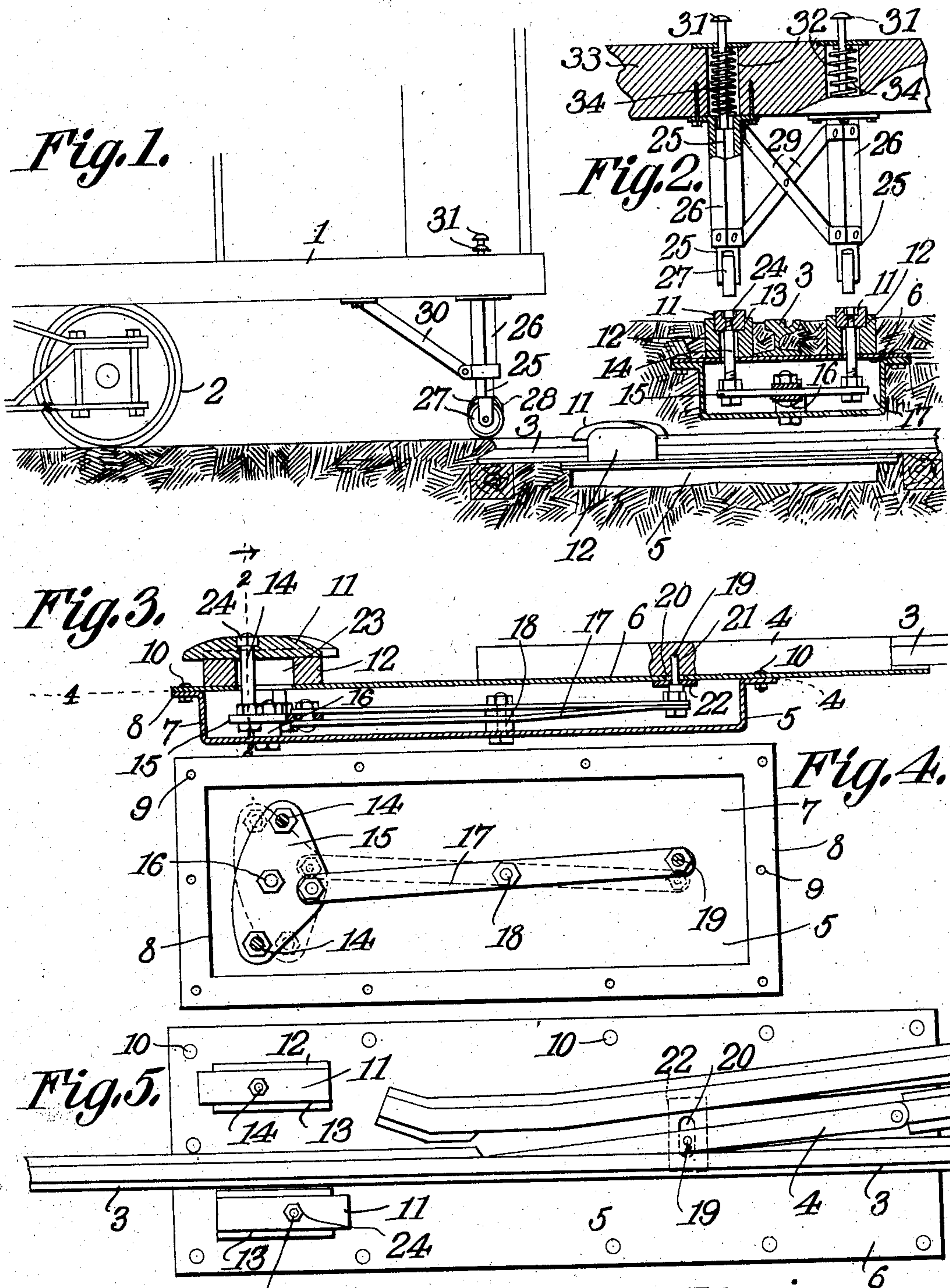


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H. J. AUGER.
SWITCH OPERATING MECHANISM.
APPLICATION FILED JULY 11, 1906.



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SWITCH-OPERATING MECHANISM.

No. 833,863.

Specification of Letters Patent.

Patented Oct. 23, 1906.

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To all whom it may concern:

Be it known that I, HENRY J. AUGER, a citizen of the United States, residing at Spokane, in the county of Spokane and State of Washington, have invented a new and useful Switch-Operating Mechanism, of which the following is a specification.

This invention relates to a switch-operating mechanism to be used in connection with city or interurban electric cars, whereby a switch can be opened or closed by the motorman without stopping the car for the purpose of dismounting and throwing the switch by hand, as is commonly necessary.

One of the objects of the invention is to improve and simplify the construction and operation of this class of devices and to render them more reliable.

A further object is to provide a switch-throwing mechanism of simple and inexpensive construction having its operating parts so organized and arranged as to permit the mechanism to be readily operated in all sorts of weather and as readily at night as in the day.

Another object is the employment of separately-actuated depressors or foot-actuators arranged on the platforms of the cars which are adapted to be moved into coöperative relation with the switch-throwing mechanism by the motorman, so that as the car approaches the switch the latter can be opened or closed, as desired.

With these objects in view and others, as will appear as the nature of the invention is better understood, the invention comprises the various novel features of construction and arrangement of parts, which will be more fully set forth hereinafter and defined with particularity in the claims appended hereto.

In the accompanying drawings, which illustrate one of the embodiments of the invention, Figure 1 is a side elevation of the front portion of a car and a section of a road-bed, showing the switch-throwing mechanism. Fig. 2 is a transverse section, taken on line 2 2 of Fig. 3, of the switch-throwing mechanism and the depressors on the car-platform shown associated with the switch-throwing mechanism. Fig. 3 is a vertical longitudinal section of the switch-throwing mechanism. Fig. 4 is a longitudinal section taken on line 4 4 of Fig. 3. Fig. 5 is a plan view of the switch and the throwing mechanism therefor.

Corresponding parts in the several figures are indicated throughout by similar characters of reference.

Referring to the drawings, 1 designates a platform of a car, the body of which is mounted on a truck, (shown in part at 2.) On the platform 1 at a point near one of the tracks is a foot-actuated mechanism by which the opening or closing of a switch may be controlled by the motorman as the car approaches the switch. One of these foot-actuated devices may be arranged on opposite sides of each platform, so that the car can be switched in a direction either to the right or left, into a turnout, crossover, or siding.

The track may be constructed in any approved manner, having the usual rails 3 and a switch-tongue 4. The switch-throwing mechanism is located along the rails in a casing or housing 5, the upper plate 6 of which serves or may serve as the frog-plate of the switch. The bottom portion 7 of the casing 5 is a box-like structure having a peripheral flange 8, which is provided with apertures 9 for receiving the bolts 10 whereby the bottom portion 7 is secured to the plate 6. The casing of the switch-throwing mechanism is located under the adjacent rail and below the level of the street-surface and is therefore concealed from view. Arranged on the approach side of the switch-tongue and at a suitable distance from the free end of the latter are two longitudinally-movable shift-blocks 11, arranged on opposite sides of the track-rail having the switch. These blocks are mounted in guide members 12, secured on the plate 6. These members, which are provided with longitudinal grooves 13, in which the shift-blocks are guided, serve to raise the shift-blocks above the level of the street, so as to be in the path of the foot-depressors. The longitudinal movement of the shift-blocks is employed for the purpose of throwing the switch. The shift-blocks are connected, by means of the upright bolts 14, to an oscillating lever 15, located within the casing 5 and fulcrumed on the bottom thereof at 16. The lever 15 is connected with a second lever or walking-beam 17, which is disposed longitudinally of the casing 5 and mounted in the latter on the fulcrum 18. The end of the lever 17 opposite from the lever 15 is provided with an upwardly-extending post or finger 19, that projects through the slot 20 in the plate 6

and into a socket 21 in the under side of the switch-tongue 4, as shown clearly in Fig. 3. It will thus be seen that the tilting of the lever 15 in one direction or the other will, through the lever 17 and post 19, open or close the switch.

In order to exclude the entrance of dirt into the casing of the switch-throwing mechanism, a shield 22 in the form of a plate is arranged to move with the post 19 and keep the slot 20 closed.

As shown in Fig. 3, the guide members 12 of the shift-blocks are provided each with a longitudinal slot 23, with which the connecting-bolt 14 of the adjacent shoe or shift-block 11 extends. Each shift-block or shoe 11 is rounded at its ends, and the nut 24 of the bolt 14 is countersunk, so that the wheels of the foot-depressor device may readily engage and ride over the shift-blocks without noise and shock.

The foot-depressor device on the platform of the car comprises two rods 25, movable in guides 26, located in planes vertically above the shift-blocks or shoes 11. The lower ends of the members 25 are provided with rollers 27, that are adapted to engage with the shift-blocks and impart longitudinal movement to the latter. These rollers are preferably faced with rubber or other suitable material, (indicated at 28 in Fig. 1,) so as to reduce the noise when they strike the shift-blocks. The tubular guide members 26 are or may be angular in cross-section, and the rods 25 are of corresponding cross-section, so as to fit in the guides and prevent relative turning. Any other suitable means may be provided for keeping the wheels 27 in alinement with the shift-blocks 11. The guides 26 are attached to the under side of the platform and are braced one from the other by the braces 29 and from the platform by the brace 30. The upper ends of the rods 25 are reduced and project above the platform, where they are provided with buttons 31. In the openings 32 of the platform-floor 33 are compression-springs 34, that serve to maintain the depressor-rods 25 in their elevated position, so that the wheels 27 will be normally out of the way of obstructions along the track.

From the foregoing description, taken in connection with the accompanying drawings, the advantages of the construction and method of operation will be readily understood by those skilled in the art to which the invention appertains. In the operation of the apparatus the motorman presses one or the other of the buttons 31 as the car is nearing the switch, thereby lowering one of the wheels 27 into the path of its respective shift-block. The switch-throwing mechanism is thereby actuated by the wheel 27 so that the switch is opened or closed, as desired. As shown in Fig. 1, the right-hand depressor-rod is lowered, so as to engage the shift-block lo-

cated on the outside of the rail 4, Fig. 5. As the car moves forward the lowered wheel strikes against the shift-block in front of the same and moves the latter forward to the position shown in Fig. 5. This causes the levers 15 and 17 to move to the dotted position shown in Fig. 4, thereby opening the switch, as shown in Fig. 5. As the shift-block on the outside of the rail is moved in a forward direction the shift-block on the inside of the rail is moved rearwardly, so as to be in the proper position for engagement with the wheel on the inside depressor-rod of a succeeding car. When a succeeding car approaches the switch and it is desired to close the same, the inside foot-button is depressed, thereby causing the wheel thereof to engage the inside shift-block and move the operating parts of the switch-throwing mechanism into the full-line position, Fig. 4. The switch will then be closed. As soon as the car passes the switch, or rather the wheel 27 rides off its respective shift-block, the motorman can remove his foot from the press-button. It will thus be seen that when the right-hand press-button is depressed the switch will be opened and vice versa when the left-hand press-button is depressed. The motorman knowing this is enabled to switch the car with equal facility during night or day.

It will be noted that the switch-throwing mechanism is located below the surface of the street, and the only part exposed to view and to the possible effects of traffic in the street are the shift-blocks. These can be readily made of substantial construction, so that they are not easily damaged.

I have described the principle of operation of the invention, together with the apparatus which I now consider to be the best embodiment thereof; but I desire to have it understood that the apparatus shown is merely illustrative and that various changes may be made when desired as are within the scope of the invention.

What is claimed is—

1. The combination with a rail, and a switch, of a mechanism for throwing the switch comprising a lever disposed at one side and in line with the tongue of the switch, means for connecting the lever with the tongue, and means for actuating the lever. said latter means comprising a pair of members located one on each side of the rail, guiding devices for guiding the members in a direction longitudinal of the rail, and an oscillatory device between the members and lever.

2. The combination with a rail, and a switch, of a mechanism for throwing the switch comprising a member disposed in line with the switch-tongue and under the free end of the latter, means for connecting one end of the member with the tongue, and a device located at the approach side of the switch and mounted for movement in a direc-

tion longitudinal of the rail for actuating the member.

3. The combination with a rail, and a switch, of a mechanism for throwing the switch comprising a member disposed in line with and under the switch-tongue, devices located above the member on the approach side of the switch and on opposite sides of the said rail, and means intermediate the devices and member for actuating the latter by the devices.

4. The combination with a rail, and a switch, of a mechanism for throwing the switch comprising a member connected with the tongue of the switch, devices located on the approach side of the switch and on opposite sides of the said rail, and an oscillatory means intermediate the devices and member for actuating the latter by the devices.

5. The combination with a rail, and a switch, of a mechanism for throwing the switch comprising a member connected with the tongue of the switch, longitudinally-movable shift-blocks located on opposite sides of the said rail, and means intermediate the shift-blocks and member for actuating the latter by the shift-blocks.

6. The combination with a rail, and a switch, of a mechanism for throwing the switch comprising a lever connected with the tongue of the switch, longitudinally-movable shift-blocks located on opposite sides of said rail, an oscillating lever connected with the first-mentioned lever, and means for connecting the shift-blocks to the second lever.

7. The combination of a rail, a plate, a switch-tongue movable on the plate, and a mechanism for throwing the switch-tongue comprising a fulcrumed member located under the said plate and connected at one end with the tongue, devices arranged on the approach side of the tongue and on opposite sides of the rail in a position above the said plate, and means for removably connecting the devices with the said member at the end opposite from that connected with the tongue.

8. The combination of a rail, a plate having a slot, and a switch-tongue movable on the plate, with a mechanism for throwing the switch-tongue comprising a member located under the plate, a post connecting the member with the tongue and arranged to extend through the slot of the plate, shift-blocks located above the plate and surface of the street, and means extending through the plate for connecting the shift-blocks with the member.

9. The combination of a rail, a plate having a slot, and a switch-tongue movable on the plate, with a mechanism for throwing the switch-tongue comprising a lever located under the plate, means extending through the slot of the plate for connecting the lever with the tongue, a shield for closing the slot of the plate, shift-blocks located above the plate,

and an oscillating lever under and connected with the shift-blocks and with the first-mentioned lever.

10. The combination of a rail, and a switch-tongue, with a mechanism for throwing the switch-tongue comprising members fulcrumed to swing in a horizontal plane which are located below the tongue and the surface of the street, and members connected with one of the fulcrumed members in a position above the surface of the street and on opposite sides of the rail.

11. The combination of a rail, and a switch-tongue, with a mechanism for throwing the switch-tongue comprising members located below the rail, longitudinally-movable shift-blocks arranged on opposite sides of the rail, and guides for the blocks which support the latter above the level of the rails.

12. The combination of a rail, and a switch-tongue, with a mechanism for throwing the switch-tongue comprising members located below the rail, longitudinally-movable shift-blocks arranged on opposite sides of the rail, guides for the blocks which support the latter above the level of the rails, and devices extending through the guides for connecting the shift-blocks with the said members.

13. The combination of a rail, a switch-tongue and a mechanism for throwing the same including shift-blocks movable in a direction parallel with the length of the rail and located on opposite sides of and in front of the tongue, with depressible devices arranged on a car for actuating the shift-blocks.

14. The combination of a rail, a switch-tongue, and a mechanism for throwing the latter including shift-blocks located on opposite sides of the rail, with means arranged on the car for actuating the shift-blocks, the same comprising guides disposed in the vertical planes including the shift-blocks, depressible members in the guides which are independently actuated to engage the shift-blocks, and means for maintaining the members out of the path of the shift-blocks.

15. The combination of a rail, a switch-tongue, and a mechanism for throwing the latter including shift-blocks located on opposite sides of the rail and rounded at their ends, with a mechanism arranged on a car for actuating the shift-blocks, the same comprising parallel guides each located above a shift-block, non-rotatable and longitudinally-movable members in the guides, and rollers on the lower ends of the members which engage with and ride over the shift-blocks to impart longitudinal movement thereto.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

HENRY J. AUGER.

Witnesses:

U. N. PERUSSE,
C. E. COOPER.