

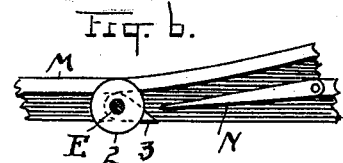
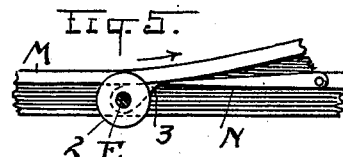
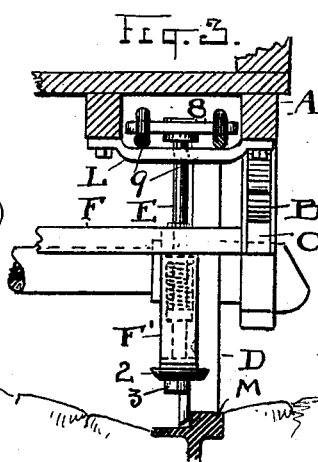
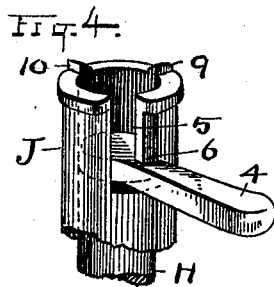
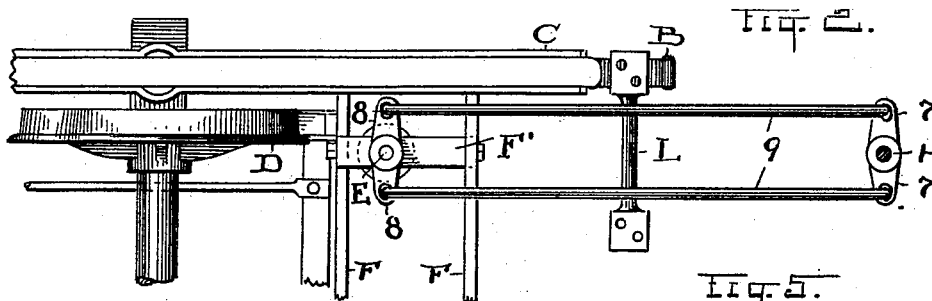
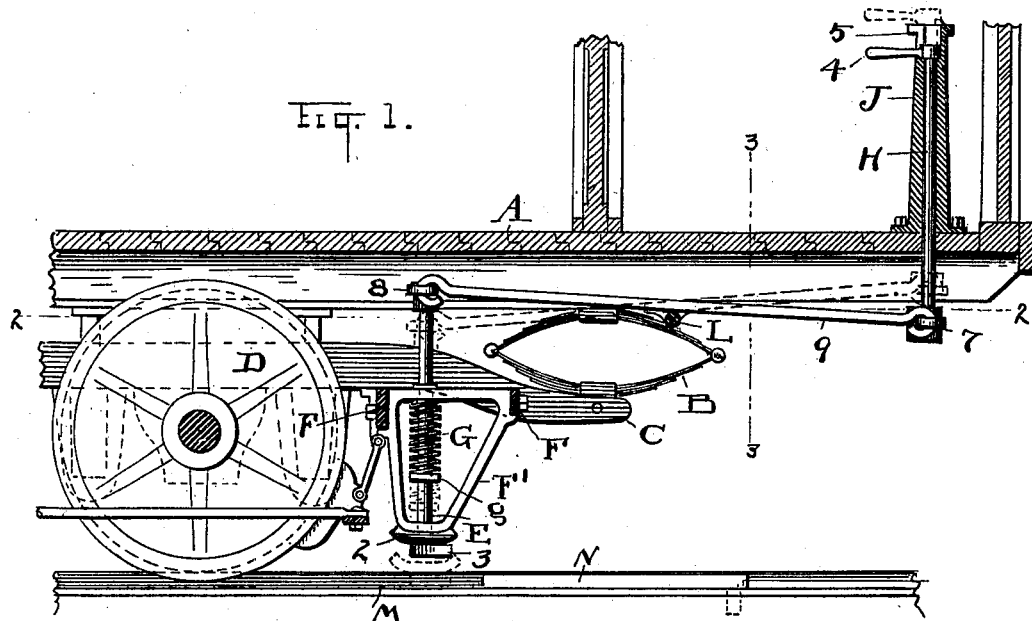
No. 649,233.

Patented May 8, 1900.

F. BURIE.
SWITCH THROWING DEVICE.

(Application filed Feb. 15, 1900.)

(No. Model.)



ATTEST
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SWITCH-THROWING DEVICE.

SPECIFICATION forming part of Letters Patent No. 649,233, dated May 8, 1900.

Application filed February 15, 1900. Serial No. 5,278. (No model.)

To all whom it may concern:

Be it known that I, FREDRICK BURIE, a citizen of the United States, residing at Bedford, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Switch-Throwing Devices; and I do declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to switch-throwing devices for railway-cars, and especially of the kind of cars in which a motorman or engineer is employed and has his position at the front of the car.

Hitherto, so far as I am aware, there have been no really practical means either made or introduced whereby a rail-switch could be thrown by the engineer from his post in the car without stopping the car. On the contrary, he has always been obliged to stop the car and quit his post, either to go entirely out of the car to throw the switch or to reach down with a long rod or bar provided for that purpose. These have been the ways practiced, notwithstanding many attempts of inventors to improve thereon and all of which, so far as I am aware, have proved impracticable. All this of course required delay, because of the necessity for stopping the car, and took time after the car was stopped to throw the switch, as well as to get back to the motor and get the car started. Almost invariably also this has had to be done at busy centers where the line was crowded with cars and every moment of pause was expensive and kept back other cars as well. I have therefore conceived the idea of effecting the throwing of the switch to either side while the car is in movement and from the post of duty, so that now the motorman need not even turn off the current or power, and while he is controlling the power-switch with one hand he can control the switch-throwing mechanism with the other and go right on his way without any pause whatever. This mechanism is further provided with means for raising it up out of working position above the track when not required, all as hereinafter fully described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a

vertical elevation, partly in section, of the front part of a car, presumably an electric-motor car, although it may be any other kind, and which shows my improved switching, controlling, or throwing mechanism in full lines as it appears when raised and in dotted lines as it appears when lowered and at work. Normally it is in the raised position. Fig. 2 is plan view of the mechanism shown in Fig. 1 with the body of the car removed. Fig. 3 is a front elevation, partly in section, of the parts shown in Figs. 1 and 2 and corresponding substantially to lines 3 3, Fig. 1. Fig. 4 is an enlarged perspective elevation of the upper part of the tube or stand in which the controlling-rod for my improved mechanism is located and adjustable. Figs. 5 and 6 are plan views or portions of a track and of a switch therein, with the switching mechanism shown in opposite positions in respect to the switch, so as to throw it in one direction in Fig. 5 and in the opposite direction in Fig. 6.

A represents the bottom of a car-body supported on springs, as usual, and in this case shows spring B on the truck C. It is immaterial to this invention how the body and the truck are connected, and the switch-throwing device is located on the truck as near to the wheel D as practicable and in front thereof and supported in this instance on cross-bars F in a frame F' of its own and fashioned substantially as shown in Fig. 1. A near position to the wheel is preferred for sundry reasons, notably as it gets near the axle of the car where there is least rocking movement. Any suitable frame F', suitably attached to the truck, may be used, as the purpose of said frame is to provide a guide and support for the switch shaft or rod E, which extends down through the said frame F' and is wound by spring G within the frame resting on a collar g on the shaft E and against the frame F' at its upper portion. The said spring is a spiral coil of sufficient strength and elasticity to promptly throw the shaft E and its switch-foot 2 down upon the rail when the said shaft is released for that purpose. This so-called "foot" 2 is circular in plan, with the shaft E in its center, so that when dropped it will ride on the head of the rail at either side or slide thereon, but not go any

lower. It is also shown here as curved upward somewhat about its edge to clear joints or small obstructions on the surface of the rail. Rigid with the said foot and the shaft
 5 E is the switch-throwing point 3, arranged to run beneath the foot 2 and is of a wedge shape and fairly sharp at its point, so as to certainly run in behind the switch N and throw it, how-
 10 ever closely it may lie, against the side of the rail M. Hence when the shaft E is rotated the foot 2 and switch 3 turn therewith and are caused to respond positively to either change of position which the shaft makes. Now in order that the said shaft may be effec-
 15 tually operated both as to its rotation for throwing the switch in either direction and up and down, as is required, I provide the novel operating or actuating mechanism here-
 20 in shown, consisting, primarily, of a handle rod or shaft H, supported vertically at the front of the car in a convenient position in the tubular stand J, the upper portion of which is shown most plainly in Fig. 4. A
 25 suitable handle 4 is affixed to the said shaft H, and normally it is adapted to rest in the head of the said tube J, as seen in Fig. 4, wherein there is a right-angled slot 5, in the lower
 30 shoulder of which the said handle 4 is locked when the switch-foot 2 is raised out of use; but the instant that the said handle 4 is thrown out of engagement with the shoulder 6 and enters the vertical portion of slot 5 the spring
 35 G comes into action and forcibly throws the foot 2 down into switching position, while the handle 4 is accordingly thrown up to the top of the stand or hub J, where it may be carried onto either side of the slot 5 and locked temporarily. As this occurs the foot 2 nec-
 40 cessarily rides on the adjacent head of the rail, and the switch-point is in corresponding position at the side of said head to throw the switch.

The shaft H has two cross-arms 7 and the shaft E two corresponding arms 8, and two
 45 rigid links or rods 9 connect said sets of arms, as plainly shown in Fig. 2. This makes a direct and positive connection between the shaft H and shaft E, so as to rotate shaft E in either direction, as may be required, to throw
 50 the switch and to hold the switch-throwing point 3 to whatsoever side it may have been carried. On the top of stand J are two stops 9' and 10 for the handle 4, Fig. 4, and the motorman will know onto which side of the said
 55 standard to throw the handle 4 when he comes to a switch, the direction being governed by the direction he wishes to travel. Thus if he wishes to throw the switch to the right in Fig. 5 and travel to the left he makes a corre-
 60 sponding movement of the handle 4 on the top of the standard 7, and in like manner when he wishes to turn to the right or to go straight ahead, as may occur in Fig. 6, he throws the handle the other way against the
 65 other stop.

Now it is important that the foregoing mech-

anism should be free to accommodate itself first to the position of the other parts ordinarily provided for on the car and to the vi-
 70 brations or tiltings of the car as it runs, which on some roads and on some cars are very considerable. To these ends the connecting-rods
 9 are freely pivoted to the arms 7 and 8 and are further supported on a fulcrum or sup-
 75 porting-stirrup L, which is affixed to the bottom of the car-body. This stirrup L forms the pivot also for said rods, so that when the handle-shaft H is depressed to raise the foot
 2 against the downward pressure of spring G the rods bear on the stirrup L as a fulcrum
 80 and they ride thereon normally. On the other hand, when the handle H is released and the spring G is permitted to come into action the said stirrup forms a fulcrum from the oppo-
 85 site end, and the handle H is thrown up by the action of spring G and the foot 2 immediately takes its place on the rail M and the switch-point is ready to engage and throw the
 switch end. The drop of switch-foot 2 is the work of only an instant, and it can be raised
 90 immediately on passing the switch. Hence its depression need never exceed a few moments.

A single link or rod 9 might answer to operatively connect the two shafts E and H; but
 95 by having two I get especially an even balance on both sides for shaft E when it is to be raised, which prevents binding in its bearings.

By the foregoing construction the rocking
 100 or tilting of the car is provided for and it does not affect the switching mechanism, whether it be up or down. If down, there is ample room for play between the lower portion of the frame F' and the shoe 2, so that
 105 the truck may rock and tilt; but the spring G will hold the said foot and the point 3 faithfully down to work.

What I claim is—

1. A switch-controlling device for use on
 110 street-cars comprising a rotatable shaft having a switching-point on its lower end, a spring connected with said shaft to normally press it downward, tilting-rods connected with the top of said shaft and means to raise and lower
 115 the opposite ends of said rods together, substantially as described.

2. A switch-controlling device having a portion to run on the head of a rail and a point
 120 to run at the side of the rail and turn the switch, a vertically-arranged rotatable shaft carrying said parts and supported on the car-truck, in combination with a set of actuating-rods oppositely connected to the top of said shaft, a pivot-support for said rods on the car-
 125 body, and a handled shaft connected with the front ends of said rods and means to lock said shaft up and down, substantially as described.

3. The car-body and the truck-frame, a switch-throwing shaft on said frame having
 130 opposite arms at its top and a downwardly-pressing spring about said shaft, in combina-

tion with a vertical hand-controlled shaft on the car-body having opposite arms on its lower end, a pair of links connecting said arms with the arms on the switch-shaft and a pivot-support for said links between their ends, substantially as described.

4. The car-truck and a switch-throwing shaft and a support on said truck in which said shaft is movable vertically and rotatably, a downwardly-pressing spring for said shaft, and means to raise and to rotate said shaft, substantially as described.

5. The rotatable and vertically-movable switch-throwing shaft and the frame in which it is supported, a spiral spring about the shaft arranged to press the shaft downward, oppositely-placed arms on the shaft and rods connected with said arms, and a rest for said

rods between its ends on which the rods are arranged to tilt, substantially as described. 20

6. In a switch-throwing mechanism for cars, the switch-throwing shaft supported to be raised and lowered in combination with a handled shaft for the car and a guide therefor in which it has an up-and-down movement and constructed to hold said shaft in raised position, rigid connections between said handled shaft and said switch-shaft and a support on which said connections are pivoted, substantially as described. 25 30

Witness my hand to the foregoing specification this 8th day of February, 1900.

FREDRICK BURIE.

Witnesses:

H. T. FISHER,
R. B. MOSER.