

No. 758,552.

PATENTED APR. 26, 1904.

J. H. MILLER.
SWITCH OPERATING MECHANISM.

APPLICATION FILED SEPT. 24, 1903.

NO MODEL.

3 SHEETS—SHEET 1.

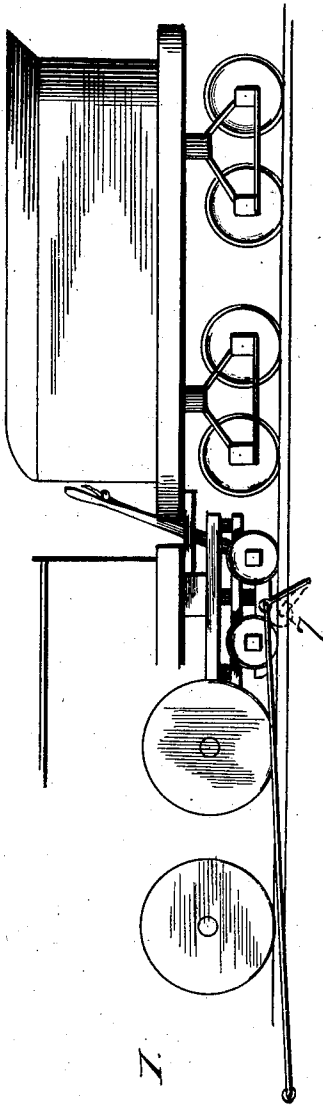


Fig. 1.

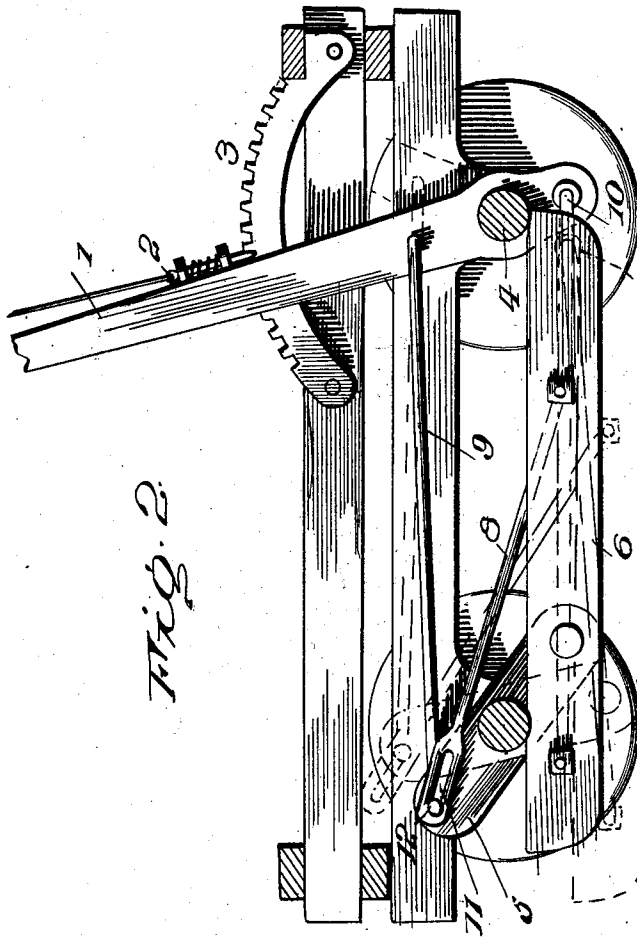


Fig. 2.

Witnesses

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3 SHEETS—SHEET 3.

Fig. 5.

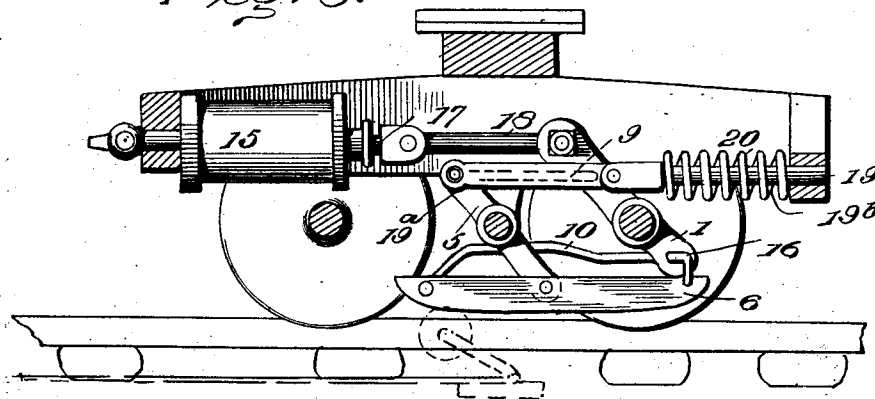


Fig. 6.

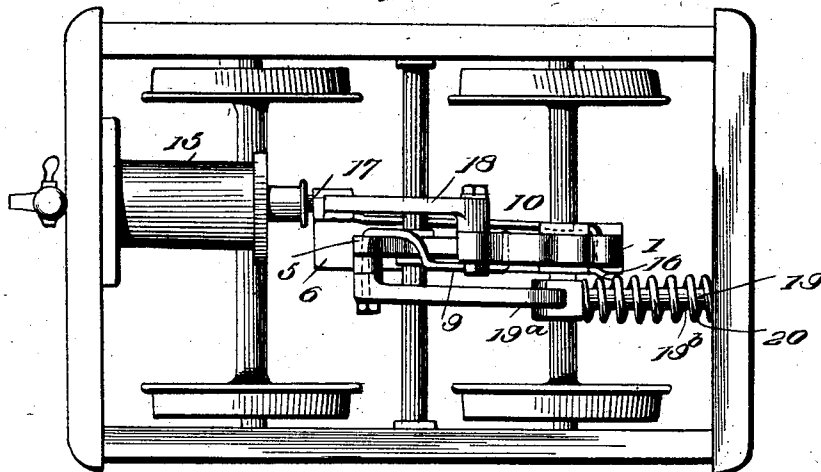
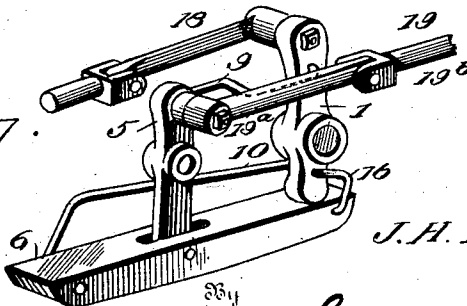


Fig. 7.



Witnesses

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SWITCH-OPERATING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 758,552, dated April 26, 1904.

Application filed September 24, 1903. Serial No. 174,501. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. MILLER, a citizen of the United States, residing at Christiana, in the county of Rutherford and State of Tennessee, have invented certain new and useful Improvements in Switch-Operating Mechanism, of which the following is a specification.

This invention relates to operating mechanism carried by the rolling-stock of railways for actuation of switches, the object being to provide new and novel construction thereof at the same time embodying a maximum amount of substantiality, efficiency, and simplicity of parts.

The invention is adapted for operation by the trainman so that the switch may be closed, or if it is not desired to change the course of travel the operating parts need not be manipulated, when, of course, the switch mechanism not being actuated the switch will retain its normal position.

For a full description of the invention and the merits thereof and also to acquire a knowledge of the details of construction of the means for effecting the result reference is to be had to the following description and drawings hereto attached.

While the essential and characteristic features of the invention are susceptible of modification, still the preferred embodiment of the invention is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation showing the operating mechanism applied to the rolling-stock. Fig. 2 is a side elevation of the operating mechanism only, parts being enlarged. Fig. 3 is a top plan view showing the relative arrangement of the parts. Fig. 4 is a perspective view of the operating parts separated from the truck to which they are affixed. Fig. 5 is a side elevation showing a slightly-modified form of operating mechanism. Fig. 6 is a plan view of the mechanism shown in Fig. 5. Fig. 7 is a detail view of the modified form of operating parts separated from the truck to which same are affixed.

Corresponding and like parts are referred to in the following description and indicated

in all the views of the drawings by the same reference characters.

It is preferred to dispose the operating mechanism at a point between the engine and the tender of the train, as shown most clearly in Fig. 1 of the drawings. The device consists, essentially, of an operating-lever 1, pivotally secured to framework interposed between the tender and engine and convenient for operation by the engineer or fireman. The lever 1 is provided with a hand-latch 2, of ordinary type, which coöperates with a toothed segment 3, rigidly secured to the framework to fix the position of the operating-lever. The lever 1 may be pivoted to the axle 4 of the tender, and at a point adjacent the said lever is also located an arm 5, which is pivoted between its ends to the adjacent axle 4^a. The arm 5 carries the shoe 6, which is adapted to engage with the trip-arm 7, the latter being disposed at a point intermediate the rails and connected in a suitable manner to the switch mechanism for operation thereof. The shoe 6 is pivoted to the lower end of the pivoted arm 5, and a link 8 connects one end of the shoe 6 to the upper end of the pivoted arm 5 and forms a brace when the shoe is lowered to engage the trip-arm 7, as aforesaid, links 9 and 10 connecting, respectively, the upper portion of the pivoted arm 5 and the lever above its fulcrum and one end of the shoe 6 with the lever at a point below its fulcrum. The end of the shoe to which the link 10 is secured is that opposite to which the link 8 is secured. The link 8 is provided at its upper end with a slot 11, and a pin 12 serves to hold the upper end of the link to the upper end of the arm, at the same time admitting of a sliding action of the said link with reference to this part of the arm 5. The shoe 6 in its movement moves in parallel relation with the link 9, which connects the upper end of the pivoted arm 5 to the lever above the fulcrum. When the shoe 6 is in a position so as not to engage with the trip-arm 7 between the rails, it is disposed so as to have its upper portions in contact with the axle or other pivoting means upon which the arm 5 and the lever 1 are pivoted. The lever 1, by manipulation of the latch 2 thereof,

is locked so as to either hold the shoe in such a position that it will engage the trip-arm 7 or is locked so as to hold the shoe 6 positively out of engagement with it. The axles 4 and 5 constitute limiting means for preventing upward movement of the shoe beyond a certain point, and thus constitute after a manner stops preventing any play of the shoe when same is locked in its uppermost position.

To throw the shoe into position so that it will engage the trip-arm 7, and thus operate the switch mechanism, the lever will be moved so as to lower the shoe 6 and is locked when the said shoe has such a position. The link 8 forms a brace for holding the shoe rigid, insuring the perfect tripping operation aforementioned.

The device involves a minimum number of parts, is extremely simple in its operation, and for this reason is possessed of great desirability.

In the contemplation of my invention it is my intention that the switch-throwing mechanism be operated other than by manual means, as has been described hereinbefore. In Figs. 5 and 6 of the drawings, as shown, a somewhat-modified construction of drawing mechanism adapted to be actuated by steam admitted to a cylinder 15 is mounted in a suitable manner upon the truck-frame. The cylinder 15 is connected to the steam-spaces of the boiler, and valve means are provided under the control of the engineer or other trainmen for governing admission of the steam to the cylinder in operating the shoe 6. The operating-lever 1 and the pivoted arm 5 are mounted within the truck-frame in substantially the same manner as illustrated in the first four figures of the drawings. The links 9 and 10 also are utilized to connect, respectively, the upper ends of the operating-lever 1 and the pivoted arm 5 and the lower end of the operating-lever and an end of the shoe 6. In the modification, however, the lower end of the operating-lever 1 is connected by a second link 16 to the end of the shoe 6 opposite to that to which the link 10 is secured. A piston-rod 17, extending from the cylinder 15, is connected by means of a bar 18 to the extreme upper end of the operating-lever 1. A spring-retracted bar 19 is also pivoted to the upper end of the pivoted arm 15, the said bar being comprised of two sections 19^a and 19^b, the latter extending through an opening in one end of the truck-frame. A spring 20 is interposed between the aforesaid end of the truck-frame and a shouldered portion upon the section 19^b of the spring-retracted bar, and this spring normally holds the bar 19 in a position so as to support the shoe 6 in an uppermost position. Upon admission of steam to the cylinder 15 under the control of the engineer or other trainmen the piston-rod 17,

through the medium of the bar 18, causes operation of the lever 1, and this movement of the lever throws the shoe 6 downwardly in a position adapted to cooperate with the trip mechanism of the switch mechanism upon the tracks. The train having passed the switch, the steam-supply is cut off, and under the actuation of the spring-retracted bar 19 the parts comprising my switch-throwing device resume their normal position.

Having thus described the invention, what is claimed as new is—

1. In a device of the character described, an arm pivoted between its ends, a shoe pivoted to the lower end of the arm, and a link connecting one end of the shoe to the pivoted arm at a point above the fulcrum thereof, substantially as set forth.

2. In a device of the character described, the combination, of an arm pivoted between its ends, a shoe pivoted to the lower end of the arm, and a link connected to one end of the shoe and to the pivoted arm at a point above the fulcrum thereof, the said link having a sliding connection with the pivoted arm, substantially as specified.

3. In a device of the character described, the combination, of an arm pivoted between its ends, a shoe pivoted to the lower end of the arm, a link connected to one end of the shoe, and a pin-and-slot connection between the said link and the pivoted arm at a point above the fulcrum of the latter, substantially as specified.

4. In a device of the character described, in combination with an arm pivoted between its ends, a shoe pivoted to the lower end of the arm, a link pivoted to one end of the shoe and to the pivoted arm at a point above its fulcrum, and an operating-lever operatively connected to the pivoted arm, substantially as specified.

5. In a device of the character described, an arm pivoted between its ends, a shoe pivoted to the lower end of the arm, a link connecting one end of the shoe with the pivoted arm at a point above its fulcrum, a pivoted lever, and link connections connecting the pivoted lever to the pivoted arm and the shoe carried thereby, substantially as specified.

6. In a device of the character described, the combination, with an arm pivoted between its ends, a shoe pivoted to the lower end of the arm, a link connecting one end of the shoe and the upper end of the pivoted arm, an operating-lever, and links connecting respectively the upper end of the pivoted arm and the lever above its fulcrum and the shoe and the lever at a point below the fulcrum of the latter, substantially as described.

7. In a device of the character described, in combination with a pivoted arm, a shoe pivoted to the lower end of the arm, a link connecting one end of the shoe to the upper end

of the pivoted arm, a link connecting the opposite end of the shoe to the lever below its fulcrum, and another link connecting the upper end of the pivoted arm to the lever above its fulcrum.

8. In a device of the class described, the combination, with an arm pivoted intermediate its ends, a pivoted operating-lever, a link connecting the arm and operating-lever at points above the fulcrums thereof, and a shoe supported by the pivoted arm at a point below its fulcrum.

9. In a device of the class described, the combination, with an arm pivoted intermediate its ends, a pivoted operating-lever, a link connecting the pivoted arm and operating-lever at points above the fulcrums thereof, a shoe supported by the pivoted arm at a point

below its fulcrum, and means connecting the shoe and the operating-lever at a point beneath the fulcrum of the latter.

10. In a device of the class described, the combination, with an arm pivoted intermediate its ends, a pivoted operating-lever, a link connecting the pivoted arm and operating-lever at points above the fulcrums thereof, a shoe supported by the pivoted arm at a point below its fulcrum, and a link connecting the lever at a point below its fulcrum to the shoe supported by the pivoted arm.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN H. MILLER. [L. s.]

Witnesses:

H. H. CLARK,
SANDY NEWMAN.