch the standard 9 is moved downwardly until the roller 10 at the lower end thereof is in engagement with the rail and the plunger 16 is then moved against the action of the spring 18 by applying the foot thereto so as to swing the arm 14 downwardly and bring the same into an operative position. The roller 15 carried thereby then engages the leaf 8 as the car travels along the track and moves the said leaf inwardly against the rail in such a manner as to throw the switch. In a reverse manner it will be readily apparent that by using the mechanism upon the opposite side of the car the switch could have been thrown in the other direction. It may here be noted that a flexible member 18 connects each of the swinging arms 14 to a point upon the car in advance of the standard and while this flexible member does not in any manner interfere with the operation of the arm as previously set forth, it tends to prevent the same from being deflected rearwardly and moved out of a vertical position when thrown into engagement with the track.

A slight modification is shown in Fig. 7 in which an auxiliary arm 20 is shown as mounted upon the standard 9, the said arm engaging the plunger 16 directly and being connected to the swinging arm 14 by a link member 21. The operation of this form of the invention however is identical with that shown in the remaining figures of the drawings.

A further modification is shown in Fig. 8 in which the operating lever 5 is shown as housed within a suitable casing 22 which protects it from frost and prevents the clogging thereof by stones or analogous means.

Having thus described the invention, what is claimed as new is:

1. In a device of the character described, the combination of a track, a switch, an operating lever extending along the track and having an operative connection with the switch, one end of the said lever being provided with a pin extending loosely through one of the rails of the track, a swinging leaf mounted upon the track and engaging the pin, and means carried by the rolling stock for coöperating with the swinging leaf to move the lever and throw the switch.

2. In a device of the character described, the combination of a track, a switch, an operating lever extending along the track and pivoted at an intermediate point, one end of the lever having an operative connection with the switch, a laterally swinging leaf applied to the web of one of the track rails adjacent the opposite end of the lever and having an operative connection therewith, and means carried by the rolling stock for engaging the said laterally swinging leaf to throw the switch.

3. In a device of the character described, the combination of a track, a switch, an operating lever extending along the track and pivotally mounted at an intermediate point, one end of the operating lever being formed with a projection adapted to engage a side of the switch point to throw the same, while the opposite end of the operating lever carries a pin passing loosely through one of the track rails, a swinging leaf mounted upon the track and engaging the pin, and means carried by the rolling stock for coöperating with the swinging leaf to actuate the operating lever.

4. In a device of the character described, the combination of a track, a switch, an operating lever mounted adjacent the track and provided with a projection adapted to be thrown across the flange receiving space of the rails upon one side of the track and to engage the switch point for throwing the same, means for holding the said projection normally in a retracted position, and means for actuating the lever.

5. In a device of the character described, the combination of a track, a switch, a switch actuating member applied to the track, a standard adjustably mounted upon the rolling stock so as to be raised and lowered, a swinging arm pivotally mounted upon the

standard, and means for moving the swinging arm into and out of coöperative relation to the before mentioned switch actuating member.

6. In a device of the character described, the combination of a track, a switch, a swinging leaf applied to the track and having an operative connection with the switch, a standard carried by the rolling stock and provided with a roller for engaging the track rail, a swinging arm carried by the standard and provided with a roller adapted to engage the before mentioned swinging leaf to operate the switch, and means for controlling the swinging arm.

7. In a device of the character described, the combination of a track, a switch, a swinging leaf applied to the track and having an operative connection with the switch, a standard adjustably mounted upon the rolling stock so as to be raised and lowered, a swinging arm mounted upon the standard and adapted to coöperate with the swinging leaf to operate the switch, and a plunger for controlling the swinging arm.

8. In a device of the character described, the combination of a track, a switch, a leaf mounted upon the track and having an operative connection with the switch, a standard carried by the rolling stock, a swinging arm mounted upon the standard and adapted to coöperate with the leaf to operate the switch, and a flexible member connecting the swinging arm to a portion of the car in advance of the standard.

9. In a device of the character described, the combination of a track, a switch, a switch actuating member mounted upon the track, a standard carried by the rolling stock and provided with means for engaging a track rail, and a swinging arm mounted upon the standard and adapted to be moved into and out of coöperative relation to the before mentioned switch actuating member.

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

FRANK P. COOK. [L. S.]

Witnesses:

J. VINCIL STONE,

FRED. T. SPENCE.