

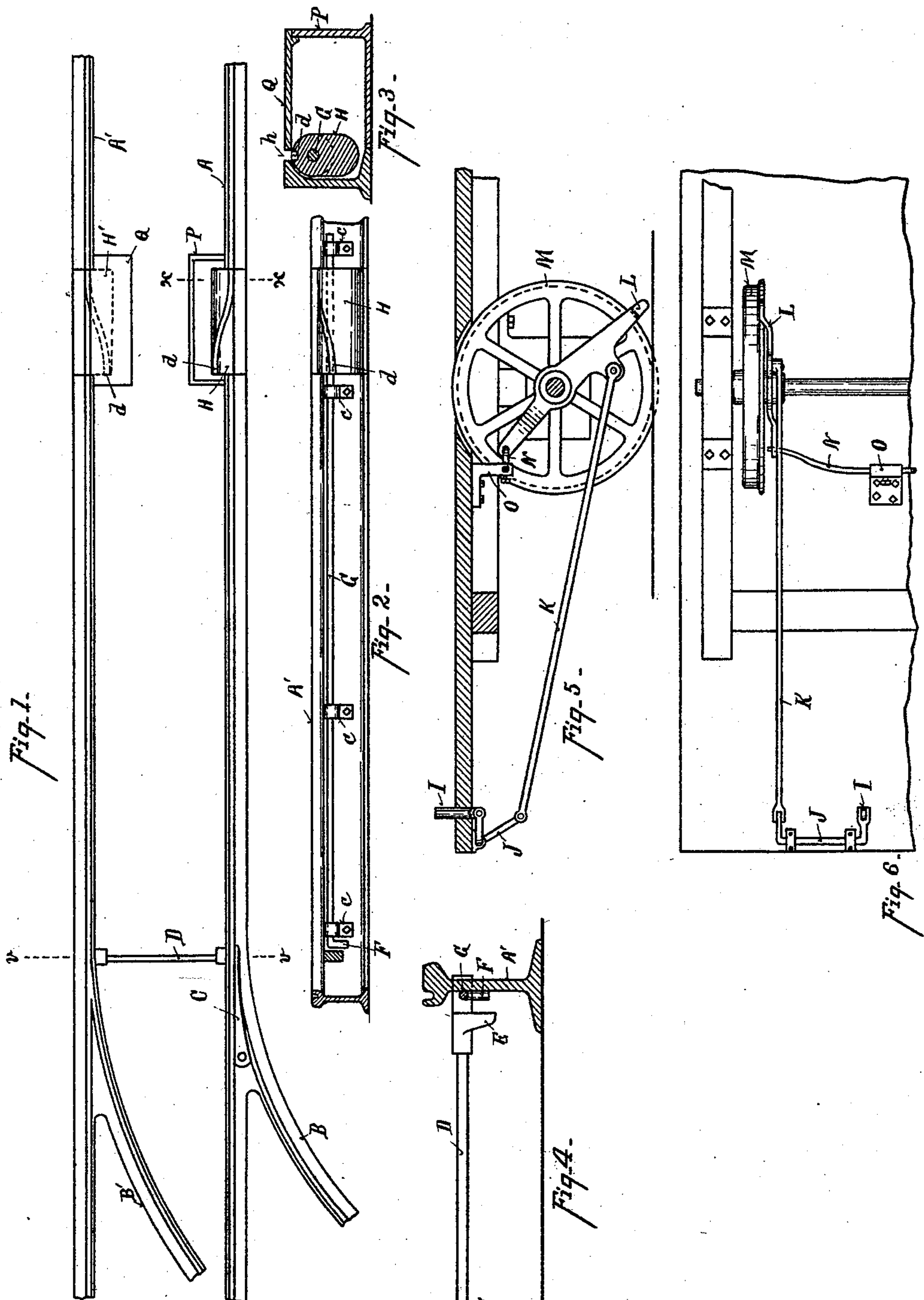
(No Model.)

B. B. BREED.

RAILWAY CAR SWITCH OPERATING DEVICE.

No. 525,253.

Patented Aug. 28, 1894.



Attest
C. W. Miles,
Oliver B. Kaiser.

Inventor
Rumitt B. Reed
By Wood & Bond, atty

UNITED STATES PATENT OFFICE.

BURRITT B. BREED, OF CINCINNATI, OHIO.

RAILWAY-CAR SWITCH-OPERATING DEVICE.

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To all whom it may concern:

Be it known that I, BURRITT B. BREED, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Railway-Car Switch-Operating Devices, of which the following is a specification.

My invention relates to a switch, primarily adapted for street railways, and to be operated by the attendant who manages the motive power for propelling the street car.

One of the objects of my invention is to provide means for throwing the switch in either direction at the will of the operator who operates the mechanism for throwing the switch to the right or to the left as the occasion may require.

Another object of my invention is to so arrange the switch throwing mechanism that when the switch is thrown in one direction that mechanism is out of connection and will work idle until the switch has been thrown back again, which movement places the parts in relation so that the switch may be again moved by said mechanism.

The various features of my invention are fully set forth in the description of the accompanying drawings making a part of this specification, in which—

Figure 1 is a top plan view of my improvement in position for use. Fig. 2 is a side elevation of one rail with the power transmitting mechanism attached. Fig. 3 is a section on line *x, x*, Fig. 1. Fig. 4 is a section on line *v, v*, Fig. 1. Fig. 5 is a side elevation of the front end of a street car with the switch throwing levers attached. Fig. 6 is a bottom plan view of Fig. 5.

A A' represent the main track rails.

B B' represent the turn-out rails.

C represents the movable tongue switch.

D represents a switch bar. The tongue switch C is connected to the switch bar by the pin *a*, connecting the two parts together, said pin moves in the recess *b* pierced through the head of the main rail A. The ends of the switch bar D are made polygonal and move in mortises pierced through the webs of the rails, whereby said rod is suitably supported to move longitudinally and is pre-

vented from turning. In order that the attendant may throw the tongue switch in either direction while the car is moving upon the track, I employ the following instrumentalities:

E E' represent lugs on the switch bar projecting downward.

F F' represent cranks on the rotary torsion rods G G'; said rods journal in the ears *c*, and are rigidly attached to the drum H suspended upon said rod. *d* represents a spiral groove formed in the periphery of each of said drums.

I represents treadles projecting up through the platform of the car. To each of said treadles are connected bellcrank levers J.

K represents a connecting rod one end of which is journaled to bellcrank levers J, and the other end to the tripping arm L; said arm is journaled upon the hub of wheel M.

N represents a spring connecting said arm to the bracket O for retracting the arm. The tripping arm is shown as journaled on the car axle, while the connecting rod is loosely hinged to said arm and to the treadle crank; hence the movement of the car up and down on its spring does not effect the positive engagement of the tripping arm with the power moving and transmitting device.

In order to illustrate the mode of operation I have shown my switch throwing device attached to the under side of the grooved rail, but of course it could be used just as well with a tram rail, as the plate Q serves as a guide to direct the tripping arm.

Mode of operation: It will be observed that the mechanisms of each side of the track are duplicates one of the other, each operated by an independent treadle, and they are so arranged that if the operator wishes to go to the left he can place his foot on the left treadle and set the switch in the proper direction; if he wishes to go straight ahead he places his foot upon the right hand treadle and throws the switch in the proper direction for moving the car in such direction. When treadle I is depressed the lower end of the bellcrank lever J pulls the connecting rod K forward bringing the switch arm L down to a vertical position, the projecting end of said arm enters the groove in the rail and passes

down into the slot *d* on the periphery of drum H, the under side of the head rail is grooved away so as to bring the peripheral edge of said drum just below and opposite the flange of the wheel. The slot *d* being spiral causes the drum H to turn by the engagement of the arm L, which rotates a rod G and turns the crank, say F', into a horizontal position; the end of the crank engages with the lug E, of the switch bar D, and moves it say to the left, and thus moving the tongue of the switch C in a corresponding direction. It will be seen by reference to Fig. 4 that the lug E is so far away from the crank F that it may be moved up and down without operating the switch bar in this position, the switch throwing mechanism working idle. If, however, the opposite crank has thrown the switch bar, say to the right, the lug E will be brought close to the position of the crank F, so that if the crank F be then turned the switch bar and the switch C will be thrown to the left. The parts being duplicate upon either side it follows that if the operator depresses the proper treadle the switch will be thrown in the proper direction, and if also he depresses the same treadle when it is thrown in the proper direction the switch throwing mechanism will work idle and do no damage. This is a very important advantage. The reason why I use torsion rods G for transmitting movement from drums H H' to their respective cranks for throwing the switch bar, is for this purpose; suppose there should be dirt or obstructions in the groove of the rail in which the switch tongue C lies, so that a complete movement of the tongue can not be made, the rod will yield a little under the strain and prevent breaking of the parts and it will spring back again into position as it is relieved from the strain. The drums H H' are each inclosed in a box P, and they are provided with a lid Q one edge of which is asunder from the sides of the box a sufficient distance to form a gain *h*, so that the free end of the tripping arm L will be guided by the edge of the lid and caused to enter the groove D, in the periphery of the drum, so that the drum will be forced to turn and the tripping arm held from lateral movement, thus securing a positive engagement of the tripping arm with the grooves of the drums whenever it is depressed by the operator. And said drums are weighted so that when the tripping arm leaves the groove they assume their normal position. Another important advantage is obtained by the loose crank connection of the switch bar. The switch can be moved by the ordinary means as the power operating devices are disconnected.

Having described my invention, what I claim is—

1. A switch throwing mechanism consisting substantially of a drum provided with a spiral groove, one end of which is located vertically under the groove of the rail and crank connection with the switch bar, substantially as described.

2. In a switch throwing mechanism, the power transmitting devices consisting substantially of drum H, connecting rod G, having loose crank engagement with the switch rod D, whereby the parts are moved idle when the switch is set in one direction, and adapted to throw the switch when it is set in the opposite direction, substantially as described.

3. The power transmitting devices consisting substantially of a spiral grooved drum H, the torsion connecting rod G, provided with crank F, adapted to loosely engage with the lug E, of the switch, substantially as described.

4. The power transmitting devices consisting substantially of a spiral grooved drum, a connecting rod provided with a crank adapted to loosely engage with the lug of the switch bar, substantially as described.

5. In combination with the spiral grooved drum H, supported under the groove of the rail, the guide plate Q forming the recess *h* opposite the end of the groove of said drum, substantially as described.

6. In a switch throwing device, the switch bar D supported in mortises in the webs of the rails, means for preventing the switch bar from rotary movement, and the tongue switch C, and a loose crank connection at each end of said connecting rod and means for operating said cranks to move the switch bar alternately in either direction, substantially as described.

7. In a switch throwing mechanism, the combination of a switch rod connected with the switch, a torsion rod having a crank adapted to loosely engage a lug on the switch rod, a drum rigidly mounted on the torsion rod and provided with a spiral groove one end of which is normally located adjacent to the track rail, and lever actuated tripping mechanism carried on a car and adapted to engage the spiral groove of the drum, substantially as and for the purpose specified.

In testimony whereof I have hereunto set my hand.

BURRITT B. BREED.

Witnesses:

T. SIMMONS,
W. R. WOOD.