

(No Model.)

2 Sheets—Sheet 1.

W. G. LEWIS.
TRAMWAY SWITCH.

No. 585,767.

Patented July 6, 1897.

Fig. 1.

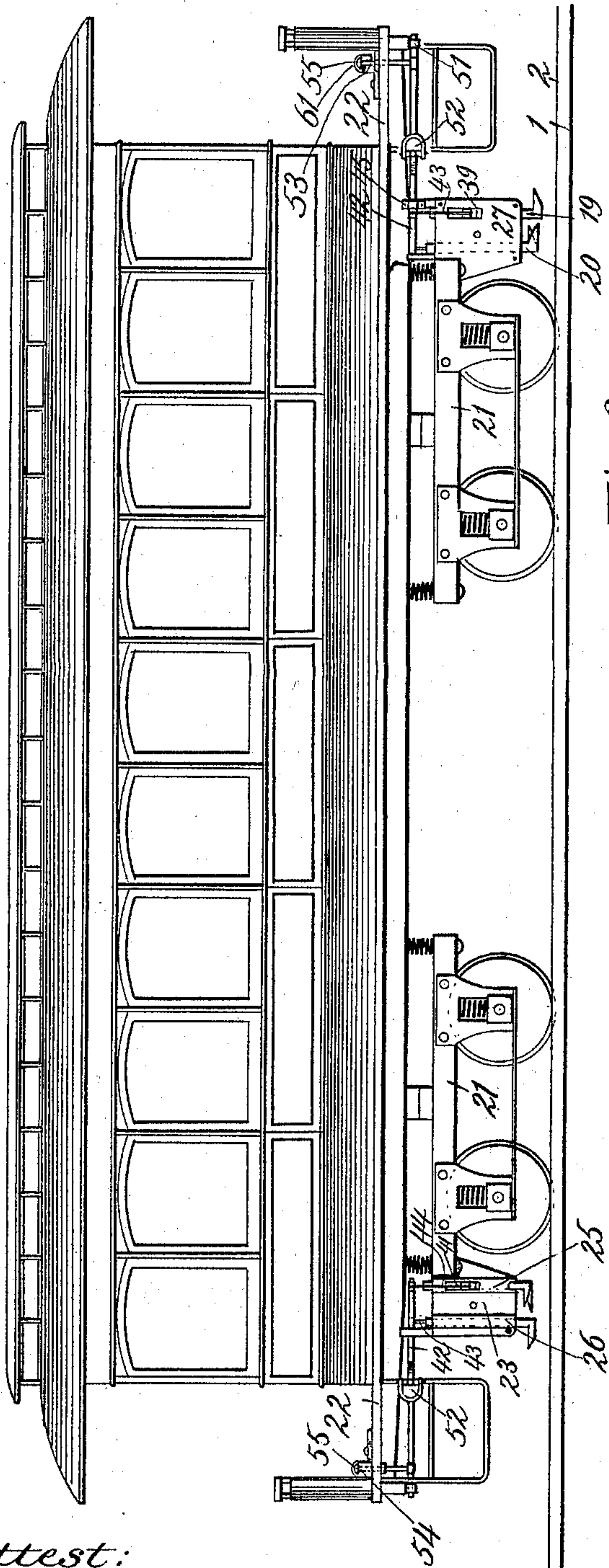


Fig. 2.

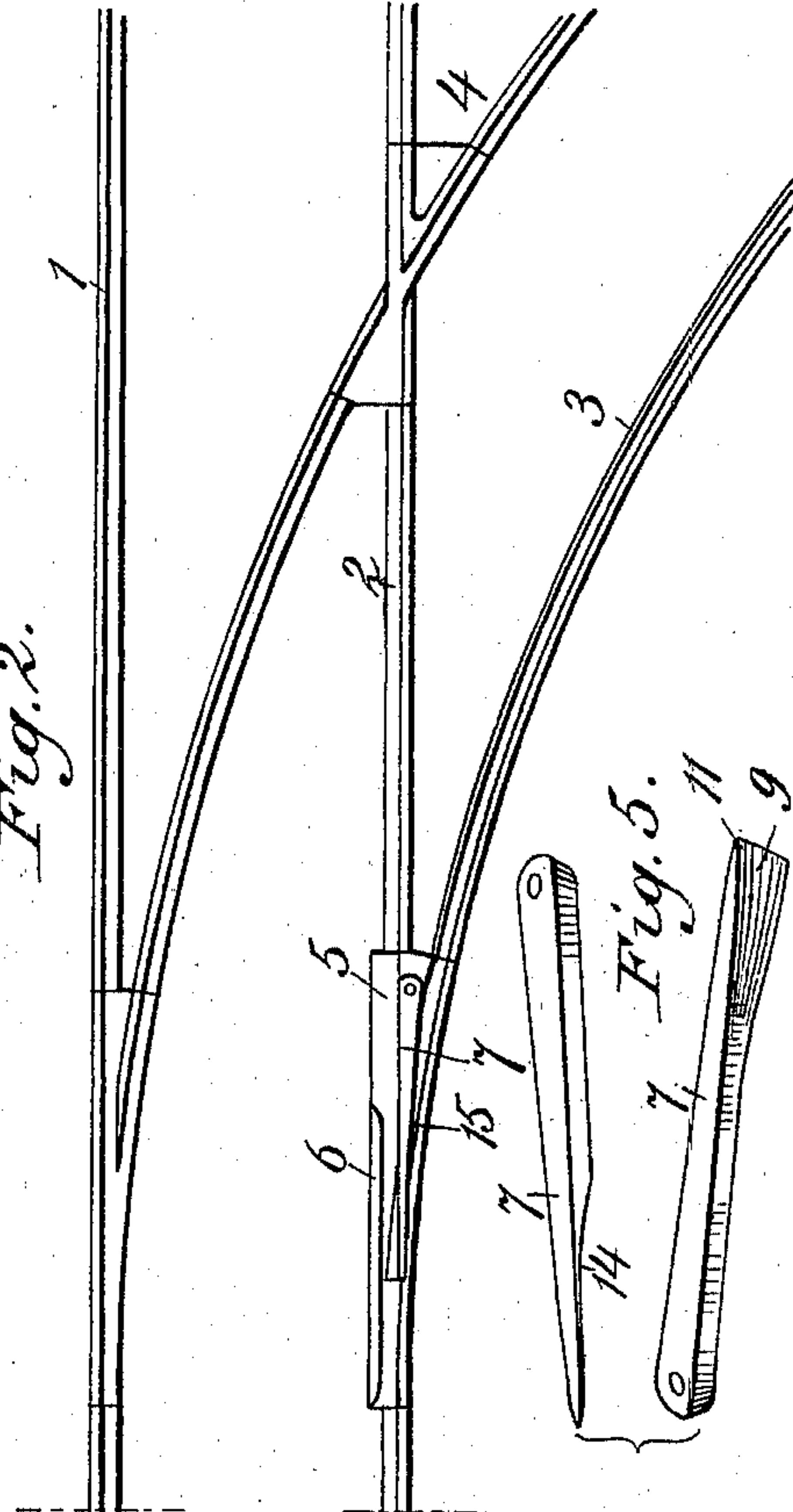
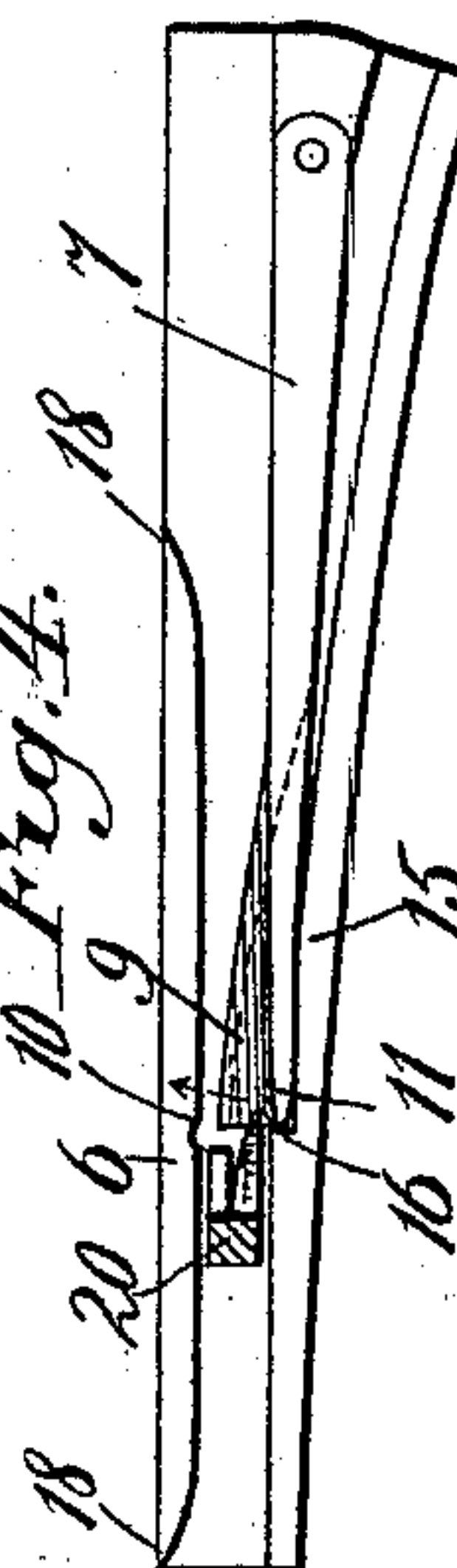


Fig. 3.



Fig. 4.



Attest:

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A. M. Perkins

Inventor:

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By *Lucie & Goldsborough*
Attys:

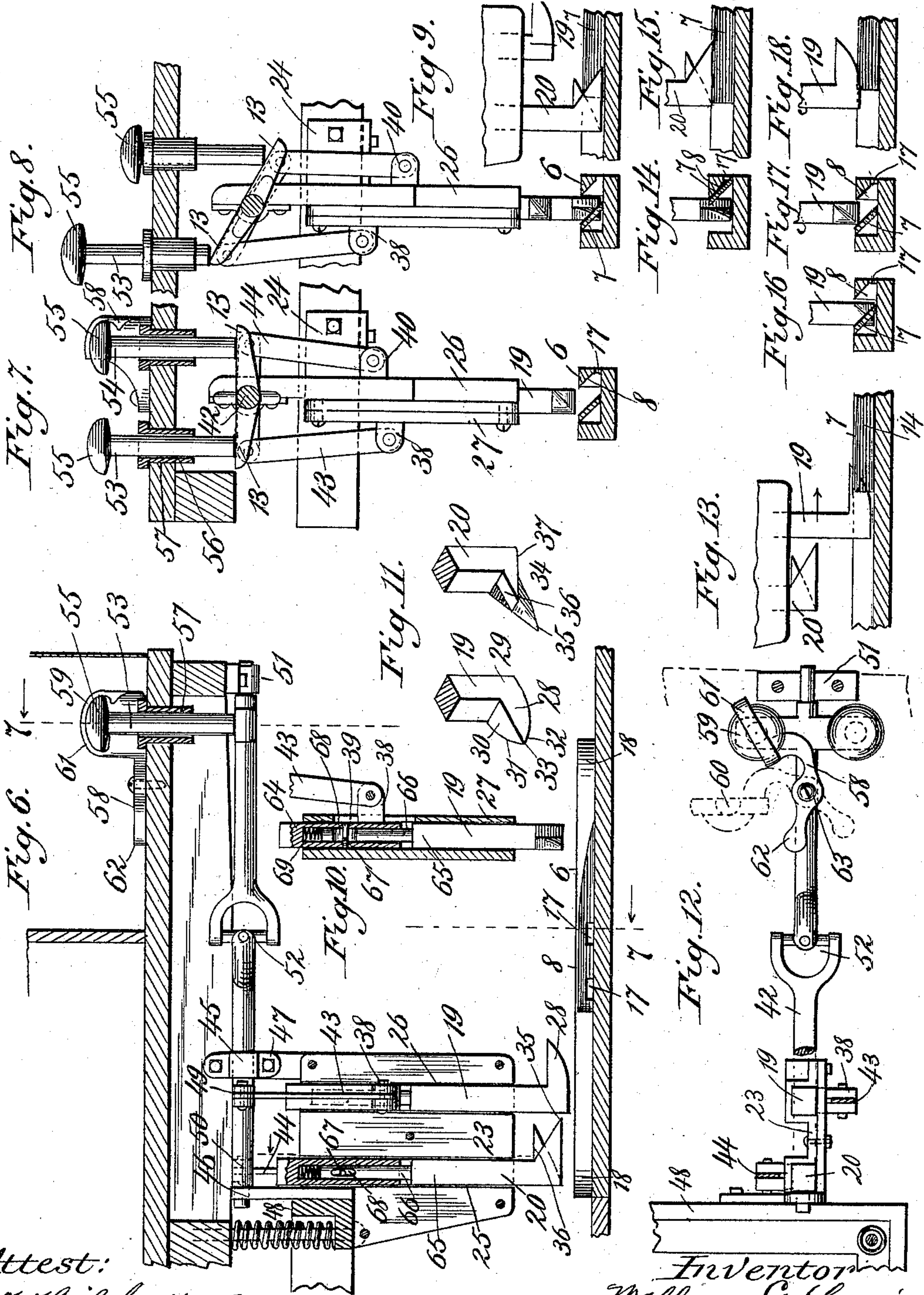
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UNITED STATES PATENT OFFICE.

WILLIAM G. LEWI, OF ALBANY, NEW YORK.

TRAMWAY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 585,767, dated July 6, 1897.

Application filed September 8, 1896. Serial No. 605,137. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM G. LEWI, a citizen of the United States, residing at Albany, in the county of Albany and State of New York, have invented certain new and useful Improvements in Tramway-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 appertains to make and use the same.

My invention relates to tramway-switches, the object being to throw the switch-point so as to open or close the switch by devices carried by the car and under the control of the driver or motorman.

The improvements embrace features of construction of the switch-point and guard-rail, as well as of the switch-operating devices arranged on the car, as will be hereinafter specifically described, and defined in the appended claims.

In the accompanying drawings, Figure 1 is a side elevation of a street-railway car equipped with my improved switch-operating mechanism. Fig. 2 is a plan view of a tramway-switch constructed in accordance with my invention. Figs. 3 and 4 are detail plan views illustrating the movements of the switch-point, the shoe for throwing the switch being shown partly in section. Fig. 5 shows the switch-point detached. Fig. 6 is a side elevation, partly in section and on a larger scale, of the switch-throwing mechanism arranged on a car, the switch and a part of a car being shown in vertical section. Fig. 7 is a front elevation, partly in section, of the switch-operating mechanism, the switch itself being shown in transverse section. Fig. 8 is a like view showing the mechanism in position to throw the switch. Fig. 9 is a detail side elevation of the switch-shoes with the switch in longitudinal vertical section. Fig. 10 is a vertical sectional elevation of one of the switch-throwing bars and its supporting and operating mechanism. Fig. 11 illustrates in detail the construction of the switch-shoes. Fig. 12 is a plan view of the push-rods for operating the switch-bars, the connections between said push-rods and the bars, and means for locking the push-rods against movement. Figs. 13, 14, 15, 16, 17, and 18

are detail sectional views of the switch and shoes.

The reference-numerals 1 and 2 indicate the rails of the main track of a railway, and 3 and 4 the rails of a siding.

5 is the switch, provided with a guard-rail 6 and a pivoted switch-point 7. The guard-rail 6 is beveled or undercut on the side adjacent to the switch-point 7 to form a pocket 8 to receive the inclined projecting lower edge 9 of said switch-point. The inner edge of the guard-rail is also notched to form a shoulder 10, which coöperates with the beveled end 11 of the switch-point to form a flaring slot 12, into which one of the contact-shoes is guided, as best shown in Fig. 3. As illustrated in Figs. 4 and 5, the free end of the switch-point is inclined or spirally turned to form the wing or edge 9, projecting laterally beyond the top edge of the switch-point and the beveled surface 14. The inner edge of the switch-rail 15 is cut away to form a shoulder 16, with which the end 11 of the switch-point alines, as shown in Fig. 4.

The side of the guard-rail 6 is formed with one or more openings 17 to facilitate the discharge of dirt or dust from the pocket 8, (see Fig. 6,) and the ends 18 of the guard-rail are rounded or beveled, as shown.

The switch-point 7, constructed as above described, is adapted to be thrown by means of switch-bars 19 and 20, supported in parallel relation to each other between the car-truck 21 and platform 22 by a frame 23, secured to the car-truck by a bracket 24. The frame 23 is provided with two guideways 25 and 26, which receive the vertically-movable bars 19 and 20. A cap-plate 27 secures the bars within the ways of the frame. The forward switch-bar 19 is provided at its lower end with a shoe 28 of the form shown in Fig. 11, having its inner and upper sides 29 and 30 plane and its outer and lower sides 31 and 32 rounded or beveled to form a point 33, said point being in the same vertical plane as the inner side of the bar 19 to adapt it to enter the slot 12 and throw the switch-point into alinement with the main-line track. The beveled lower and outer sides of the shoe 28 serve to permit the shoe, after throwing the switch, to ride up between the guard-rail and

switch-point, thus raising the shoe and the bar 19 to their normal position with the shoe out of contact with the tread-surface of the track. This automatic return movement of the shoe, after being depressed by the mechanism hereinafter described, is due to the fact that the shoe is wider than the space between the guard-rail and switch-point, and the contact of the beveled or rounded surfaces 31 and 32 with the guard-rail and switch-point forces the bar 19 upward.

The rear switch-bar 20 is provided at its lower end with a shoe 34, beveled at its upper and inner sides to form a point 35, which is adapted to project below and engage the edge 9 of the switch-point when the latter is in alinement with the main track and throw the switch to permit the car to pass to the siding. The shoe 34 is provided on its inner side with a prong or projection 36, upwardly beveled at its under surface 37 to adapt it to ride up over the end of the switch-point to raise the bar 20 after the switch is thrown.

The bar 19 is provided at its outer side with a bifurcated lug 38, projecting through a vertically-elongated slot 39 in the cap-plate 27. A bifurcated lug 40 projects from the outer side of the bar 20 through an elongated slot 41 in the frame 23. These lugs 38 and 40 are respectively connected to opposite sides of a rock-shaft 42 by means of links 43 and 44, one on either side of the frame 23.

The rock-shaft is mounted in bearings 45 and 46, formed in brackets 47 and 48, projecting upwardly from the top of the frame 23, and is provided on opposite sides with arms 49 and 50, to which the upper ends of the links 43 and 44 are pivotally secured, the lower ends of said links having a pivotal connection, respectively, with the lugs 38 and 40. The forward end of the rock-shaft is supported in a bracket-bearing 51, secured to the under side of the car-platform, and at about the center of its length the shaft 42 is provided with a universal joint 52 of any suitable form—as, for example, a gimbal-joint—as shown.

Near its forward end the rock-shaft is provided with oppositely-projecting arms 13, against which bear the lower ends of push-rods 53 and 54, the upper ends of which are provided with heads 55, adapted to serve as treadles for depressing the rods. The car-platform 22 is provided with openings 56, through which the push-rods extend, suitable bushings 57 being provided for the openings.

For the purpose of locking the push-rods against movement I provide a catch or dog 58, pivoted upon the car-platform and provided with a hood 59, slotted at the point 60 to embrace the rod 53, and having a loop 61 fitting over the head of the rod. The projecting end 62 of the catch serves as a foot-piece for turning the catch upon its pivot 63.

For the purpose of permitting a limited vertical yielding play of the bars 19 and 20 in case

obstructions are encountered in their travel I preferably construct each of said bars of two telescoping sections. (See Fig. 10.) The upper section 64 is of tubular form, while the lower section 65 is reduced circumferentially to form a rod 66, extending into the tubular upper section and connected thereto by a removable transverse pin, screw, or bolt 67, which extends through a vertically-elongated slot 68, formed in the reduced upper end 66 of the bar. A coil-spring 69 is arranged within the hollow upper section of the bar, and the upper end of the lower section is thus cushioned in its upward movement.

The operation of the mechanism is as follows: Normally both of the switch-shifting shoes are supported above the rails. If the switch-point is set so that it would shunt the car onto the side-track and it is desired to throw the switch-point to permit the car to continue on the main track, the driver or car-attendant depresses the push-rod 53, thus turning the rock-shaft 42 and depressing the bar 19. The contact of the shoe 28 with the point 11 of the switch forces the latter from the position shown in Fig. 3 to that shown in Fig. 4, thus throwing the switch-point into alinement with the main track. The continued forward movement of the shoe 28 causes it to rise to its normal position, as has already been explained.

If the switch is set for the main track, as shown in Figs. 2 and 4, and it is desired to direct the car onto the side-track, the push-rod 54 is depressed, with the effect of lowering the rear bar 20, so that the point 35 of its shoe is projected under the edge 9 of the switch-point (see Figs. 8, 9, and 15) to shift the latter to the position shown in Fig. 3.

It will be observed that the link connections between the vertically-movable bars 19 and 20 and the rock-shaft 42 are such that it is impossible for both bars to be depressed at the same time, since the movement of the rock-shaft which depresses one of said bars also simultaneously raises the other bar.

The universal joint connecting the two sections of the rock-shaft enables the bars 19 and 20 to be operated without regard to the position of the car-body with relation to the car-truck, it being understood that the car-body is more or less depressed upon the springs of the truck, accordingly as the load is heavy or light.

When the push-rods are locked, both of the shifting-shoes are held above the level of the track and in substantially the same horizontal plane, as shown in Fig. 1.

Having thus described my invention, what I claim is—

1. A railway-switch point, the free end of which is inclined from the vertical to present laterally-projecting edges adapted to be engaged by a traveling contact device.

2. In a railway-switch, a switch-point inclined from the vertical at its free end to pre-

sent laterally-projecting upper and lower edges adapted to be engaged by a traveling contact device.

3. In a railway-switch, a switch-point provided with a laterally-projecting wing in combination with a guard-rail inwardly beveled or recessed on its inner face to receive the lower edge of the switch-point.

4. In a railway-switch, a switch-point the free end of which is transversely inclined from the vertical to present laterally-projecting upper and lower edges, in combination with a guard-rail recessed or beveled on its inner face, and notched at its inner edge.

5. In a railway-switch, the combination of a switch-point provided at its free end with a laterally-projecting wing, a switch-rail recessed at its inner face, and a guard-rail recessed or beveled at its inner face, and notched at its inner edge.

6. In a railway-switch, the combination of a switch-point provided at its free end with a laterally-projecting wing, and longitudinally beveled at said free end, a switch-rail recessed at its inner face, and a guard-rail recessed at its inner face to receive the projecting wing of the switch-point, and notched at its inner edge.

7. The combination with a car or the like, of switch-shifting mechanism comprising a vertically-movable shoe, said shoe being adapted to engage and shift a switch-point, and beveled to adapt it to ride up between the guard-rail and switch-point to raise the bar to normal position after the switch-point has been shifted.

8. In a railway-switch, the combination with a switch-point provided at its free end with a laterally-projecting wing, of switch-shifting mechanism comprising a pair of vertically-movable shoes, one of said shoes being adapted to project under the wing of the switch-point to shift the latter in one direction, and the other shoe being adapted to engage the switch-point above its wing to shift the switch in the opposite direction.

9. The combination with a car or the like, of switch-shifting mechanism comprising two vertically-movable shoes arranged one behind the other and supported beneath the car, a rock-shaft supported in bearings beneath the car, connections between the shoes and rock-

shaft, push-rods arranged on the car-platform and adapted to simultaneously depress one of said shoes and raise the other, the forward shoe being beveled on its outer and under faces, while the shoe on the rear bar is beveled on its upper and inner sides and provided with a prong or projection for automatically raising its bar after the shifting of the switch.

10. The combination with a car or the like, of switch-shifting mechanism, comprising vertically-movable shoes, a rock-shaft, connections between the shoes and rock-shaft, push-rods extending through the car-platform and adapted to operate the shaft, and a pivoted catch provided with a hood which engages the head of one of said push-rods both above and below the head, thus locking both push-rods against movement.

11. The combination with a car or the like, of switch-shifting mechanism, comprising a vertically-movable shoe, a rock-shaft, a connection between the shoe and rock-shaft, a push-rod extending through the car-platform and adapted to operate the shaft, and a pivoted locking-catch for said push-rod, provided with a slotted hood to engage the head of the rod, and a projecting foot-piece.

12. The combination with a car, or the like, of switch-shifting mechanism comprising a vertically-movable shoe-carrying bar consisting of telescoping sections, one of which is formed with a vertically-elongated slot, a cross-pin extending through said slot, and a spring interposed between the sections.

13. A traveling contact-shoe for switches, said shoe being rounded or beveled on its under and outer sides to adapt it to throw a switch-point, and to subsequently ride up between the switch-point and guard-rail.

14. A traveling contact-shoe for switches, said shoe being beveled on its upper and inner sides to adapt it to engage the switch-point and provided with a prong or projection adapted to ride up over the switch-point to raise the shoe.

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

WILLIAM G. LEWIS.

Witnesses:

ROBERT G. SCHERER,
PIERRE L. MORANGE.