No. 644,299. Patented Feb. 27, 1900.

J. A. P. McDONALD.

SWITCH OPERATING DEVICE.

(Application filed Aug. 26, 1899.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 3.

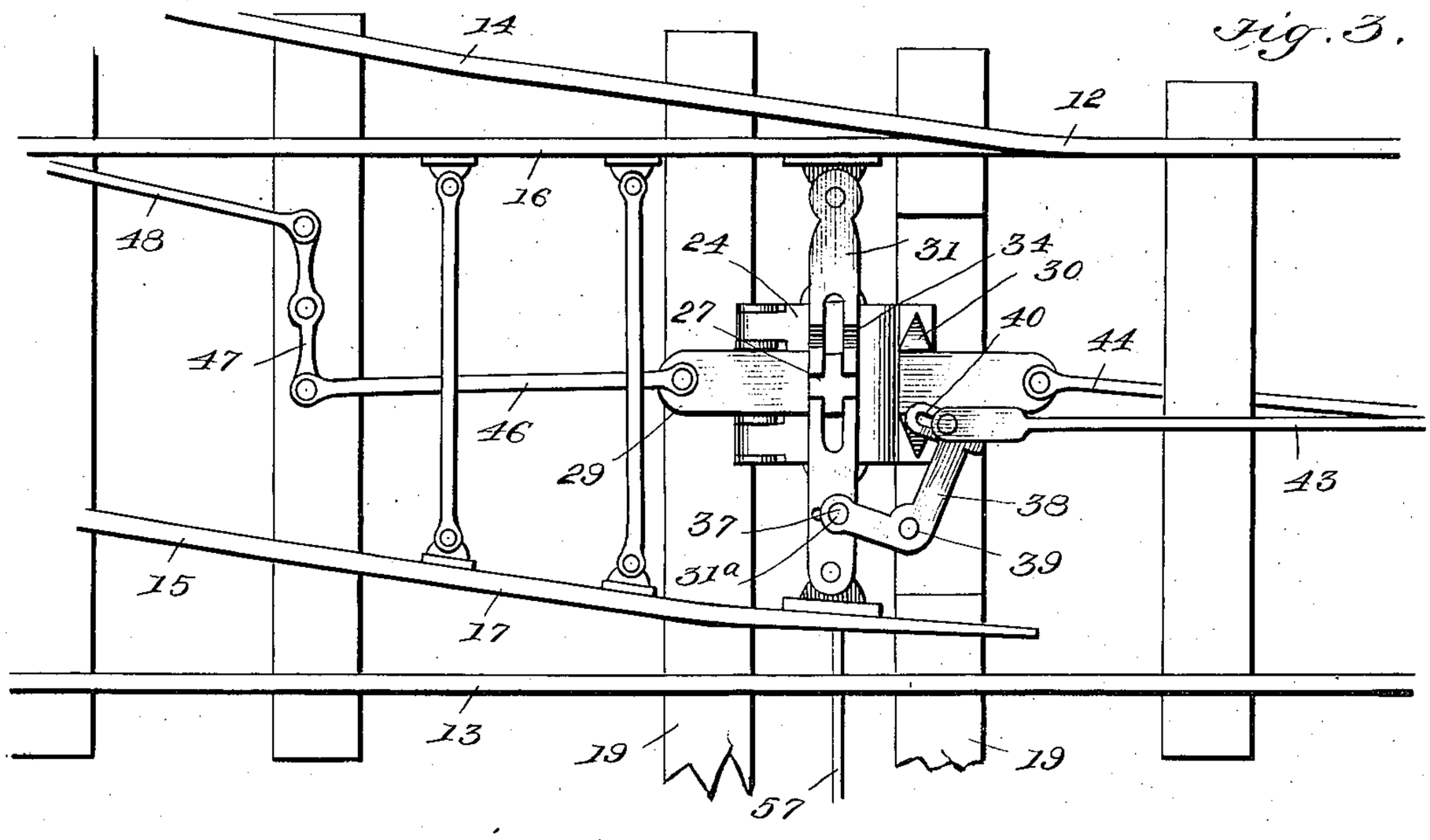


Fig. 1.

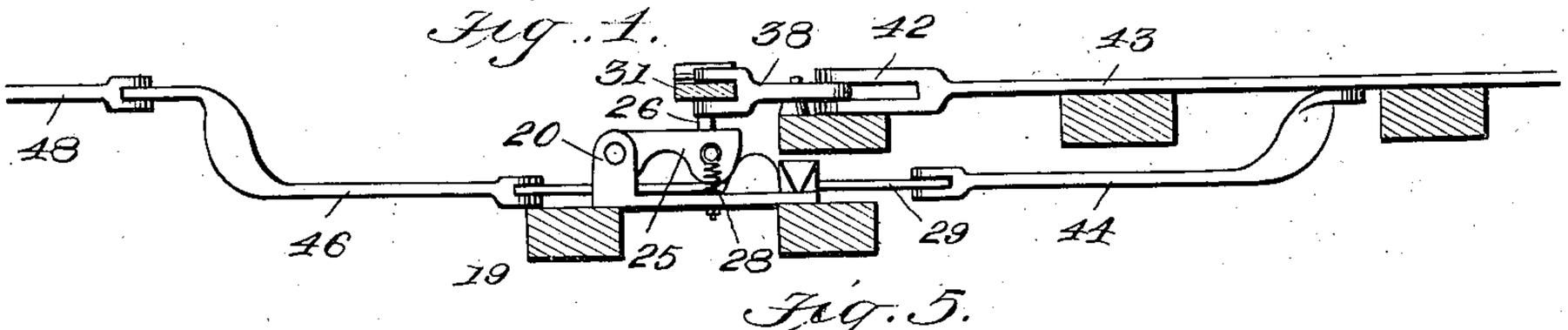


Fig. 5.

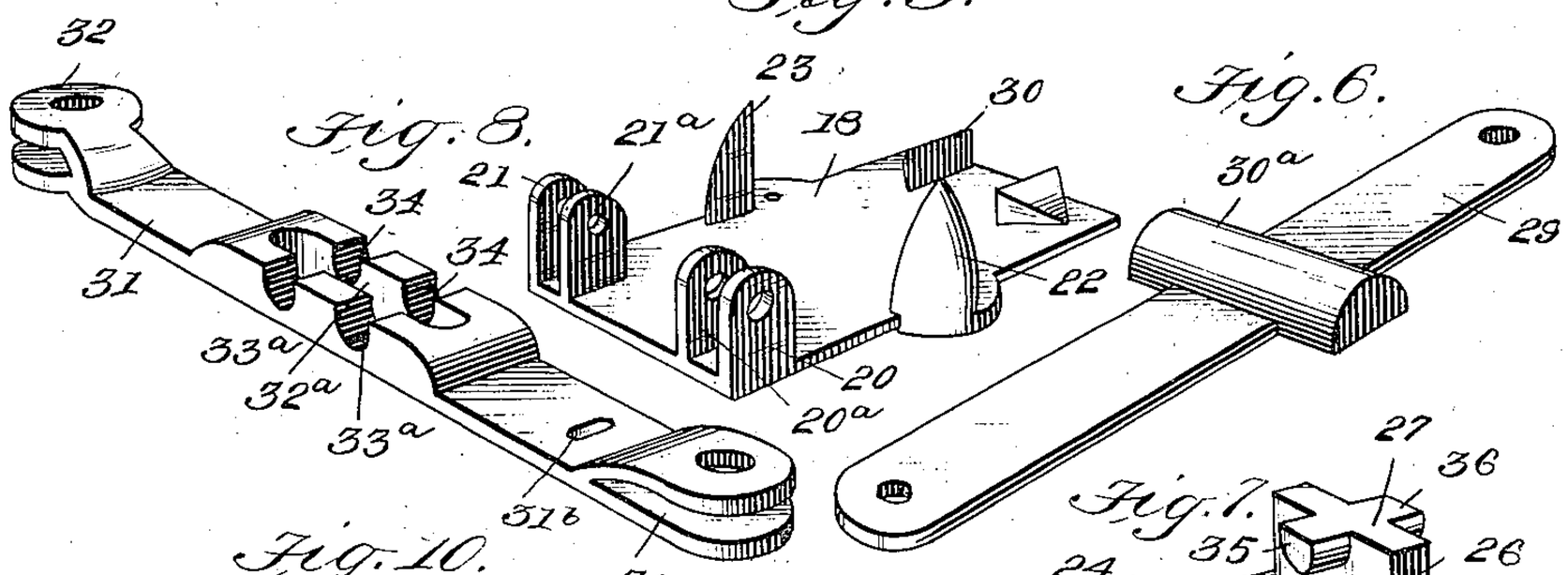


Fig. 10.

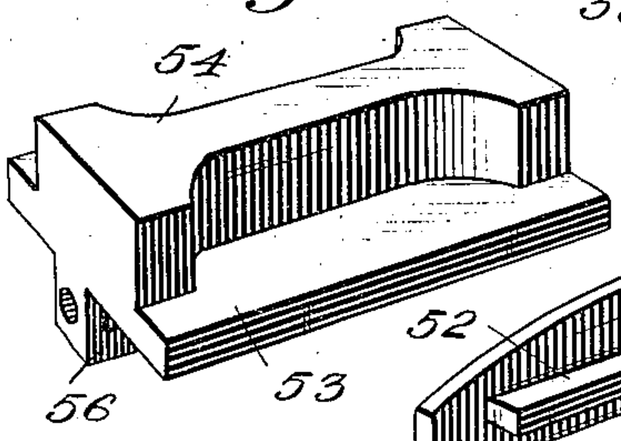


Fig. 9.

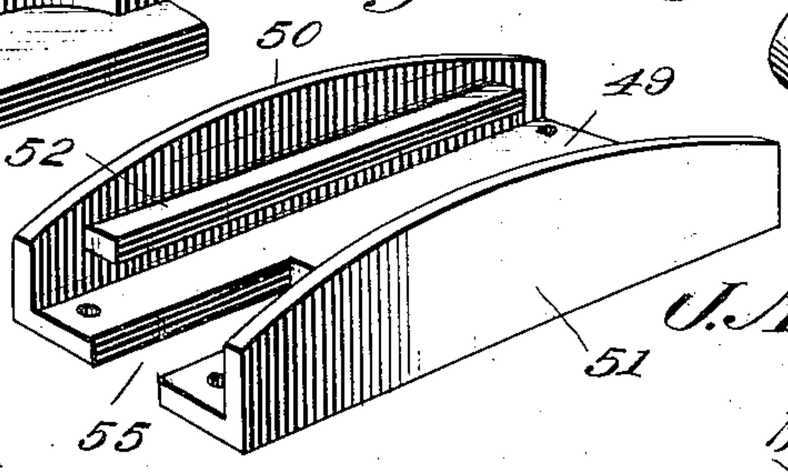
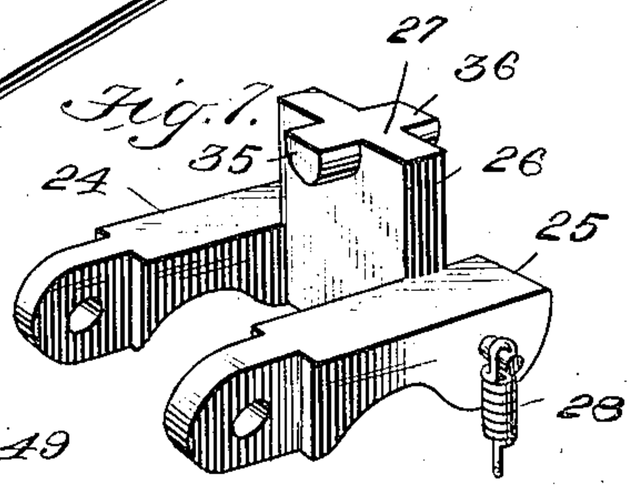


Fig. 7.



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No. 644,299. Patented Feb. 27, 1900.

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SWITCH OPERATING DEVICE.

(Application filed Aug. 26, 1899.)

(No Model.) 2 Sheets—Sheet 2.

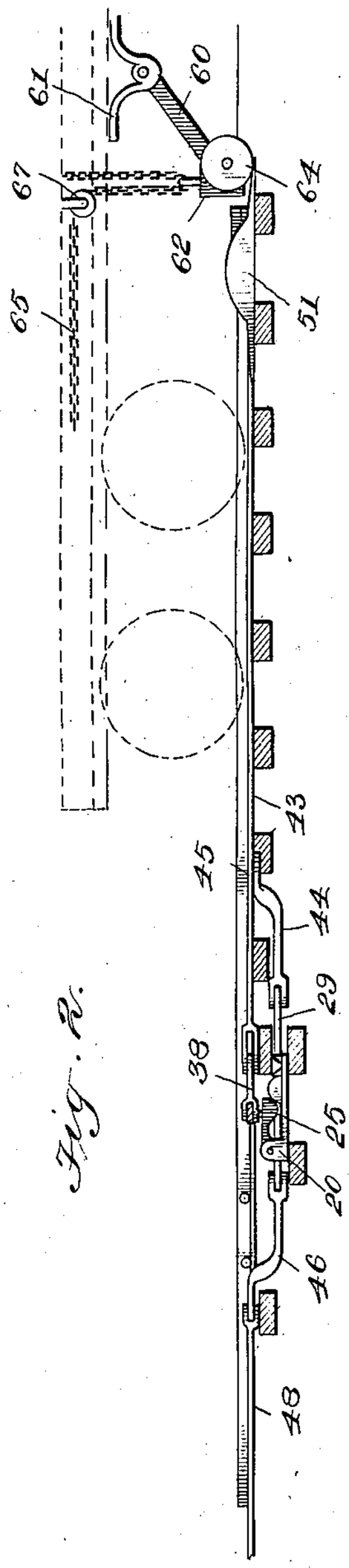

Fig. 2.

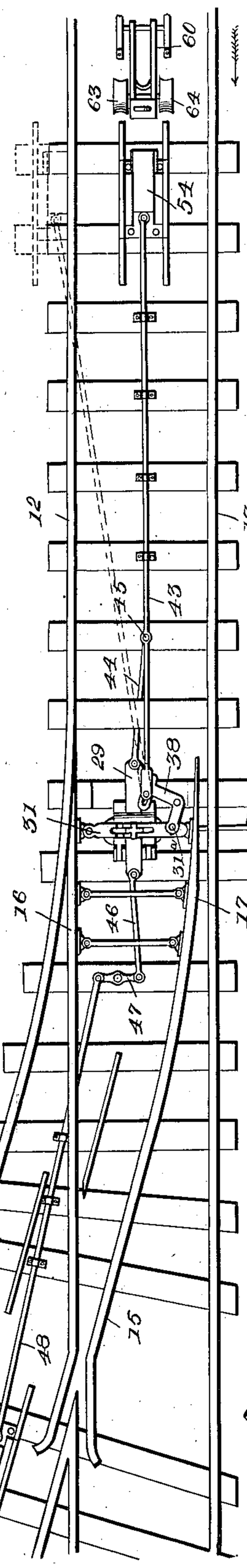

Fig. 1.

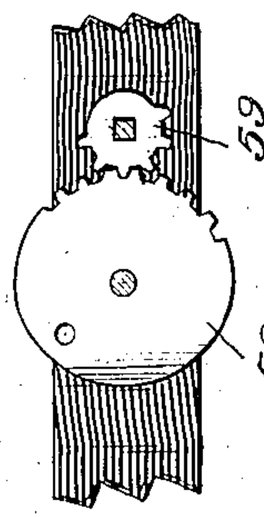

Fig. 11.

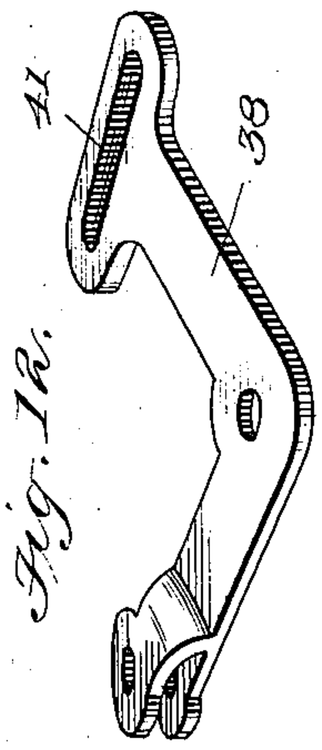

Fig. 12.

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UNITED STATES PATENT OFFICE.

JOHN A. P. McDONALD, OF BRADFORD, PENNSYLVANIA.

SWITCH-OPERATING DEVICE.

SPECIFICATION forming part of Letters Patent No. 644,299, dated February 27, 1900.

Application filed August 26, 1899. Serial No. 728,622. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. P. McDONALD, a citizen of the United States, residing at Bradford, in the county of McKean and State of Pennsylvania, have invented a certain new and useful Switch-Operating Device, of which the following is a specification.

My invention relates to switch-operating devices, but more particularly to that class which are adapted to be controlled by an operator from a locomotive or tram-car; and it consists of the parts and combination of parts, as will be fully described hereinafter, illustrated in the accompanying drawings, and pointed out in the claims hereunto annexed and forming a part of this specification.

In the drawings, Figure 1 represents a top plan view of a portion of a track, illustrating my improved switch-throwing mechanism applied thereto. Fig. 2 is a side elevation of a portion of the same. Fig. 3 is an enlarged top plan view of the mechanism adjacent to the switch. Fig. 4 is a longitudinal section of the mechanism adjacent to the switch; and Figs. 5 to 12, inclusive, are details of the various parts.

Referring now to the drawings by reference-numerals, 12 and 13 indicate the main rails, and 14 and 15 the rails of a siding or branch track.

16 and 17 are movable or switch rails, to which is pivoted the switch-operating mechanism.

In carrying out my invention I employ a plate 18, secured to the cross-ties 19, and on one end of which are cast or otherwise secured two upwardly-projecting bearings 20 and 20^a and 21 and 21^a, one set at each corner, and about midway the side edges of this plate are positioned projections 22 and 23, which prevent a lateral displacement of the locking-dogs 24 and 25, the rear ends of which are held between the bearings on the plate by a suitable bolt. The forward ends of these dogs are curved at their lower edges and immediately in rear thereof have approximately-semicircular cut-out portions to be hereinafter referred to.

26 is a block of metal containing the two dogs and is provided at its upper end with a cross-head 27, the purpose of which will be hereinafter apparent, and the dogs are normally held against the plate by means of the spring 28.

Slidably secured upon the plate and beneath the block 26 is a longitudinally-arranged flat bar 29, which is guided thereon by the inner edges of the two bearings 20^a and 21^a at one end thereof and at the other by the lugs 30. Intermediate the ends of this bar 29 is a tripping-head 30^a, substantially semicircular in cross-section, which is designed to raise the dogs when the bar is moved either toward or away from the bearings thereof.

31 is a transversely-arranged bar bifurcated at each end, as at 32 and 33, and is designed to engage the sides of the switch-rails. This bar is slotted longitudinally its length for a short distance, as at 32^a, and on each side of the slot are seats 33^a and 34, adapted to receive the arms 35 and 36 of the cross-head 27, which projects through said slot.

Connected at 37 to the bar 31 by a pin 31^a, working in the slot 31^b, is a bell-crank or elbow lever 38, pivoted at 39 to one of the cross-ties and having a T-shaped end 40, which is slotted at 41 to receive the bifurcated end 42 of an operating-rod 43, connected by a link connection 44, secured to the sliding bar 29 at one end and at the other to the operating-rod 43, as at 45. The remaining end of the slidable bar 29 is connected to a short bar 46, which pivotally engages an intermediately-pivoted lever 47, connected to an operating-rod 48, similar to the rod 43. The free ends of these operating-rods are connected to the switch-operating mechanism, which I construct as follows: At a suitable distance from the switch-throwing mechanism just described I secure a guide-plate 49, having upwardly-extending and curved side flanges 50 and 51, on the inner sides of which are ribs 52 to overlap the upper edges of the flanges 53 of the operating I-shaped block 54. It will be noticed that the plate 49 is cut out at 55 to accommodate the downwardly-extending portion 56 of this block 54 to more securely hold it in position. As it is customary to employ signals in connection with all switches, I provide an automatic signal in the shape of a transverse rod 57, connected to one of the movable rails and eccentrically to a mutilated

gear 58, which meshes with a smaller gear 59, which carries the signal-standard.

By reference to Fig. 2 it will be seen that I have provided a peculiar construction of tram-car or locomotive throwing mechanism comprising the pivoted depending arms 60, which will be positioned beneath the tram-car or locomotive in suitable brackets 61 and on the free ends of which are the contact-block 62 and the wheels 63 and 64, held suspended, so that they will always be in a position to engage a switch-operating block, but high enough to prevent their coming in contact with the cross-trees by a chain 65. When it is desired to pass a siding, the operator will pull on the chain 65, passing over the pulley 67, and thus raise the arms and wheels out of the way.

The operation of my device is as follows: Supposing a train to be traveling in the direction indicated by the arrow, Fig. 1, the operator will release the chain 66, and the wheels on the forward ends of the arms 60 will travel on the flanges 50 and 51. The head carried by the arms will strike the sliding block, push the operating-rod forwardly, and force the longitudinally-slidable bar forward. The tripping-head 30 will raise the dogs, and at the same time the transverse bar will push the movable rails to the left of the track, so that the train will enter the siding. When the dogs are raised, it is obvious that the cross-head will also rise, and as the movements of the longitudinal and transverse bar are practically simultaneous as soon as the switch is operated the head will drop in the seats nearest the right-hand end of the track and the switch will be positively locked in that position. Now when the train reaches the farther operating mechanism the sliding block thereof will be struck and the switch will be thrown back and locked in its original position and the main track will be "clear." Of course the operation of the switch would be the same if actuated by a train coming onto the main track from the siding.

While I have illustrated tram-operating mechanism in the center of the car and the block to be actuated thereby, it is obvious that I might position these on the side of the car and road-bed, respectively, as shown in dotted lines in Fig. 1, without departing from the spirit of my invention.

Have thus fully described my invention, what I claim as new, and desire to obtain by Letters Patent of the United States, is—

1. In a switch-operating mechanism, the combination with the movable rails of a switch, of a slotted transverse bar connecting said rails, having two sets of seats in its upper edge, dogs pivoted beneath said bar, a cross-head carried by said dogs, normally seated in one set of seats and means for raising said cross-head out of the seats, in which it rests and dropping it in the other set, substantially as described.

2. In a switch-throwing mechanism, the combination with a transverse bar, a longitudinally-slidable bar, a cross-head adapted to engage said cross-bar, and pivoted supports for said cross-head adapted to be operated by the longitudinal bar, whereby the said transverse bar will be locked in a predetermined position, when the switch is opened or closed, substantially as described.

3. In a switch-operating mechanism, the combination with the movable rails of a switch, of a transverse bar connecting the same, having portions adapted to be engaged when the switch is closed and when open, pivoted dogs arranged and carrying a cross-head to engage said portions, a bar for actuating the dogs and operating-rods and a bell-crank lever for opening and closing the switch, substantially as described.

4. In a switch-operating mechanism, the combination with the movable rails of a switch, of pivoted dogs intermediate the sides of the rails, a cross-head carried thereby, a transverse bar connecting the said rails, and provided with a slot through which the cross-head projects, a longitudinally-slidable bar adapted to operate the dogs whereby the transverse bar is locked in a predetermined position when the switch is opened or closed, and a bell-crank lever and rods for sliding the transverse bar, substantially as described.

5. In a switch-operating mechanism, the combination with a car, downwardly-projecting pivotally-secured arms extending therefrom, a weighted head on the forward ends of said arms, and wheels on either side of the head, substantially as described.

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