

942,313.

W. F. DONER.
SWITCH RAIL CONTROLLING DEVICE.
APPLICATION FILED JAN. 18, 1909.

Patented Dec. 7, 1909.
2 SHEETS—SHEET 1.

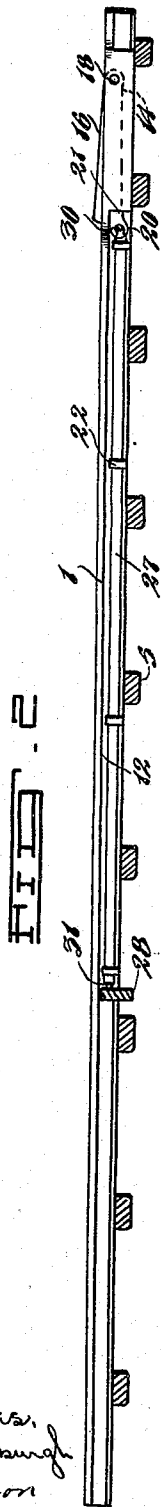
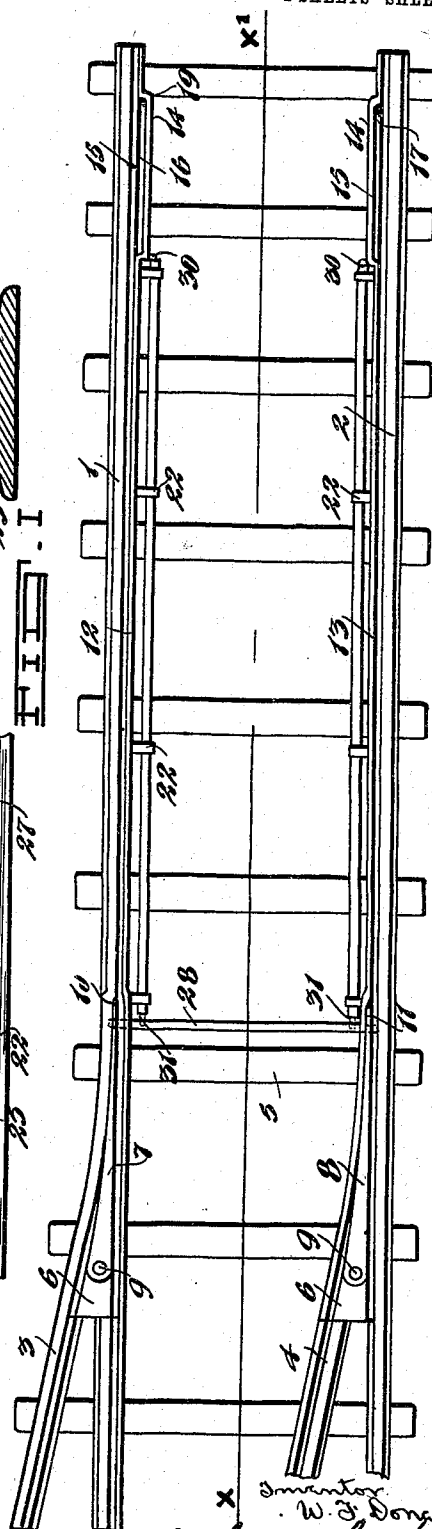
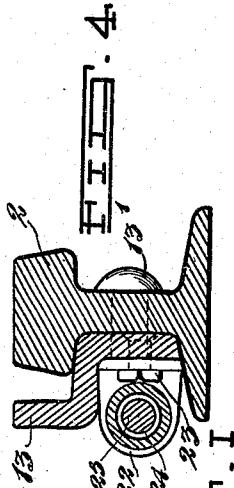
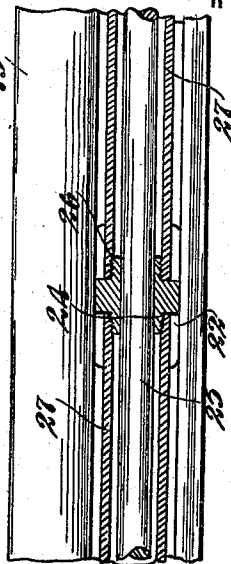


FIG. 5



Witnesses,
S. & R. R. R. R.
J. Thomson

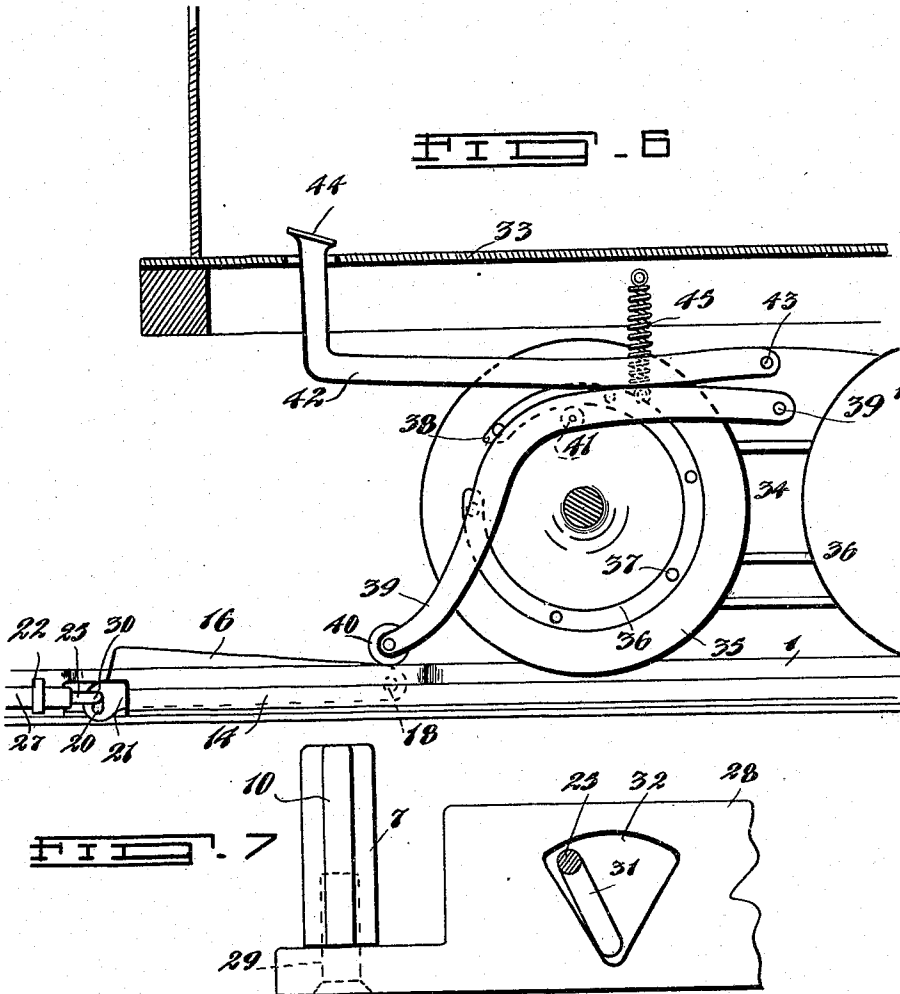
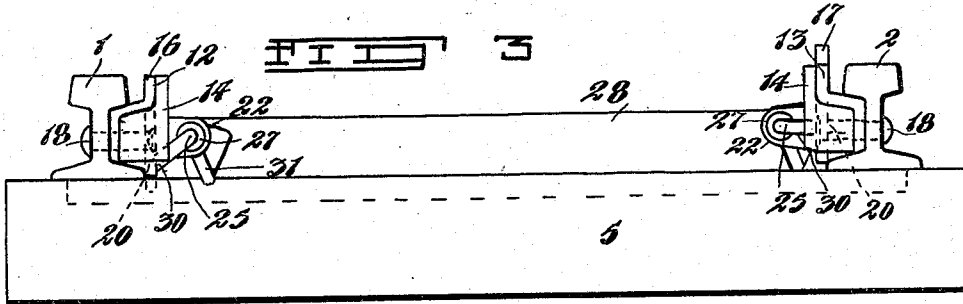
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Att'y

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WITNESSES
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UNITED STATES PATENT OFFICE.

WILLIAM FRANCIS DONER, OF WINNIPEG, MANITOBA, CANADA.

SWITCH-RAIL-CONTROLLING DEVICE.

942,313.

Specification of Letters Patent.

Patented Dec. 7, 1909.

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To all whom it may concern:

Be it known that I, WILLIAM FRANCIS DONER, of the city of Winnipeg, in the Province of Manitoba, Canada, contractor, have
5 invented certain new and useful Improvements in Switch-Rail-Controlling Devices, of which the following is the specification.

My invention relates to switch rail controlling devices, and the object of the invention is to provide a simple, easily operated, and effective device, particularly adaptable to street cars, whereby the operator or motorman, from the interior of the car, can cause the car to remain on the main track or
15 take the switch.

It consists essentially in a sliding plate secured to the switch points of the rails; an opposing set of rotatably supported rods having crank ends; actuating bars pivotally
20 secured to the rails and controlling the operation of the crank rods; and means secured to the car whereby the actuating bars can be operated by the motorman from the interior of the car, the parts being arranged and
25 constructed as hereinafter more particularly described.

Figure 1 is a plan view of a track showing the switch rails and my invention applied. Fig. 2 is a side elevation of the track, a longitudinal section being taken in the plane denoted by the line X X', Fig. 1, and looking at the rail in the direction denoted by the arrow. Fig. 3 is an enlarged end view of the main line track, showing one of the
35 actuating bars in its upper position and the other in the lower position. Fig. 4 is an enlarged detailed vertical sectional view through one of the main line rails and the flange plate showing the manner in which
40 the brackets supporting the rods are attached to the web. Fig. 5 is an enlarged vertical sectional view through one of the brackets, showing one of the rods in side elevation, and the tubings inclosing the rod in vertical
45 section. Fig. 6 represents the means attached to the car and employed for operating the actuating bars. Fig. 7 is an enlarged detailed end view of one of the points and a portion of the sliding plate attached thereto.
50 In the drawings like characters of reference indicate corresponding parts in each figure.

1 and 2 represent the main line rails, and 3 and 4 switch rails, all of such rails being
55 supported on the usual sleepers 5.

6 are chairs supporting the frogs 7 and 8, the frogs being pivoted at 9 to the chairs thereby rendering their extending ends 10 and 11, respectively, laterally adjustable on the chairs. 60

The portions already described are of the usual form and it is considered unnecessary to further describe them in detail.

12 and 13 are flange plates or rails secured at intervals firmly to the web of the rail by
65 bolts or rivets 13'. At some slight distance from the switch point and on the main line track the flange plates are bent away from the track as at 14 forming vertically directed openings 15 to receive the actuating bars 16
70 and 17, which are pivoted to the web of the rails by means of pins 18.

19 are collars or spacing members placed between the actuating bars and the web of the rails. The actuating bars are made
75 wider at one end than at the other, the end through which the pin passes being the narrower. The free end of each actuating bar is provided with an elongated opening 20 for a purpose hereinafter explained. Directly
80 opposite the latter openings the flange plate is cut away as at 21 but otherwise the actuating bars are completely inclosed at the sides thereby preventing foreign matter such as snow, coal, or stones, from interfering
85 with the operation of the bars.

22 are brackets secured at intervals to the flange plate by bolts 23. Each bracket has a longitudinal central opening 24 to receive the rods 25 and has two exteriorly
90 threaded and extending bosses 26 to which are threaded the protecting pipes 27 which extend between the adjoining brackets. In this way the rods 25 are completely protected from any possibility of being bent
95 or otherwise thrown out of commission. By securing the brackets to the flange plate and the flange plate to the rail it is possible to see that the brackets are all properly aligned before placing the plate in position. If the
100 flange plate were secured first to the rail and the brackets afterward, considerable difficulty might be found in getting them in correct position, and such is necessary for the proper operation of the rods. 105

28 is a plate having its ends pivotally secured to the points 10 and 11 by screws 29, the screws passing into the narrow end of the respective points.

The rods 25 have their ends formed with 110

cranks, the crank ends 30 passing more or less horizontally into the openings 20 provided in the actuating bars. The crank ends 31 are received within openings 32 formed in the plate 28, such openings being toward either end of the plate. The openings are of the form shown in Fig. 7, as it will be seen that it is necessary for them to be in the form of a sector to allow the cranks 31 to operate when the rods are turned.

33 represents the ordinary car floor and 34 are the car trucks.

35 represents the car wheels.

36 is a plate bolted at 37 to the car wheel the plate being concentric with the wheel. The two ends of the plate are slightly apart leaving a passage 38 therebetween.

39 is an arm pivotally secured at 39' to the car trucks and passing downwardly over the axle toward the track, the extending end being provided with a wheel or roller 40.

41 is a second roller pivotally secured to the arm and designed to operate on the plate 36 whose inner edge forms a track for the roller.

42 is a foot lever having its one end 43 pivoted to the car trucks and its other end 44 extending within the car vestibule and being provided with a plate whereby it can be conveniently depressed. The lever is directly above the arm and rests normally against it.

45 is a spring secured at one end to the arm and at the other to the car floor continuously tending to hold the arm upwardly against the lever.

It will be understood that there are two levers and arms provided on each car, one at either side, directly at the inner side of the front wheels of the front trucks.

In order to better understand the invention I will now describe its operation, assuming the motorman desires to cause the car to take the switch, that is, to leave the main line rails. By pressing the foot lever 42 at the same side of the car as the frog 7 when the car is approaching the switch, the roller 41 is caused to run on the outer edge of the plate 36 till such time as it comes to the opening when it passes to the inner edge. The motorman can then release the foot pressure on the lever, and the roller being then operating on the inner edge of the plate will hold the arm with the roller 40 on a level with the track. The spring 45 holds the arm so that the roller 41 runs on the plate and causes the roller to escape through the opening 38, as soon as the wheel turns sufficiently far to allow it to pass through. As the car advances the roller 40 approaches and passes over the actuating bar 16 and depresses it. The bar carries the crank end 30 downwardly with it and turns the rod 25 which on account of the crank end 31 slides the plate 28. This causes the

ends 10 and 11 of the points to pass over toward the main line rails thereby causing the car to take the switch.

It will be noticed that as the actuating bar 16 is pressed downwardly the bar 17 passes upwardly, so that in all cases when a car is approaching a switch there is one of the actuating bars up so that the points can be operated. If the actuating bar 16 had been down when the car was approaching it would have meant that the points were set to take the switch and consequently the motorman would not have needed to depress the foot lever. If the points are set so that the car will take the switch and the motorman desires to keep his car on the main line rails, he presses the foot lever controlling the actuating bar 17.

It will be noticed that the plates 36 will hold the arms 39 down for a time considerably longer than the time it takes the rollers 40 to pass over the actuating bars.

When a motorman becomes accustomed to the device he will have little difficulty in judging the distance from the actuating bars at which it is best to depress the foot lever.

What I claim as my invention is:

1. In a device of the class described the combination with the rails; the switch points; and the car, of a slidable plate pivotally secured to the switch points; a set of opposing rods rotatably mounted in brackets extending from the inner side of the rails, such rods having crank ends, one set of ends engaging with the plate and being adapted in the rotation of the rods to move the plate transversely of the track; a set of actuating bars pivotally secured to each rail of the track and having an enlarged end with an elongated opening therein, the opening being designed to receive the remaining crank ends of the rods; and means carried by the car whereby the actuating bars can be depressed, as and for the purpose specified.

2. In a device of the class described the combination with the car; the track; the switch points; and the flange rails, such flange rails being bent outwardly from the rails at some distance from the switch points forming a vertical opening between the track and flange rails; a slidable plate pivotally secured to the switch points; a set of rods rotatably mounted in brackets extending from the inner side of the rails, such rods having cranked ends, one set of the cranked ends being in engagement with the slidable plate and adapted in the rotation of the rods to move the plate transversely of the track; a set of actuating bars pivotally secured to the track within the openings provided between the flange and track rails, such bars having their extending ends enlarged and provided with an elongated opening, the opening being designed to receive

the other set of cranked ends which pass into said openings through openings provided in the flange rails; and means carried by the car whereby the actuating bars can be depressed to rotate the rods, as and for the purpose specified.

3. In a device of the class described the combination with the rails and the rods rotatably mounted in brackets carried by the rails, such brackets being formed with a pair of opposing exteriorly threaded bosses, of piping interiorly threaded at its ends and adapted to screw to the bosses and inclosing the rods, as and for the purpose specified.

4. In a device of the class described the combination with the car floor; the car trucks; and the car wheel, of an arm pivotally secured to the trucks and having its extending end provided with a roller; a plate secured to the outer face of the wheel and concentric with the wheel, the ends of the plate being apart; a roller carried by the arm and adapted to operate on the plate; a foot lever pivotally secured to the trucks and engaging with the arm; and a spring interconnected to the car floor and the arm, as and for the purpose specified.

5. In a device of the class described the combination with the actuating bars pivotally secured to the track and having their free ends normally extending above the level of the track; the car body; the car trucks; and wheels, of plates secured to the inner face of an opposing pair of car wheels and concentric therewith, such plates having their ends apart; arms pivotally secured at their upper end to the trucks and having their free ends turned downwardly toward the track and provided with rollers adapted to engage with the respective actuating bars; a roller carried by the arms and adapted to enter the opening between the ends of the plates and operating on the inner edge of such plates; foot levers pivotally secured to the trucks and engaging with the arms whereby they may be depressed and springs secured to the arms and to the car body, as and for the purpose specified.

Signed at Winnipeg, in the Province of Manitoba, this 19th day of September 1908.

WILLIAM FRANCIS DONER.

In the presence of—

M. A. SOMERVILLE,

GERALD S. ROXBURGH.