

No. 682,717.

Patented Sept. 17, 1901.

J. W. KOCH.

RAILWAY SWITCH AND AUTOMATIC OPERATING DEVICE.

(Application filed Feb. 5, 1901.)

(No Model.)

2 Sheets—Sheet 1.

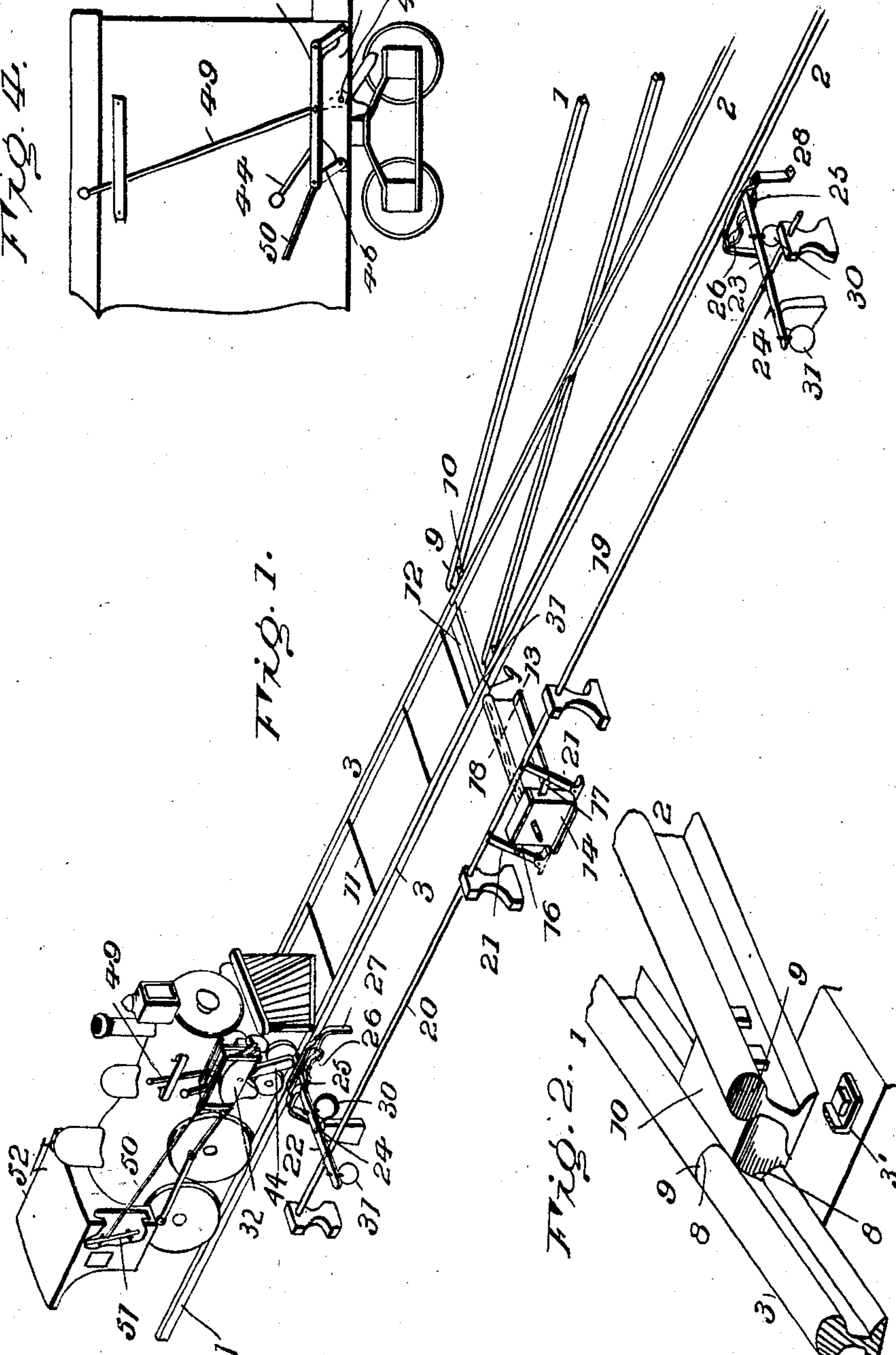
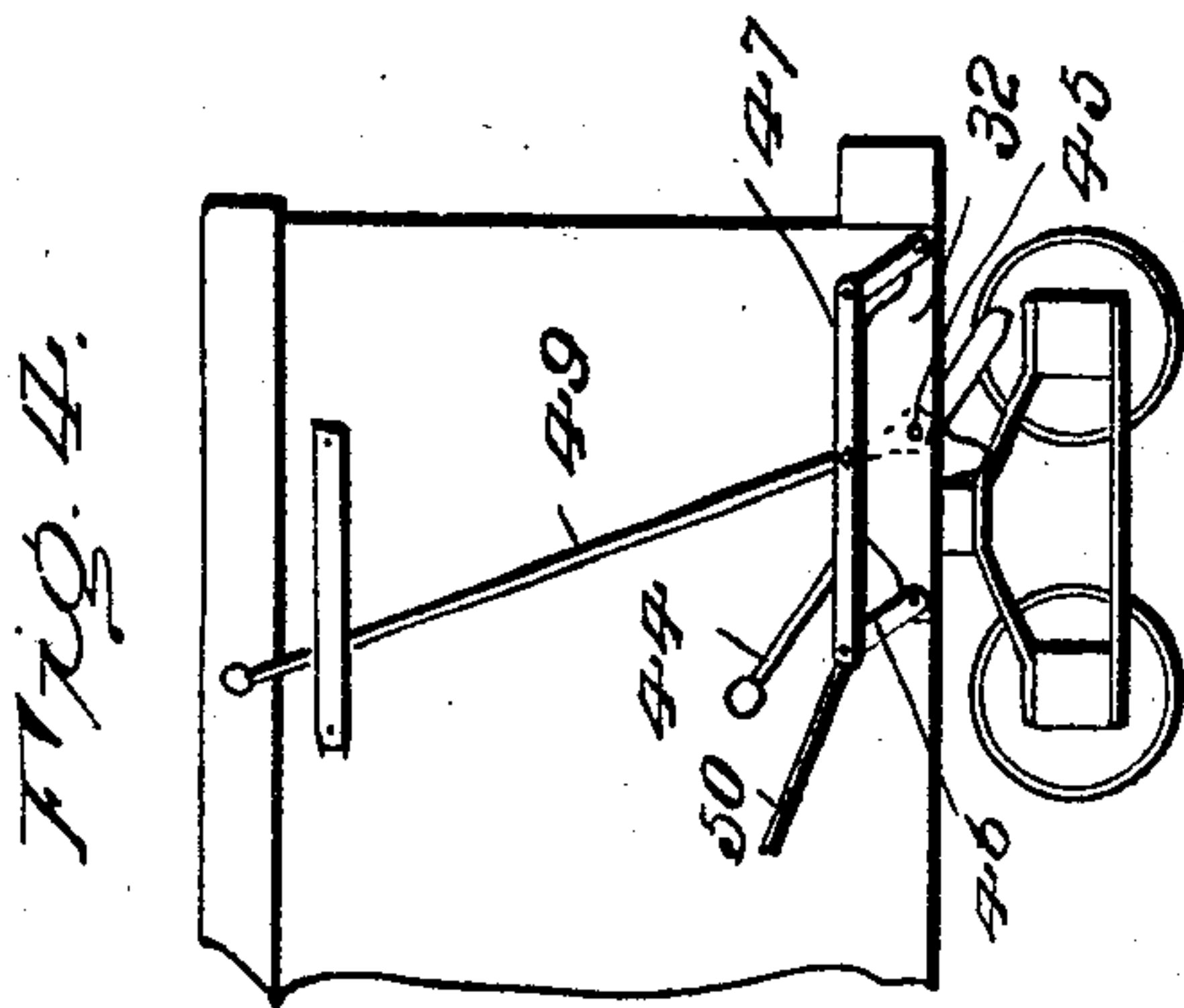
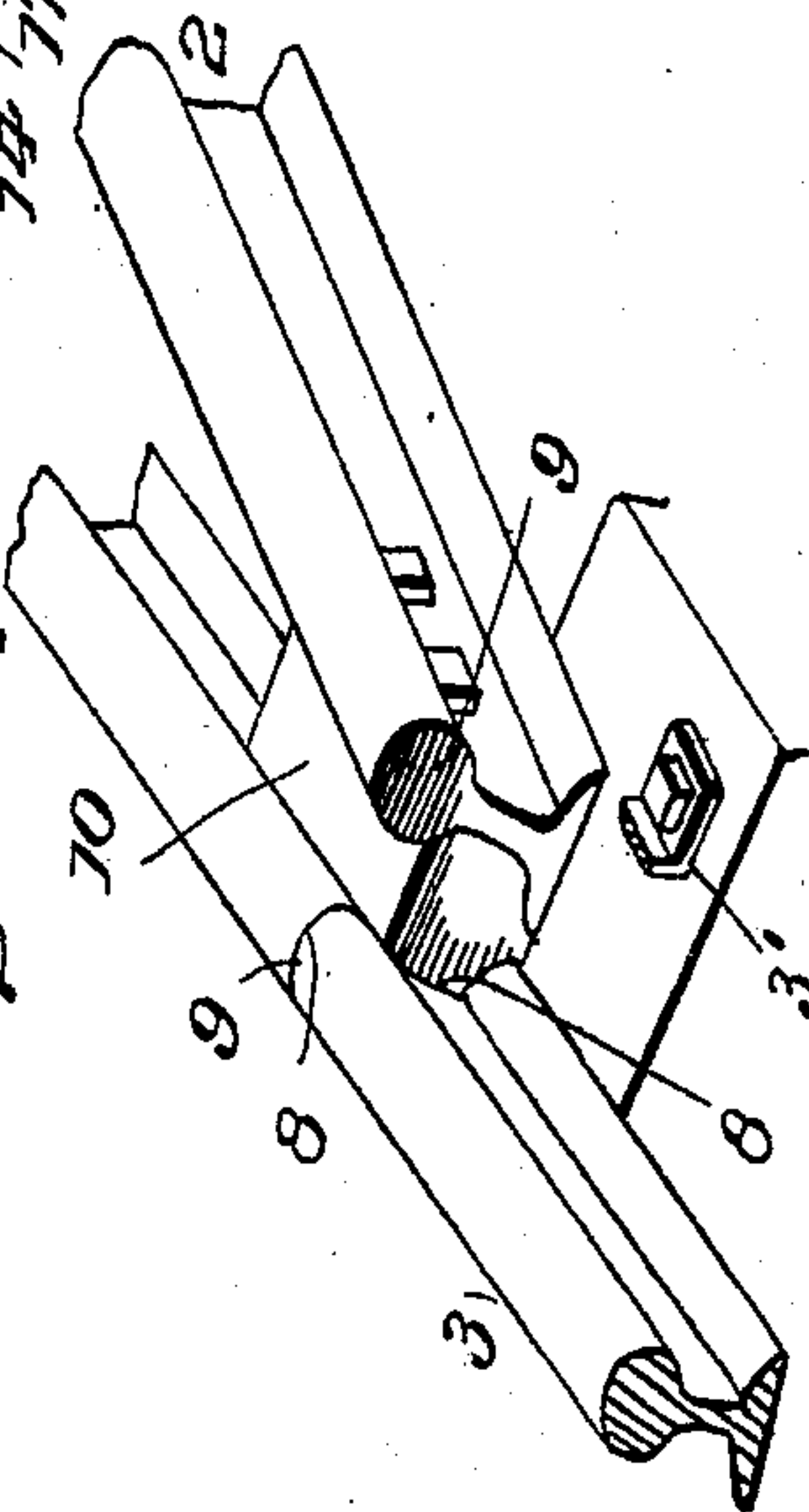


Fig. 2.



Witnesses

*James W. Koch*  
*CM Catlin*

*James W. Koch*

By

*Wm. R. Catlin*

Attorney

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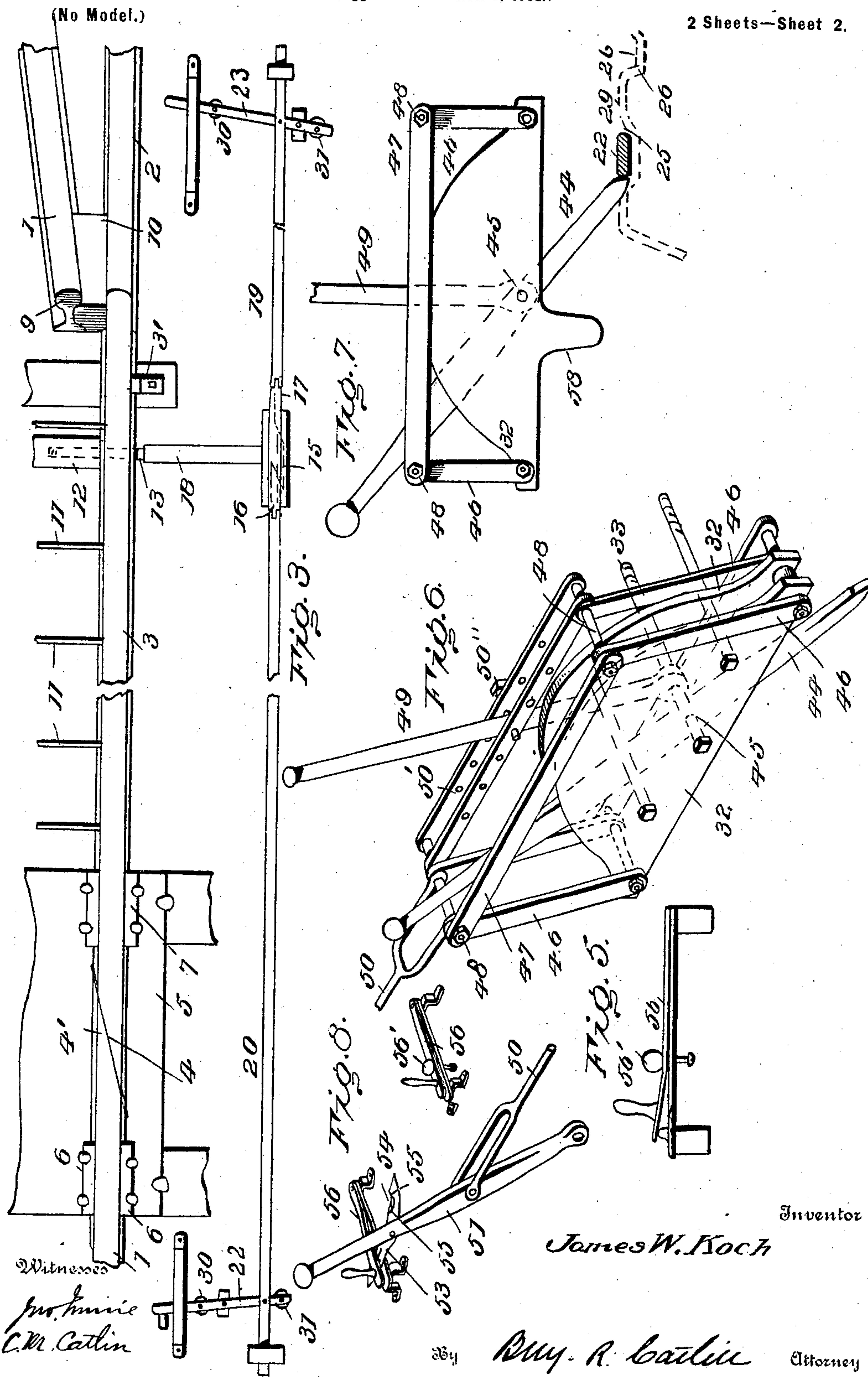
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Inventor

James W. Koch

Attorney

Ruy. R. Catlin



# UNITED STATES PATENT OFFICE.

JAMES W. KOCH, OF REYNOLDS, PENNSYLVANIA.

## RAILWAY-SWITCH AND AUTOMATIC OPERATING DEVICE.

SPECIFICATION forming part of Letters Patent No. 682,717, dated September 17, 1901.

Application filed February 5, 1901. Serial No. 46,082. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES W. KOCH, a resident of Reynolds, in the county of Schuylkill and State of Pennsylvania, have invented certain new and useful Improvements in Devices for Operating Switch-Levers and Switches; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

This invention relates to railway-switches of the class which are operated by devices on a vehicle moving on the track, as shown, for example, in my Patents No. 663,907, dated December 18, 1900, and No. 666,899, dated January 29, 1901.

The main objects of the invention are to provide an improved switch and improved means for operating the same, as hereinafter set forth.

In the accompanying drawings, Figure 1 is a perspective view of an engine, a switch, and operating devices. Fig. 2 is a perspective of a short section of main, branch, and switch rails. Fig. 3 is a plan view, but one side of the track being shown, the other side or half being like the part shown. Fig. 4 shows the switch-lever-operating device on a freight-car. Fig. 5 is a side view of a spring-catch. Fig. 6 is a perspective view of the switch-lever-operating device. Fig. 7 is a side view thereof. Fig. 8 is a perspective view of a distant operating-handle and spring-catches.

1 represents the main track-rails, 2 the branch track-rails, and 3 the movable switch-rails, 3' being stops on the outsides of the switch-rails to limit their movement. The latter at their pivotal ends are formed with long bevels 4, Fig. 3, in vertical planes, which overlap complementary ends 4' of the rails 1. Rail 1 and the switch-rail at this joint are not directly connected together, but are held in co-operative relation, resting on large plate 5 or other suitable support, by separate plates 6 7. This arrangement allows the ends to move independently when necessary—for example, when the main and switch rails expand and contract, in which case the overlap may increase or diminish. This joint is strong and obviates pounding as wheels pass over it. At

the other end of each switch-rail there is a rearwardly and downwardly inclined end 8, adapted to overlies the forwardly and upwardly inclined rail ends 9 of the main and branch track-rails. Between the main and branch rails, at the switch end, where the rails come near together, (and extending from the switch as far as desired,) are bolted blocks 10. These blocks are low enough so that they will not interfere with the vehicle-wheel flanges. They prevent accidental or intentional blocking of the spaces between the rails by stones or other obstructions. The switch-rails are held rigidly together by cross-rods 11, so as to maintain the proper relation.

12 is a body fixed to the switch-rails near the swinging ends, and to the body is secured a rod 13, which extends through box 14, in which box is a double wedge-block 15, Fig. 3, operated forward and backward by wedge-blocks 16 17, as in my patents above referred to. The location of the box may be varied to suit different switches. Between the track and box 14 rod 13 is preferably passed through a protecting-casing 18. This serves to keep snow and the like from the rod.

19 20 are rods extending forward and backward from the box 14, being operatively connected, through suitable levers or devices 21, to the wedge-blocks 16 17. The opposite ends of the rods are connected pivotally to the switch-levers 22 23, having pivots 24, and each lever normally resting with one of its ends in one of the two notches 25 or 26 in the top of bracket 27 or 28.

29 is a flat high part of the bracket between the notches.

In my Patent No. 663,907, referred to, the switch-levers are each shown with a heavy weight at one side of the pivot normally holding the switch-lever down in said notch. I find that the operation of the levers is improved by placing other weights not quite counterbalancing the first on the opposite side of the pivots. The weights 30 31 increase the inertia of the switch-levers, but at the same time lessen the force required to move the levers as compared with the one-weight construction shown in my patent.

Referring now to the device on the vehicle (engine or car) on the track for operating the



switch-levers, 32 32 are approximately semi-circular plates rigidly fixed to the vehicle near its forward end, as by bolts 33. 44 is a heavy lever pivoted between said plates at 5 45. The lower end of this lever is normally raised, so as not to strike any switch-lever which the vehicle may pass. The lever may, however, be moved to operative position either directly or through suitable devices—for ex- 10 ample, through the frame consisting of links 46, pivoted at their lower ends to the plates 32 and at their upper ends connected by longer links or bars 47 and bolts 48. In its normal inoperative position the heavy lever 15 44 rests against one of the bolts 48. 49 is a lever, also pivoted on bolt 45 and connected to the frame by bolt 50' or by a bolt on either side of the lever, the position of which may be varied by moving the bolts to different 20 holes 50' in the bars or links 47. By this lever the frame can be adjusted by a person at the forward end of the engine or other vehicle. This lever may be long enough to reach to the top of the vehicle—for example, when 25 the switch-lever-operating device is used on a freight-car, Fig. 4. The frame may also be operated from a distance, such as the opposite end of the vehicle. For this purpose in Fig. 1 is shown a rod 50, connected to the bolt 48 of 30 the frame and to lever 51 at the opposite end of the vehicle, as in the cab 52 of an engine or at the opposite end of a freight-car. The lever 51 is provided with a rod 53, having a notch 54 at each end with inclined sides 55. 35 On opposite sides of the lever, at the extremities of motion thereof, are spring-catches, the springs 56 of which fall into the notches 54 as the lever is in its forward or its backward position. The springs may carry weights 56' 40 to increase their holding power and quickness of operation. When a strong pull is given to lever 51, directly or by means of lever 49, the spring of the catch will yield and leave its notch. When lever 51 is operated 45 directly, spring 56 may be raised by hand to give an easier motion to said lever. I do not limit myself to this particular means for normally holding the lever out of operation. Other parts of the apparatus also may be 50 modified somewhat without departing from my invention.

In Figs. 6 and 7 the frame is in position to lower the bottom of the heavy lever, so that on reaching a switch-lever 22 it will strike 55 said switch-lever, starting it along and raising it onto part 29 of the bracket, the lever 44 being itself thrown over to its reverse position when the switch-lever is struck by the rigid lug 58 and carried along to the opposite 60 notch, this construction and operation being set forth in my patents referred to and which therefore need not be described in detail herein. When lever 44 has operated the switch-setting lever 22 and through the connecting 65 parts has set the switch, lever 44 may be set by the frame and rod 50 or by rod 49, so that

it will strike and operate the resetting-lever 23 as the engine passes it.

I claim—

1. The combination with a track-vehicle, 70 of a switch-lever-operating device carried by the vehicle, said device consisting of a heavy pivoted lever normally out of operating position but movable into operative position, said lever when in operative position being free to 75 swing forward and reverse its position when its lower end is arrested by striking a switch-lever, guide-plates for said heavy lever, and a frame for setting the heavy lever, said frame consisting of links 46 pivoted at their lower 80 ends and at their other ends connected by bars 47 and by transverse bolts adapted to operate on the heavy lever to change its inclination at will, and means for adjusting the position of said frame. 85

2. The combination with a track-vehicle, of a switch-lever-operating device carried by the vehicle, said device consisting of a heavy pivoted lever normally out of operating position but movable into operative position, said 90 lever when in operative position being free to swing forward and reverse its position when its lower end is arrested by striking a switch-lever, guide-plates for said heavy lever, and a frame for setting the heavy lever, said frame 95 consisting of links 46 pivoted at their lower ends and at their other ends connected by bars 47 and by transverse bolts adapted to operate on the heavy lever to change its inclination at will, and means adapted to be 100 operated at a distance for adjusting the position of said frame.

3. The combination with a track-vehicle, of a switch-lever-operating device carried by the vehicle, said device consisting of a heavy 105 pivoted lever normally out of operating position but movable into operative position, said lever when in operative position being free to swing forward and reverse its position when its lower end is arrested by striking a 110 switch-lever, guide-plates for said heavy lever, and a frame for setting the heavy lever, said frame consisting of links 46 pivoted at their lower ends and at their other ends connected by bars 47 and by transverse bolts 115 adapted to operate on the heavy lever to change its inclination at will, and means consisting of a lever, and a rod connecting the lever and frame for adjusting the position of said frame. 120

4. The combination with a track-vehicle, of a switch-lever-operating device carried by the vehicle, said device consisting of a heavy pivoted lever normally out of operating position but movable into operative position, 125 said lever when in operative position being free to swing forward and reverse its position when its lower end is arrested by striking a switch-lever, guide-plates for said heavy lever, and a frame for setting the heavy lever, 130 said frame consisting of links 46 pivoted at their lower ends and at their other ends con-



5 nected by bars 47 and by transverse bolts adapted to operate on the heavy lever to change its inclination at will, and means consisting of a lever, and a rod connecting the lever and frame for adjusting the position of said frame, and spring-catches on each side of the distant lever for normally holding said lever in one of its extreme positions.

10 5. The combination with a track-vehicle, of a switch-lever-operating device carried by the vehicle, said device consisting of a heavy pivoted lever normally out of operating position but movable into operative position, said lever when in operative position being  
15 free to swing forward and reverse its position when its lower end is arrested by striking a switch-lever, guide-plates for said heavy lever, and a frame for setting the heavy lever, said frame consisting of links 46 pivoted at

their lower ends and at their other ends connected by bars 47 and by transverse bolts adapted to operate on the heavy lever to change its inclination at will, and means consisting of a lever, and a rod connecting the lever and frame for adjusting the position of said frame, and spring-catches on each side of the distant lever, a rod secured to the lever and having notches near its opposite ends adapted to be engaged by the spring-catches, said notches having inclined ends whereby  
20 25 30 the catches will yield to a strong pull.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JAMES W. KOCH.

Witnesses:

JAMES M. STAPLETON,  
C. F. SHINDEL.