

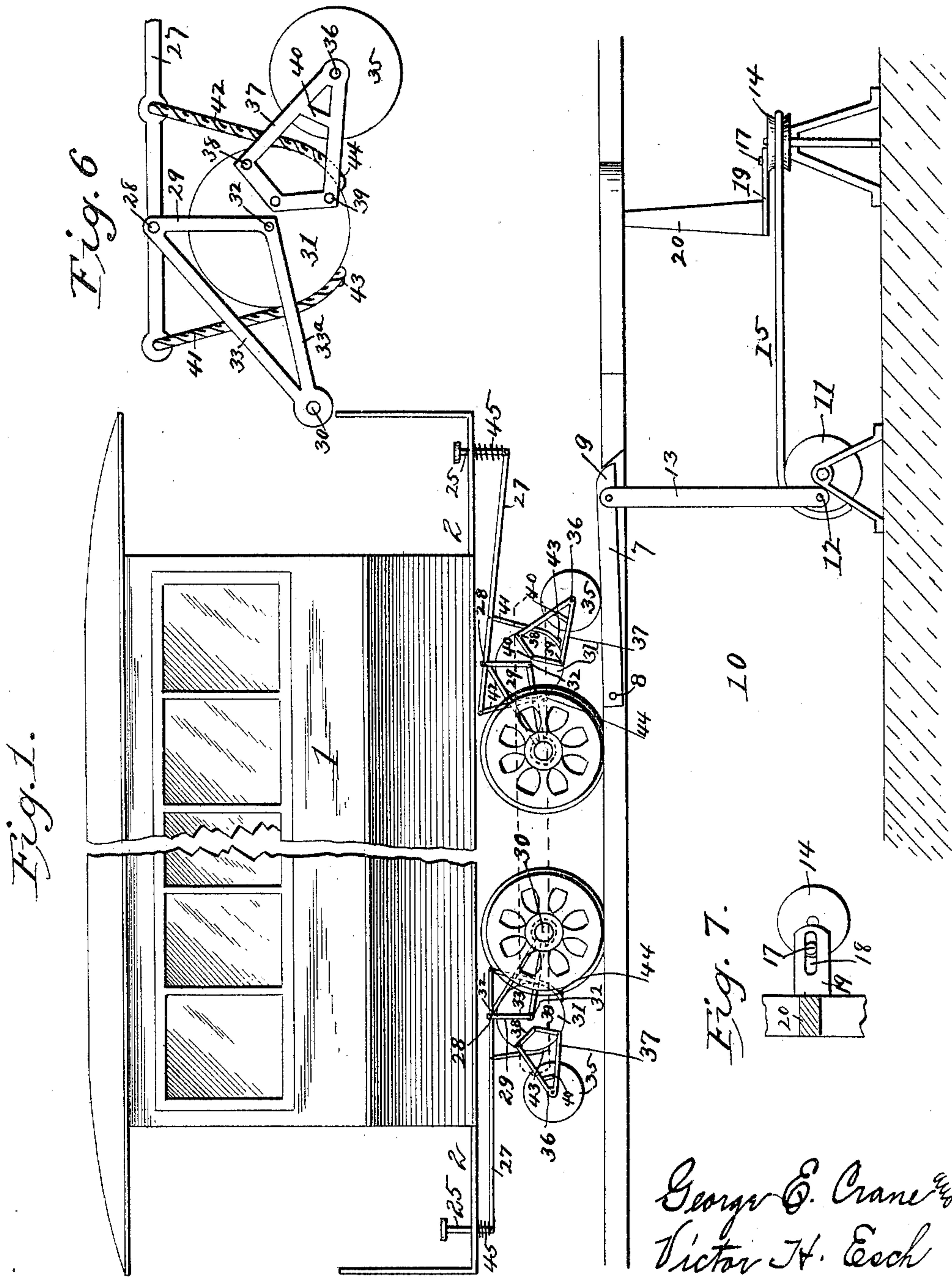
(No Model.)

2 Sheets—Sheet 1.

G. E. CRANE & V. H. ESCH.
SWITCH FOR STREET RAILWAYS.

No. 600,407.

Patented Mar. 8, 1898.



WITNESSES

A. B. Rogers
L. D. Hennrichs

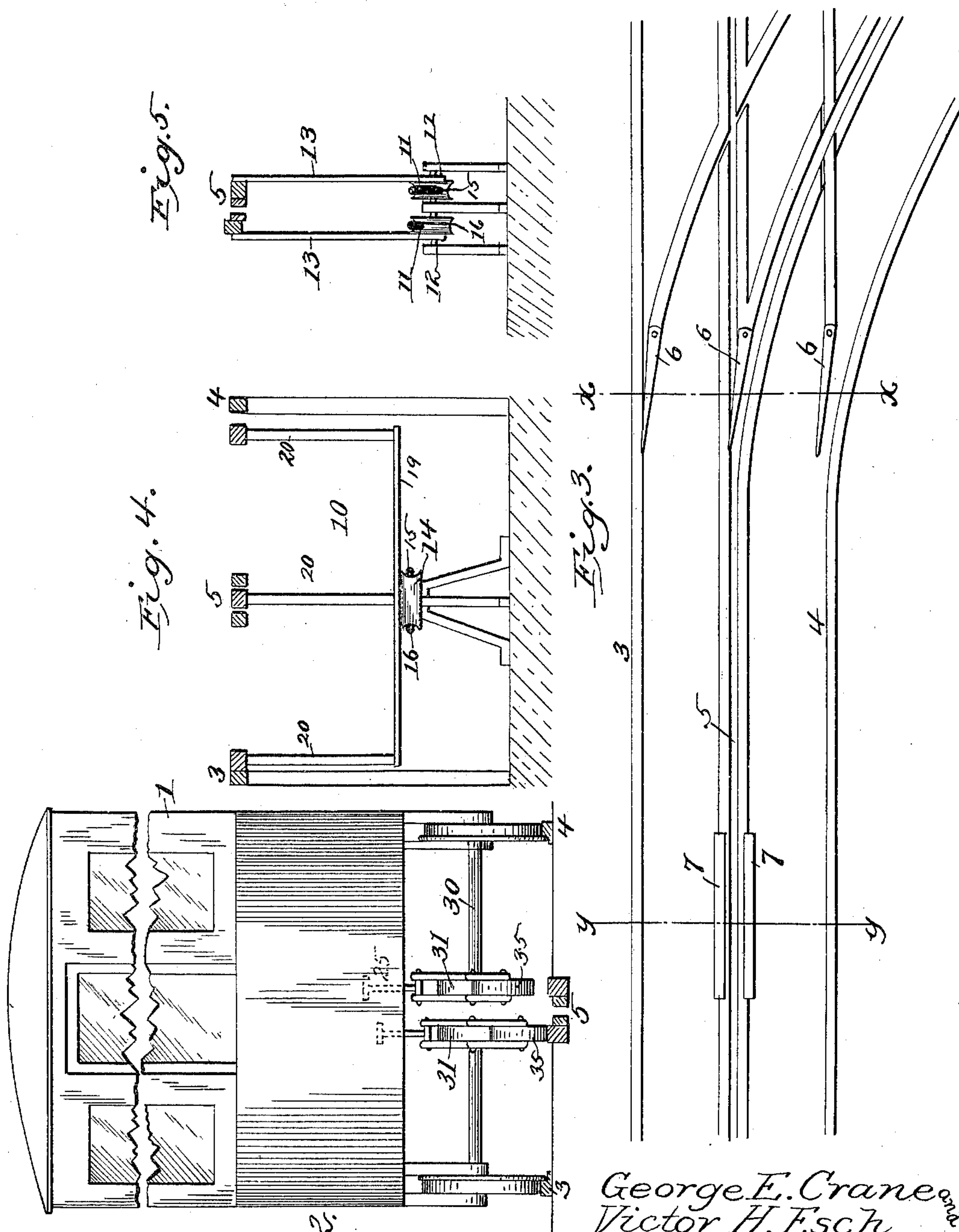
INVENTORS

*George E. Crane &
Victor H. Esch*
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A. B. Duggan

L. D. Heinrich

Fig. 2.

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UNITED STATES PATENT OFFICE.

GEORGE E. CRANE AND VICTOR H. ESCH, OF WASHINGTON, DISTRICT OF COLUMBIA; SAID ESCH ASSIGNOR OF HIS RIGHT AND SAID CRANE ASSIGNOR OF ONE-THIRD OF HIS RIGHT TO FRANCIS A. HOPPING, ADAM H. BECK, AND JEROME B. BURKE, OF SAME PLACE, AND WILLIAM J. H. TRAYNOR, OF DETROIT, MICHIGAN.

SWITCH FOR STREET-RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 600,407, dated March 8, 1898.

Application filed March 10, 1897. Serial No. 626,869. (No model.)

To all whom it may concern:

Be it known that we, GEORGE E. CRANE and VICTOR H. ESCH, citizens of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Switches for Street-Railways; and we do 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, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

This invention has relation to switches more particularly intended for street-railways; and it consists in certain peculiarities in the construction, arrangement, and combination of the several parts, substantially as hereinafter described, and particularly pointed out in the subjoined claims.

The object of the invention is to provide a simple, cheap, durable, and efficient switching mechanism for street-railways which may be operated from the car-platform by the foot of the motorman, gripman, or driver of the car, thus obviating the necessity of employing some one specially to set the switches or of requiring the conductor or driver to leave the car for that purpose, and at the same time leaving the hands of the motorman, gripman, or driver free to control the motive power of the car while the switches are being set by him. This object is accomplished by the construction illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a car provided with our improved switch-setting mechanism and of the portion of the switching means located within the road-bed, the parts being shown in the position they occupy while the switch is being set. Fig. 2 is a front view of a car provided with the switch-setting mechanism. Fig. 3 is a plan view of one side of the road-bed. Fig. 4 is a vertical transverse section on the line *x x* of Fig. 3. Fig. 5 is a vertical transverse section through *y y* of Fig. 3. Fig. 6 is an enlarged detail of the

wheels and supports for depressing track-levers, and Fig. 7 is a detail showing connection of horizontal pulley with switch-supports.

The same numerals of reference designate the same parts in the several views.

1 designates the body of a car; 2 2, the platforms at the ends thereof; 3 and 4, the rails of the road-bed, and 5 the slot for the passage of the grip-lever or electric conductor into the conduit when the device is employed upon a road using cable or underground electricity as the motive power. Mounted at opposite sides of said slot 5, at a suitable distance from the switch-rails 6, are track-levers 7 7 for controlling the switches. Each of these levers is pivoted at one end, as shown at 8, and extends thence to and slightly above the level of the track, and its free end is formed to extend below the level of the road-bed contiguous to said slot, as shown at 9, so as to prevent it from rising too far. Suitably journaled within the conduit 10 or below the level of the rails is a pulley 11 for each track-lever, each of which pulleys is provided with a pin 12, eccentric to the center thereof, to which is attached the lower end of a rod 13, connecting it with the free end of its lever.

14 designates a horizontal pulley suitably journaled and supported within the conduit and beneath the switches. This pulley 14 is connected separately with both pulleys 11 by means of suitable cables or lines 15 and 16, which are properly secured at one end to the periphery of the respective pulleys 11 and at their other ends to the periphery of said pulley 14. Said pulley 14 is also provided with an upwardly-projecting pin 17, which is received within an elongated opening 18, formed in or connected with a transverse movable rod 19, which latter carries a plurality of arms 20, attached to the respective switches 6.

From the above description it will be seen that when the free end of either lever 7 is pressed downward the pulley 11 connected therewith will be turned in its bearing and pull upon the cable connected with it, thus turning the pulley 14 to the right or left, according to which of the levers is depressed,

and causing the arms 20 to move to the right or left across the road-bed, but in a straight line, by reason of the provision of the elongated slot 18 and pin 17, thereby setting the switches and causing the car to travel upon one or the other tracks from the switches, as required. Although we have shown three switches for each track, two for the rails thereof and one for the slot between the rails, it is obvious that one of the rail-switches may be dispensed with and that when the switching mechanism is to be used upon other systems than those employing underground cables or conductors the intermediate switch for controlling the grip-lever or depending trolley may also be dispensed with. The means for depressing said levers 7 are carried by the car and are under the control of the foot of the gripman, motorman, or driver of the car. Four of said operating means are preferably provided for each car in order to meet all the conditions of service; but as they are of identical construction a description of one will answer.

25 25 designates a foot-lever which extends through the car-platform into position conveniently to be operated upon. The lower end of this lever is pivoted to the end of a lever 27, which extends therefrom toward the longitudinal center of the car. This lever is pivoted near its inner end, as shown at 28, to the upper end of a support which is suitably upheld beneath the car-body and preferably consists of an approximately triangular frame formed of arms 29, 33, and 33^a, as shown best in Fig. 6. 31 designates a wheel which is journaled in bearings 32 formed in said frame, and said frame is also preferably formed with an opening 30 to receive the axle of the car.

35 40 Suitably connected with this wheel 31, so as to be elevated or depressed thereby, is a wheel 35, which when lowered traverses one of the levers 7 and depresses the same for the purpose above set forth. This wheel 35 is journaled in bearings 36 and is preferably rigidly connected with the wheel 31 by the kite-shaped frame 37, secured to the face of said wheel 31 at the two points 38 and 39 and braced by the intermediate connecting-piece 40. Extending from opposite sides of the pivot 28 of the lever 27 are two cables or cords 41 and 42, the lower ends of which are properly secured to the periphery of said wheel 31 at the points 43 and 44. It will now be seen that when the foot-lever is depressed the rear end of lever 27 is caused to rise and pull upon said cable 41, thus turning said wheel 31 in its bearings and depressing said wheel 35, so that the latter will run upon and operate the lever 7, as above stated. Suitable means—as, for example, a spring 45—will be provided for returning the foot-lever to its original position when pressure is removed therefrom, whereby the front end of said lever 27 will be caused to rise and pull upon said cable 42 and thereby automatically elevate said wheel 35 to above

the level of the road-bed. By supporting said lever 27 and the wheels 31 and 35 wholly from the car-truck said parts will not be influenced in any way by the movement of the car-body relatively to the truck, which is obviously of prime importance.

We do not wish to be understood as limiting ourselves to the exact construction herein set forth, as we are aware that changes may be made in the details without departing from the spirit of the invention.

Having thus described the invention, what we believe to be new, and desire to secure by Letters Patent, is—

1. The combination with a pivoted track-lever, and a switch-rail, of a pulley located beneath said track-lever and operatively connected thereto, a vertical arm attached to said switch-rail, a bodily-movable rod attached to the lower end of said arm and having an elongated slot, a pulley provided with a pin traversing said slot, and means connecting said pulleys together, substantially as shown and described.

2. In a switching mechanism, the combination with the plurality of switch-rails, of a pulley beneath the same, having a pin projecting upward from its face, a transverse movable rod having a slot receiving said pin, arms connecting said rod with the respective switch-rails, and means for turning said pulley to set said switch-rails, substantially as set forth.

3. In a switching mechanism, the combination with a plurality of switch-rails, of a pulley beneath the same having a pin projecting upward from its face, a transverse movable rod having a slot receiving said pin, arms connecting said rod with the respective switch-rails, the track-levers, pulleys beneath the same, pivoted arms connecting the pulleys with the track-levers, and cables connecting said pulleys with the first-mentioned one, substantially as shown and described.

4. In a switch, the combination with the switch-rail, track-lever, means connecting said switch-rail and track-lever, and the car, of a foot-treadle carried by the car, a lever pivoted thereto, a support for said lever to which it is pivoted, a wheel connected with said lever and turned thereby, and a wheel, connected with said first-mentioned wheel and lowered thereby to engage said track-lever, substantially as shown and described.

5. In a switch, the combination with the switch-rail, track-lever, means connecting said switch-rail and track-lever, and the car, of a foot-treadle carried by the car, a lever pivoted thereto, a support for said lever to which it is pivoted, a wheel adjacent to said lever and connected therewith at opposite sides of the pivot thereof, a wheel for engaging said track-lever, said wheel being rigidly connected with said first-mentioned wheel and raised and lowered by the turning of the same, and means for returning said treadle and con-

needed parts to their original positions when pressure thereon is removed, substantially as shown and described.

6. In a switch, the combination with the
5 switch-rail, of a track-lever, pivoted at one end and having its free end projected to the level of the track, a pulley beneath said track-lever, a rod pivoted at one end to the free end of said track-lever and at its other end to the
10 face of said pulley, and means connecting

said pulley with the switch-rail whereby movement of the former will set the latter, substantially as shown and described.

In testimony whereof we affix our signatures in presence of two witnesses.

GEORGE E. CRANE.
VICTOR H. ESCH.

Witnesses:

CHAS. J. STOCKMAN,
JOHN H. SIGGERS.