No. 641,952. Patented Jan. 23, 1900.

R. W. GRANGE, JR.

STREET RAILWAY SWITCHING DEVICE.

(Application filed Apr. 7, 1899.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

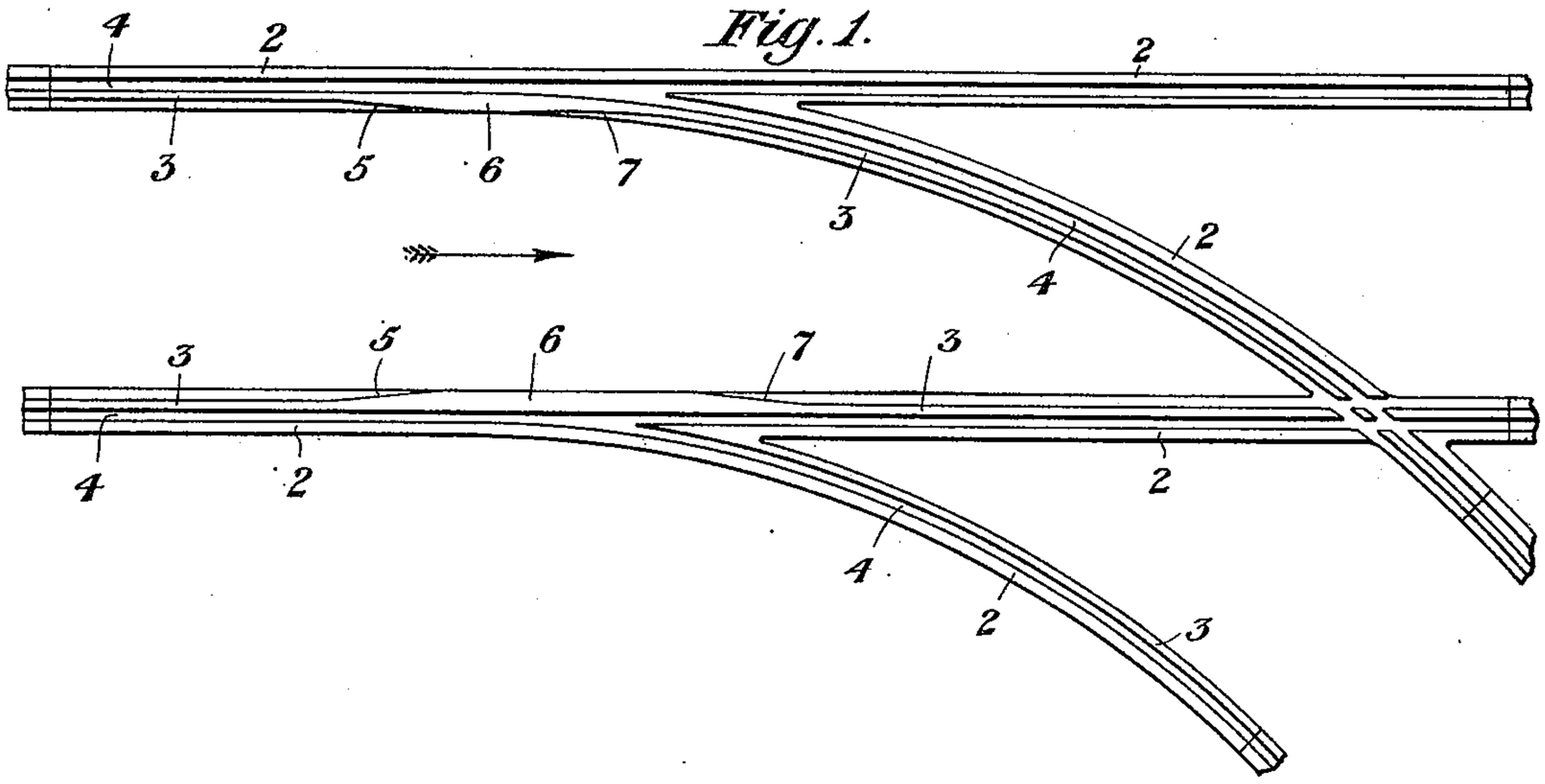

Fig. 2.

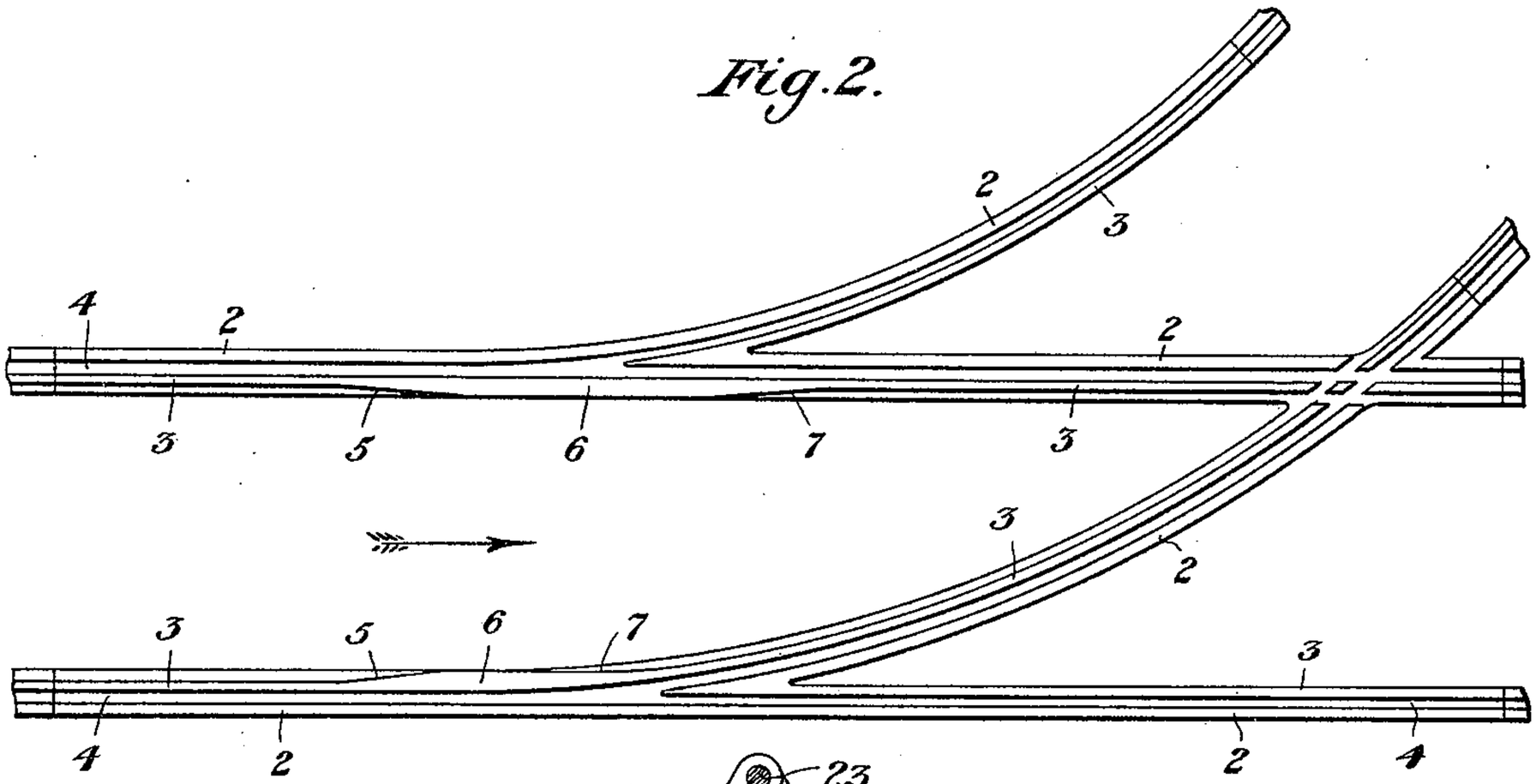

Fig. 7.

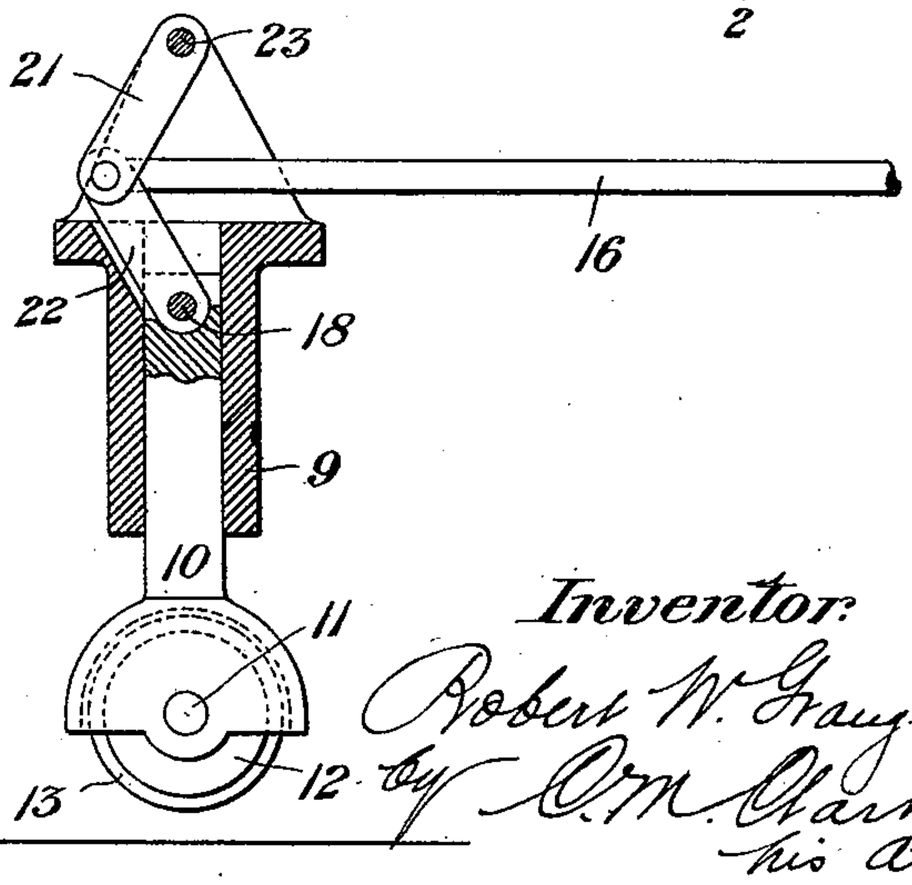

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Fig. 3.

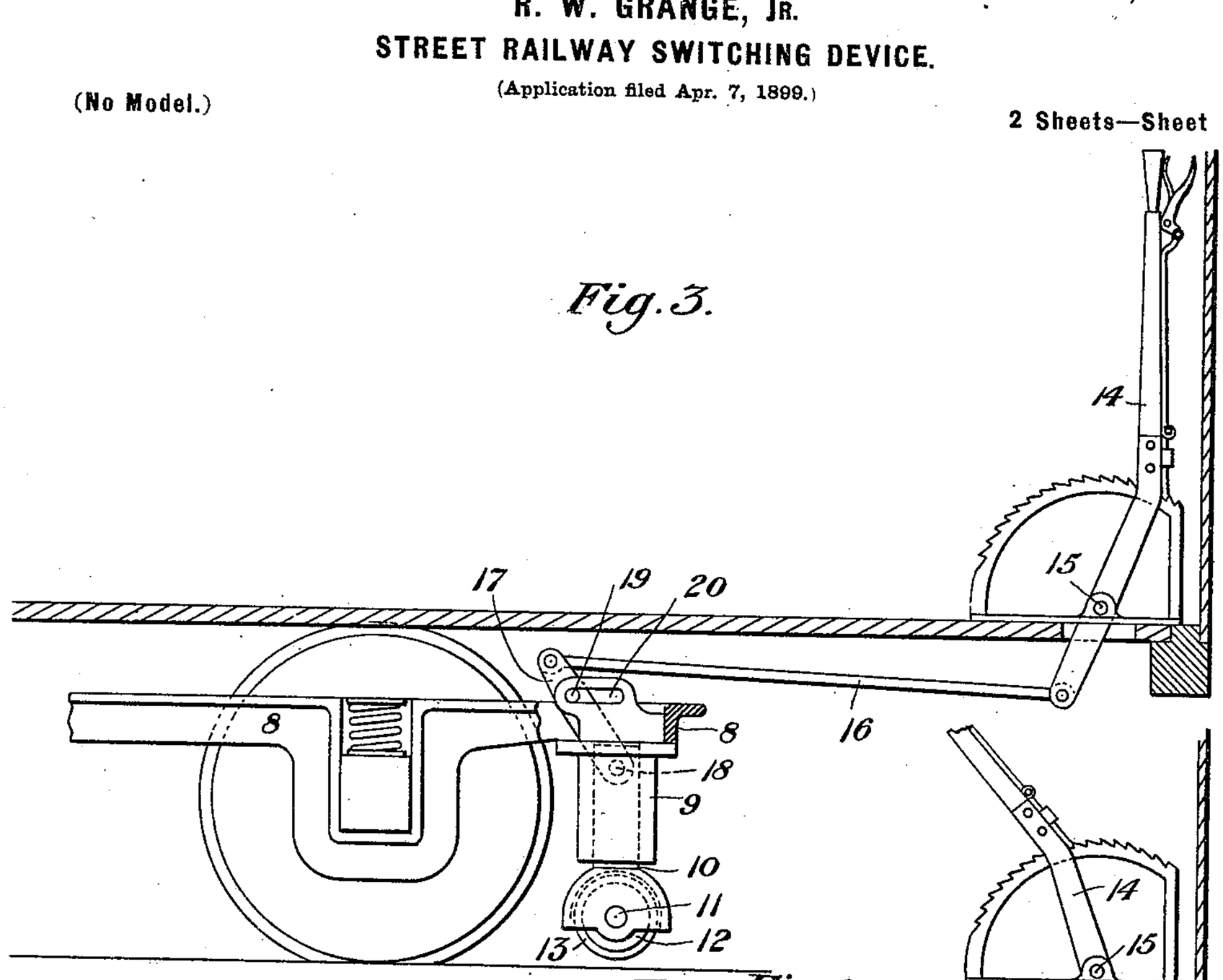


Fig. 4.

Fig. 5.

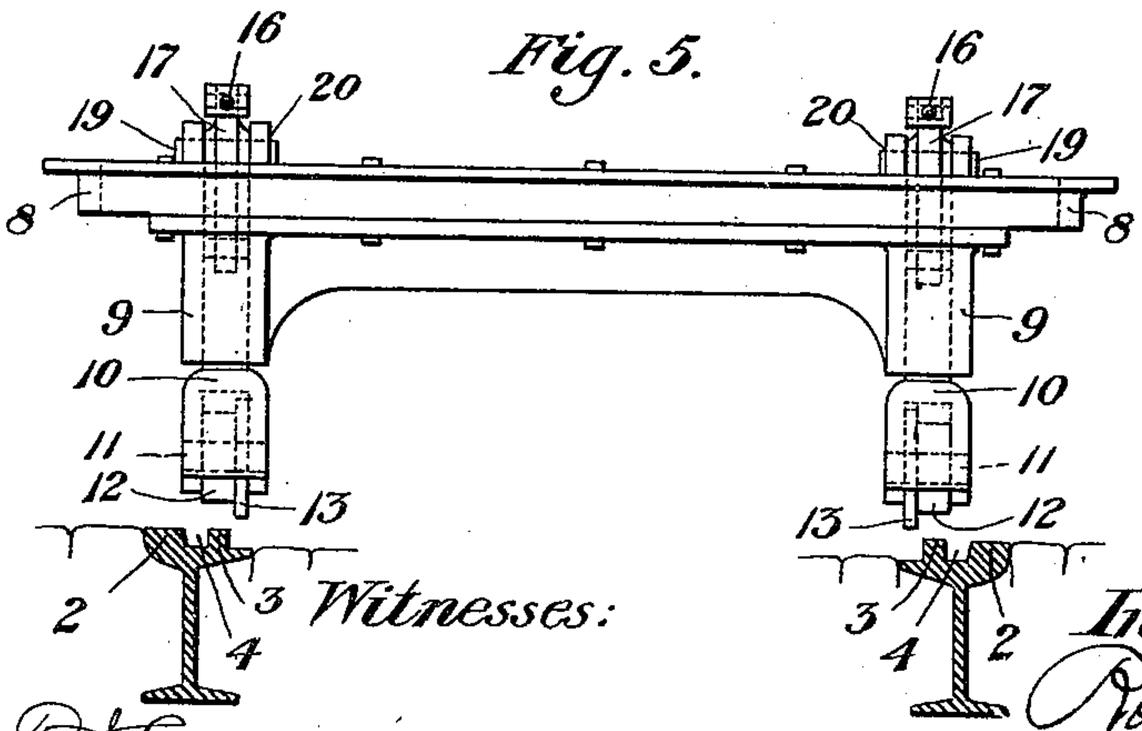
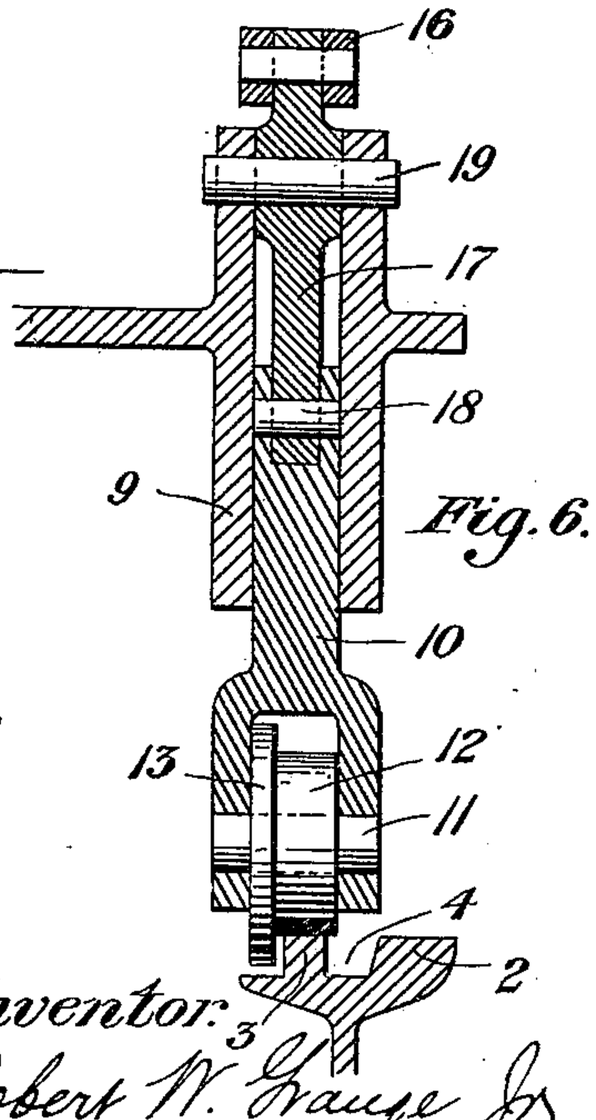


Fig. 6.



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UNITED STATES PATENT OFFICE.

ROBERT W. GRANGE, JR., OF PITTSBURG, PENNSYLVANIA.

STREET-RAILWAY SWITCHING DEVICE.

SPECIFICATION forming part of Letters Patent No. 641,952, dated January 23, 1900.

Application filed April 7, 1899. Serial No. 712,076. (No model.)

To all whom it may concern:

Be it known that I, ROBERT W. GRANGE, Jr., a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented or discovered a new and useful Improvement in Street-Railway Switching Devices, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan view of a main track with a switch leading to the right. Fig. 2 is a similar view with a switch leading to the left. Fig. 3 is a view in side elevation of my device mounted on a car truck and body in position for operation. Fig. 4 is a similar view showing the switching-wheel depressed into engagement with the rail. Fig. 5 is a front view in elevation illustrating the manner of mounting the switching-wheels at each side of the track. Fig. 6 is an enlarged vertical sectional view on the line VI VI of Fig. 4. Fig. 7 is a detail view illustrating a modified construction of operating mechanism.

My invention relates to the class of switching devices wherein the operation is performed upon and entirely through means mounted upon the car, thus dispensing with the necessity of the conductor leaving the car to operate a switch and enabling switches to be made without stopping.

Referring to the drawings, Figs. 1 and 2 illustrate the special construction of track employed at each switch, wherein the rail is provided with the main head 2, upon which the car-wheels run, a parallel inner guard or guide rail 3, and an intervening depressed groove 4 to admit of the entrance of the wheel-flange. In the continuations of the main track forming the branch track or switch this construction is continued, care being taken to provide proper clearance-spaces when the rails cross in making the turnout.

It will be noted that the guide-rail 3 is reinforced at a point on each side somewhat in advance of the switch proper and is provided with inclined faces 5 5, producing a widened section 6 of the guide-rail, which extends slightly beyond the switch-point, when the normal width of the guide-rail is again established by means of tapering the widened section, as at 7.

Referring now to Sheet 2, 8 is the car-truck, upon which, in advance of the wheels at each side, are secured the housings 9, in which are mounted the switching-wheel carriers 10, having revolubly mounted in their lower ends, within suitably-formed bearings and upon pivotal bolts 11, the switching-wheels 12, having an inner flange 13. This flange-wheel is adapted to be raised or lowered at either side independently by means of an operating-lever 14, mounted in the front of the car-body, pivoted at 15 and connected through a rod 16 to the upper end of a lever 17. This lever is pivotally connected to the upper end of the wheel-support 10 at 18 and is mounted by a cross-pin 19 in a double horizontal groove 20 at the upper side of the housing. It will be seen that when the lever 14 is thrown back or forward the wheel-support and wheel will be lowered or raised, as in Figs. 4 and 3. A similar movement may be imparted to the wheel 12 through the toggle-joint construction shown in Fig. 7, wherein the rod 16 is pivotally connected to the links 21 22, attached, respectively, to an upper rigid bearing 23 of the housing and at 18 pivotally to the wheel-support.

The operation is as follows: Upon approaching a switch the motorman will lower the wheel 12 on that side of the car on which it is desired to engage the guide-rail 3 to throw the car toward the opposite side, the flange 13 of the wheel dropping down inside of the guide-rail, and upon further forward travel the flange will engage the inclined face 5 and ride up onto the reinforced widened section 6. This action will transmit a similar movement to the forward car-wheels through the truck, and the car-wheels will thus be forced over toward the switch, the flange of wheel 12 still remaining in engagement with the guide-rail 3 until the forward wheels have passed onto the switch, when the switching-wheel may be raised. In case it is desired to keep the straight track the switching-wheel at the opposite side may be lowered into engagement with the guide-rail and, acting in a similar manner, will force the car over away from possible engagement with the switch-

points and insure its keeping to the straight track.

It will be understood that the additional thickness of the guide-rail caused by the reinforcement 6 does not exceed the amount of lateral movement that is possible for the wheels to have upon the track, due to the ordinary clearance between the wheel-flanges and the head of the rail.

By employing separate independently-operating switching-wheels at each side it will be seen that either right or left hand switches may be made with equal ease, or the car may be retained upon the straight track, as desired. Also in the case of a switch to each side, and a continuation of a straight track between, either switch may be made, or the straight track may be maintained by simply allowing both switching-wheels to remain raised.

I am aware that others have attempted to accomplish the purpose of my invention and have examined the patents to S. Allen, *et al.*, No. 69,741, R. T. Smith, No. 433,548, R. T. Smith, No. 459,419, and others, but believe that my invention is distinct from and practically and patentably different from these patents.

Various changes and modifications may be made in the construction or the invention may be adapted to varying conditions by the skilled mechanic without departing from my invention, since I do not desire to be limited to the exact construction shown, but to include within the scope of this patent all such obvious changes and variations as are clearly within the claims.

What I claim is—

1. In apparatus for switching cars, a main track and a switching-track leading off therefrom, an inner guide-rail conforming to the main track and to the switching-track having a tapered reinforced section at each side respectively in advance of the switch-points, such reinforcement merging into the switching-track guide-rail, and receding in the main-track guide-rail beyond the switch-point.

2. In apparatus for switching cars, in combination with a main track and a switching-track leading off therefrom, provided with inner guide-rails conforming to the main track and switching-track respectively, and having tapered reinforced sections at each side in advance of the switch-points; a flanged switching-wheel mounted on the car or truck with means for depressing it into contact with the guide-rail.

3. In combination with a main track and a switching-track leading off therefrom, and guide-rails on the inside of such tracks; a flanged switching-wheel mounted on a support in a housing secured to the car-truck, a lever mounted by a pin in horizontal slots on the housing, pivotally connected to the wheel-support, and an operating-lever mounted in the car with a connecting-bar attached to the upper end of the wheel-support lever, substantially as set forth.

4. In apparatus for switching cars, in combination with a main track and a switching-track leading off therefrom provided with inner guide-rails conforming to the main track and switching-track respectively and having tapered reinforced sections at each side in advance of the switch-points; a flanged switching-wheel mounted on a support in a housing secured to the car-truck, a lever mounted by a pin in horizontal slots on the housing, pivotally connected to the wheel-support, and an operating-lever mounted in the car with a connecting-bar attached to the upper end of the wheel-support lever.

In testimony whereof I have hereunto set my hand.

ROBERT W. GRANGE, JR.

Witnesses:

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