

(No Model.)

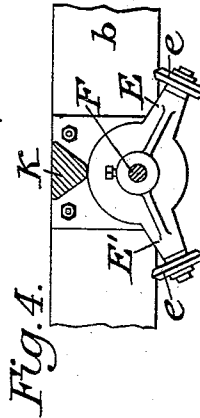
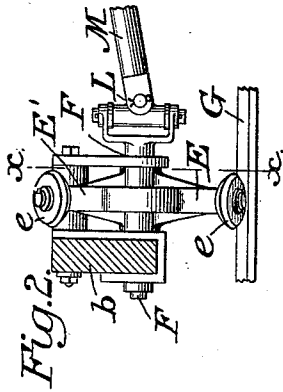
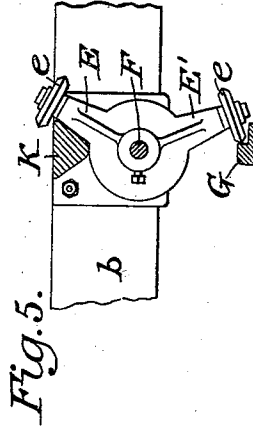
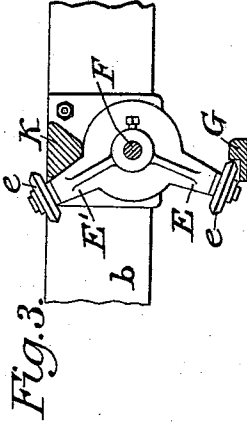
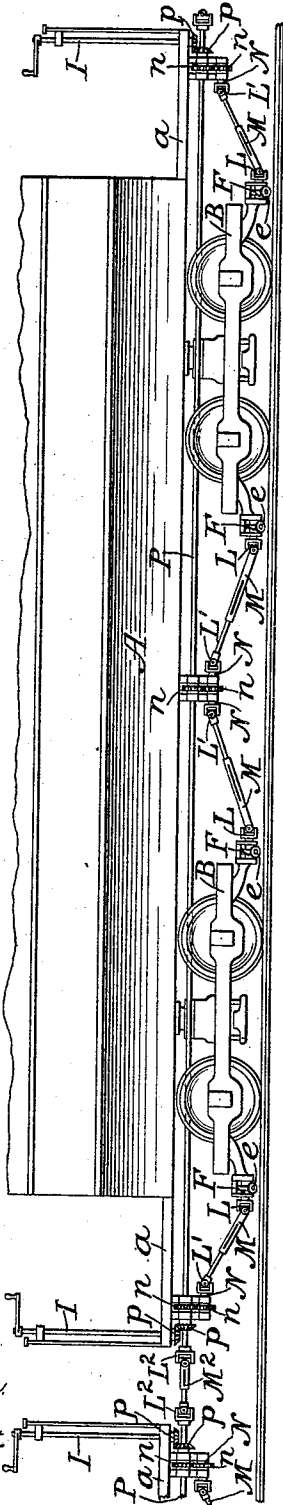
2 Sheets—Sheet 1.

R. T. SMITH.
STREET RAILWAY SWITCH.

No. 479,028.

Patented July 19, 1892.

Fig. 1.



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(No Model.)

2 Sheets—Sheet 2.

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Fig. 7.

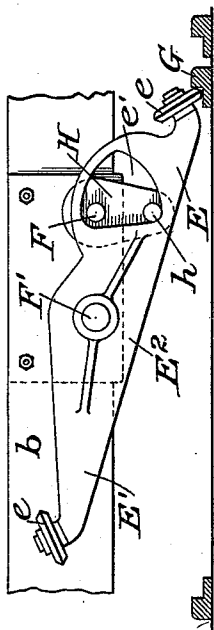


Fig. 6.

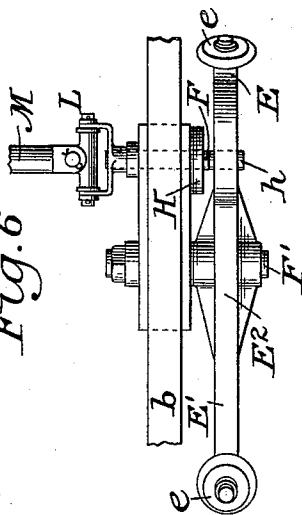
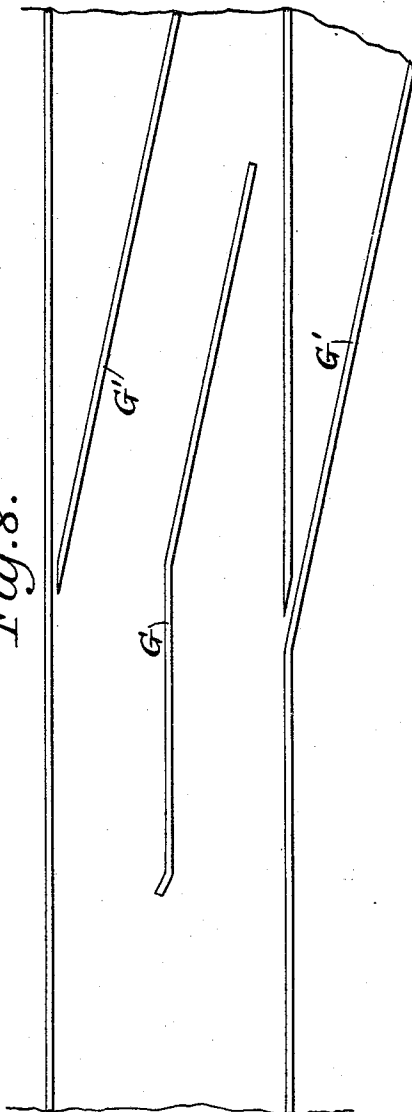


Fig. 8.



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UNITED STATES PATENT OFFICE.

ROSWELL T. SMITH, OF NASHUA, NEW HAMPSHIRE.

STREET-RAILWAY SWITCH.

SPECIFICATION forming part of Letters Patent No. 479,028, dated July 19, 1892.

Application filed January 27, 1892. Serial No. 419,395. (No model.)

To all whom it may concern:

Be it known that I, ROSWELL T. SMITH, of Nashua, in the county of Hillsborough and State of New Hampshire, have invented certain new and useful Improvements in Street-Railway Switching Devices; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

My invention relates to that class of switching devices which are intended to co-operate with a fixed guide or switch rail or with the usual movable switch-tongue to turn the car either to the right or to the left at the will of the driver and to be operated from the platform of the car.

My object is to improve the construction and operation of such devices generally, and particularly to enable the device to be operated from either end of the car, to guide the car, as desired, in whichever direction it may be advancing, to adapt the device to the long cars now in use upon electric railways, so that the rear wheels or trucks may be certain to take the switch properly, and, further, to make it possible when two or more cars are coupled together for the driver on the forward platform of the front car to control all the cars of the train, so that they may all take the switch properly.

In the accompanying drawings, Figure 1 is a side elevation of a portion of a street-railway car having my improvement applied thereto and showing, also, a sufficient portion of the second car coupled to the first to illustrate the application of my improvement to a train of cars. Fig. 2 is a detail side elevation of one form of my improved device. Figs. 3, 4, and 5 are sectional views of the same on line *x x* of Fig. 2 in different positions. Figs. 6 and 7 are plan and end views of another form of the device. Fig. 8 is a plan view of a portion of a street-railway track and switch having a fixed guide or switch rail between the main rails.

My improvement is capable of application to any style of car; but I have shown it applied to a car having a long body *A*, with front and rear platforms *a a*, as usual, and

having two swiveled trucks *B B'*. In cars of such construction the tendency of the rear wheels or trucks to follow the main line rather than to take the switch upon which the leading wheels have turned is most marked, particularly when the car is moving rapidly. Of course if the switch has been set by hand the rear wheels will follow properly; but as it is the object of the devices to which I refer to enable the switch to be set by the driver as the car approaches the switch it becomes especially desirable to insure that the switch shall be set properly, not for the forward truck or car alone, but for the following truck or car as well, lest by some accident it should be moved after the first truck or car has passed over it. Accordingly I place a switching device in front of each truck and provide suitable means whereby both may be operated together from the car-platform. Furthermore, it sometimes occurs that the rear wheels of a single truck are thrown out of proper relation to the track, as by a sudden lurch of the car, after the front wheels have taken the switch, and to permit this I prefer to provide a switching device both in front and in rear of each truck, and I cause both of these switching devices to be operated together.

In the construction shown in Figs. 1, 2, 3, 4, and 5 two arms *E* and *E'*, suitably formed at their ends or provided with shoes or with small rollers *eee* to engage the switch or guide rail *G* are secured to a short shaft *F'*, which is rotatably supported by the cross-bar *b* of the truck-frame and adapted to be rotated to shift the arms by means hereinafter described. A stop *K* is placed in the path of the arms of the plate to receive the pressure when one extremity or the other is in engagement with the guide-rail. The shaft *F* is connected by a universal joint *L* with an extensible shaft *M*, the other end of which is again connected by a universal joint *L'* either directly or indirectly with an ordinary vertical brake-shaft *I*, supported in a convenient position. I have shown the joint *L'* as connected to a short shaft *N*, driven by gears *n n* from a shaft *P*, which is in turn driven by miter-gears *p p* from the shaft *I*. The shaft *P* has a special function when the device is used on a double-truck car or with two cars or for

operating switching devices in front and in rear of a truck; but it is evident that for a single truck the shaft M might be driven directly from the shaft I.

5 As indicated above and as shown in the drawings, I prefer to employ, particularly when the car is fitted with swivel-trucks, a switching device in front and another in the rear of each truck. Both of these switching
10 devices are geared to the shaft P to be operated thereby so that the one in the rear of the truck shall be set simultaneously with that in front and so insure the proper taking of the switch by the rear wheels. To still further
15 insure this desirable result, I prefer to extend the guide-rail somewhat, as shown in Fig. 8. The shaft P preferably extends the full length of the car, as shown in Fig. 1, and is geared to a hand-shaft on each platform,
20 whereby the switching devices in advance of each truck or set of wheels in whichever direction the car is moving may be under control from the forward platform.

If two cars are to be coupled together, as
25 indicated at the left in Fig. 1, the two shafts P of the two cars may also be united by a suitable coupling, and the switching devices of the second car thereby placed under control from the front platform of the leading
30 car. I have shown as a suitable coupling to permit the necessary freedom of movement an extensible shaft M², connected to the two shafts P by universal joints L².

In Figs. 6 and 7 I have shown a form of the
35 device which is adapted to operate in connection with a guide or switch rail G' at the side of the track or with the rail of the turn-out. The arms E and E' form part of a plate E², which is mounted upon a stud F' and is
40 formed with a three-sided opening e' for engagement with the pin h of a crank H, mounted upon a shaft F, which is connected by a universal joint L with a shaft M, as described with reference to Figs. 2 to 5, inclusive.

45 I do not claim, broadly, the combination of a double arm or two oppositely-placed arms adapted to be shifted to cause one or the other to engage a fixed or movable switch-rail and means to operate such arms from the platform
50 of a car. So far as I am aware, however, the said arms have been so placed heretofore as to make the thrust thereon substantially at right angles to the axis of the arm, thereby necessitating the use of powerful devices to
55 hold the arm in position while a car is being switched. This objectionable feature is entirely overcome by the arrangement shown in Figs. 6 and 7 and described above, wherein the two arms form, practically, a continuous
60 and nearly-straight bar, which is pivoted at its middle to the truck-frame, while its members extend, practically, to the line of the wheels on either side. The thrust upon the arms or members of the bar is thus practically
65 longitudinal and is exerted directly upon the

pivoted stud, which is itself carried by the truck-frame in which the axles are journaled.

I have herein shown my device as adapted to co-operate with a guide-rail fixed in the middle of the track (see Figs. 2, 3, 4, and 5) 70 or with the fixed turn-out or switch rail (see Figs. 6 and 7) to thrust the car bodily from the main track to the turn-out; but it is obvious that it might be used to operate a movable switch-tongue. 75

I claim as my invention—

1. The combination, with a railway-car having two or more trucks, of a switching device supported in front of each truck, a common actuating device, and connections therefrom 80 to said switching device, substantially as shown and described.

2. The combination, with a railway-car having two or more trucks, of a switching device supported in front of each truck, a common 85 shaft running lengthwise of the car, means to rotate said shaft, and connections from said shaft to each of said switching devices, substantially as shown and described.

3. The combination, with a railway-car having a truck with two or more pairs of wheels, of a switching device supported in front of the truck, a second switching device supported in the rear of the truck, a longitudinal rotatable shaft, gears between said switching devices and said shaft, whereby said switching devices may be moved in the same direction at the same time, and means to operate said shaft, substantially as shown and described. 90

4. The combination, with two or more railway-cars adapted to be coupled together, of a switching device comprising a swinging arm adapted to engage a switch-rail or guide-rail and supported in front of each truck-frame, a common actuating device, connections therefrom to each of said switching devices, whereby they may move together, and means to operate said actuating device, substantially as shown and described. 100

5. The combination, with two or more railway-cars adapted to be coupled together, of switching devices supported by the truck-frames of the cars and each comprising a swinging arm adapted to engage a switch-rail or guide-rail, a shaft running lengthwise of the 110 first car, means to rotate said shaft, connections from said shaft to the switching device of the first car, a shaft supported by the second car, and intermediate connections to the switching device of the second car, and a coupling between said shafts, substantially as shown and described. 115

6. In a street-railway switching device, the combination, with the truck-frame, of a short shaft mounted upon said truck-frame, oppositely-placed arms secured to said shaft and adapted to engage a guide or switch rail, a hand-shaft mounted upon the platform of the car, a short shaft also supported by said platform and geared to said hand-shaft, and an exten- 120 125 130

sible shaft intermediate the short shaft supported by the platform and that supported by the truck-frame and connected thereto by universal joints, substantially as shown and described.

7. In a street-railway switching device, the combination, with the truck-frame, of a substantially straight bar pivotally supported at its middle on a cross-bar of the truck-frame and having its members extended to the line of the wheels on either side and having its ends adapted to engage switch-rails at the side of

the track, an operating device mounted upon the platform of the car, and extensible and yielding transmitting means between said hand operating device and said pivoted bar, substantially as shown and described. 15

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

ROSWELL T. SMITH.

Witnesses:

S. J. M. SMITH,
IRA F. HARRIS.