(No Model.) 2 Sheets—Sheet 1.

H. L. WALTON & W. A. GRIFFITHS.

SWITCHING DEVICE FOR RAILROADS.

No. 531,080. Patented Dec. 18, 1894.

Fig 1.

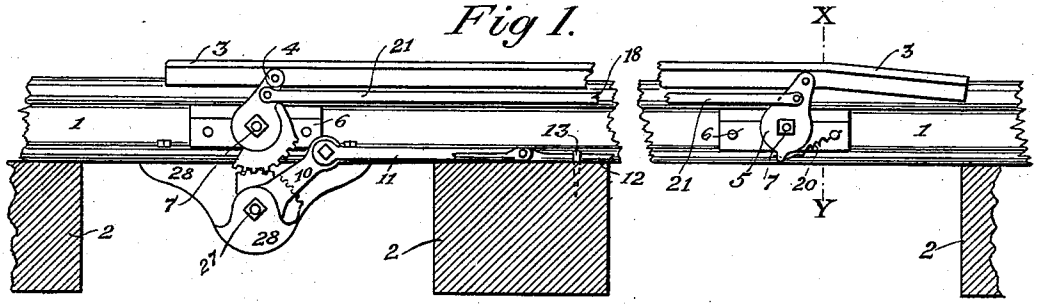


Fig 2

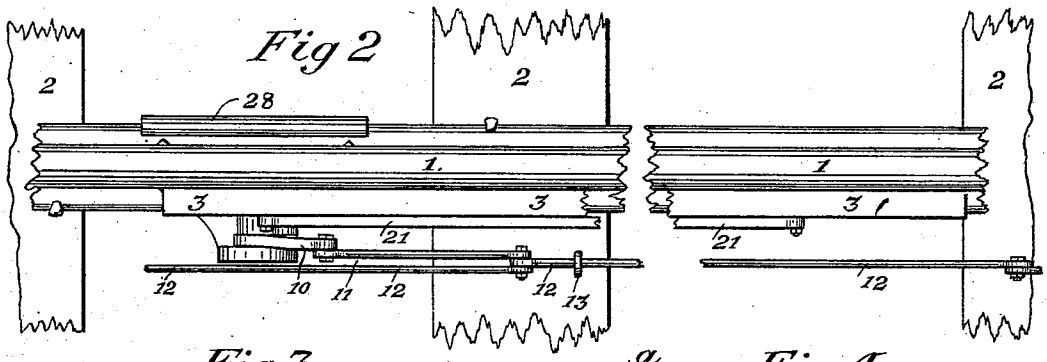


Fig 3

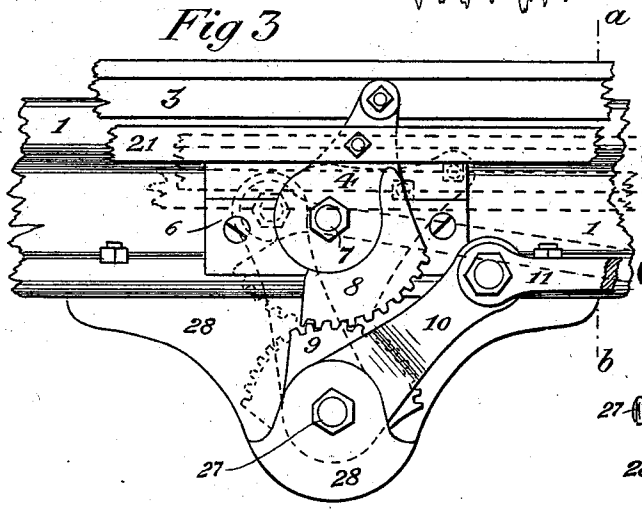
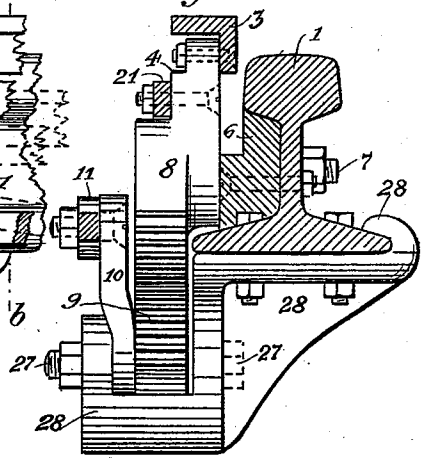


Fig 4



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(No Model.) 2 Sheets—Sheet 2

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Fig 6

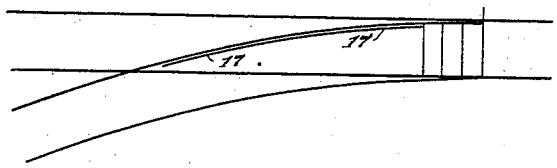


Fig 5

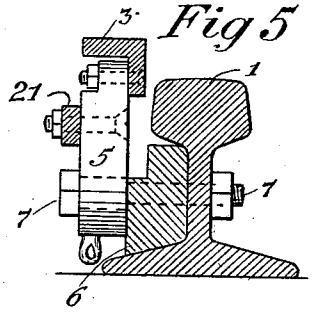
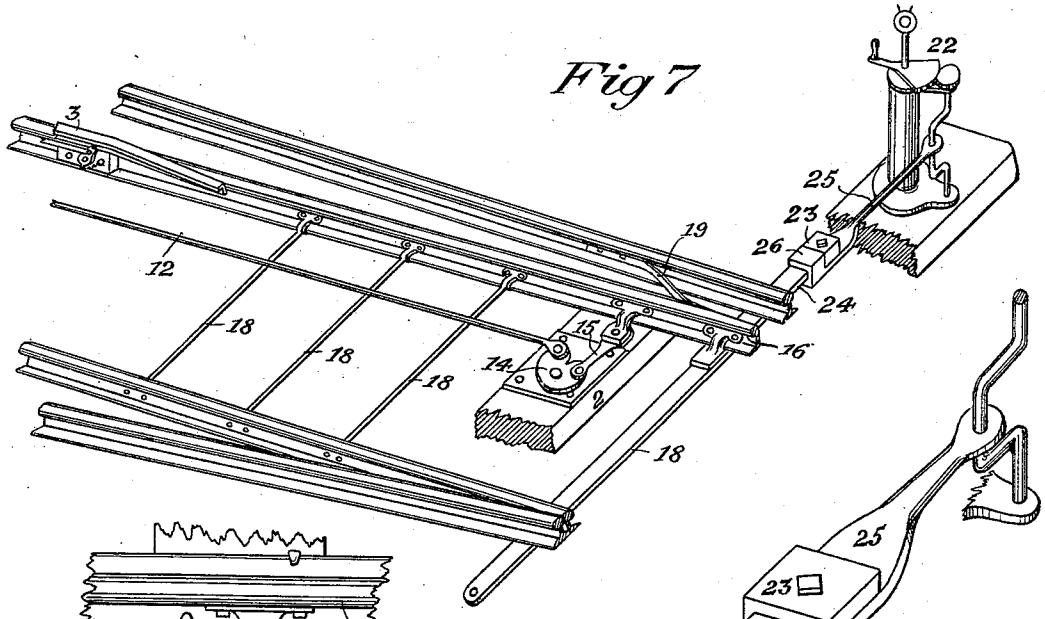


Fig 7



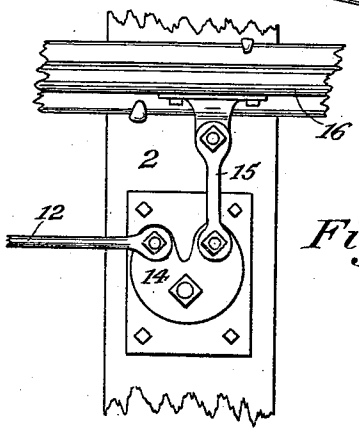


Fig 9

Fig 8

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UNITED STATES PATENT OFFICE.

HERBERT L. WALTON AND WILLIAM A. GRIFFITHS, OF MINNEAPOLIS, MINNESOTA.

SWITCHING DEVICE FOR RAILROADS.

SPECIFICATION forming part of Letters Patent No. 531,080, dated December 18, 1894.

Application filed February 16, 1894. Serial No. 500,417. (No model.)

To all whom it may concern:

Be it known that we, HERBERT L. WALTON and WILLIAM A. GRIFFITHS, citizens of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented a new and useful Switching Device for Railroads, of which the following is a specification.

Our invention relates to improvements in switching devices by which the moving train is made to open a switch automatically in order to pass to another track; and the objects of our improvement are to provide means by which the motion and weight of the train will operate to throw the switch and hold it in the desired position while the train passes, by the action of the wheels of the engine or cars or of both, as will be more fully described. We attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of our device attached to a rail of the railroad track, with a portion of its length broken out. Fig. 2 is a top or plan view of the same. Fig. 3 is a side elevation of a portion of the device on a larger scale. Fig. 4 is a cross section of the same through the line *a. b.* Fig. 3. Fig. 5 is a cross section through the line *x y* of Fig. 1. Fig. 6 is a section of main track with a side track connecting therewith, to show the application of our device. Fig. 7 is a perspective view of a railway switch showing the attachment of our device. Fig. 8 is a detail showing the sliding collar and head on the throw bar running to the switch stand. Fig. 9 is a top view of the switch lever with which our device is connected.

The same numerals refer to the same parts throughout the several views.

Our device is preferably attached to one of the rails 1, of the track, which rests upon the cross ties 2. A horizontal movable rail 3 is placed close to the inner edge of the rail 1, and is supported upon arms 4 and 5. No specific length for the movable rail 3 nor any specific numbers of the arms are required, but it is desirable to have the movable rail at least as long as the longest coach, freight car or engine. We prefer ordinarily to make the same sixty-four feet in length, with four of the arms 4 placed sixteen feet apart, while the arms 5 may be spaced between, at about two feet apart. The arms 4 and 5 are pivoted at the upper end to the movable bar 3, and below to the rail 1. A block 6 may be placed between the thin portion of the rail 1 and the arms 4 and 5, and may be bolted to the rail 1, through which block the bolt 7 passes to form the lower pivotal connection of the arms. In order that the arms may work freely on the bolt 7, it is desirable to make this bolt larger where it lies within the arms 4 and 5 than for the remainder of its length, so that the tightening of the nut on the end of the bolt 7 will not cramp the free action of the arms. Rigidly attached to the arms 4 is a segmental portion 8, provided with cogs which engage with cogs on the segment 9 which in turn is rigidly attached to the arm 10. The arm 10 is pivoted by means of a bolt 27 to a frame or body 28, and the latter may be secured by means of bolts to the under side of the rail 1, as shown in Fig. 4. The arm 10 is loosely secured at its upper end to one end of a link 11, and the other end of said link is secured to the rod 12. The rod 12 is preferably made in sections which may be bolted together and the rod held upon the ties by means of staples 13 which allow it free movement in a longitudinal direction only. The rod 12 is connected with an arm of a lever 14, Figs. 7 and 9, the other arm of which has a link 15 pivoted to it at one end, while the other end of the link is pivoted to the movable rail or switch point 16, which is a continuation of the rail 1.

Our device may be placed at the inner edge of the rail as shown in Fig. 6 designated by 17. An ordinary switch point of a standard gage railroad is fifteen feet in length, and the rail 3 of our device may be made to extend four or five feet onto such point, that is for a distance onto the movable portion of the switch rail. The curved track in Fig. 6 represents a side track connecting with a straight main track. If a train be standing upon the side track and the switch be closed so that the main track is open and clear, as shown in Fig. 7, the switch must be thrown to allow the train to pass out upon the main track. As the train is proceeding from the side track,

the flange of the first wheel strikes against the movable rail 3, at its left hand end shown in Fig. 1, throws rail 3 forward and downward, and with it the upper ends of the arms 4 and 5, the engagement of the cogs of the segments 8 and 9 thereby drawing the arm 10 back, and with it the rod 12, by its connection through link 11. The drawing of the rod 12, draws the connected arm of the switch lever 14 back, forces the link 15 against the switch point 16, and the end of the latter toward the rail of the main track. The usual connecting rods 18 impart the same motion to the opposite rail of the switch point and the switch is thrown open. As the flanges of one or several wheels are at all times pressing down upon the movable bar 3, and holding the parts in the position shown in dotted lines in Fig. 3, the switch is held open till the last wheel passes onto the movable points of the switch, when no further holding of the switch is required. For these last few feet the wheels themselves will hold the switch open till the train has passed out.

In order to close the switch behind the train, spring 19 may be placed at the switch point. In order that the weight of the movable bar with arms and attachments may be counteracted, it is desirable to use springs 20, attached to the block 6 and the arm 5, or other similar means to facilitate the return of the movable rail and parts to the position shown in Fig. 1 when the switch is closed. These springs 20 may be even made strong enough to themselves close the switch if desired, but we prefer a spring at the switch point and the use of springs 20 or like device as mere auxiliaries. Both ends of the rail 3 may be brought down to or slightly below the top of the rail 1, before rail 3 has been depressed by the wheels, but we prefer to have the end nearest the switch so brought down, and the other end slightly above the rail as shown in Fig. 1. A bar 21 running longitudinally with the movable rail 3, and bolted to the arms 4 and 5 throughout, so as to form a pivot at each bolt, will facilitate the action of the device, by insuring that all parts of the rail 3 will be depressed simultaneously. It is desirable to have the movable switch points also connected with the ordinary switch stand 22, so that the switch may at times be thrown by hand. In order that the latter may not interfere with the operation of our device, we place a head 23 on the end 24 of the outer connecting rod 18 of the switch points. A link 25 is provided with a collar 26 to which it is rigidly secured. Through this collar 26, the end 24 of the connecting rod passes so that it may work loosely therein. The outer end of the link 25, is loosely connected to the crank or lever of the switch stand 22. The result is that the switch being closed as in Fig. 7 may be opened with the switch stand 22 by the hand, the collar 26 coming in contact with the head 23 as the link 25 is drawn outward toward the switch stand 22, by turning the crank thereof, and forcing the end of the switch point over toward the rail of the main track in the usual way. On the other hand, when the crank of the switch stand 22 stands in the position shown in Fig. 7, and the switch is thrown by the operation of the train upon our device, the end 24 will slide through the collar 26 and the head 23 will be pushed out from contact with the collar as shown in Fig. 8. Any appropriate form of sliding connection may be used instead of the parts designated 23 to 26, and likewise as to the lever and link 14 and 15, and as to the form of the spring 19, but we prefer the forms shown.

A train being upon a side track at a way station, and desiring to proceed, under the old methods the switch must be thrown by one of the train men who opens the switch, remains there till the train passes out, when he closes it and the train having stopped in the meantime, the man boards it and proceeds. This involves a loss of time and the starting of the train twice. In heavy freight trains both these items add greatly to the expense of moving freight. Besides, if there be a hill or up grade,—as frequently happens,—after passing onto the main track in leaving the way station, the train may be unable to start up after stopping for the train man to get aboard. Consequently the train is cut in two, the engine hauls a portion to the next station and returns for the balance, involving great delay. This is avoided by the use of our device, for the reason, that the train getting under way before reaching the hill, and not having to stop to close the switch, is enabled to pass over the grade unbroken.

Our device may be employed likewise, to manipulate a signal, either in connection with its opening a switch to indicate such fact, or alone, as in case of a signal to warn of an approaching train.

What we claim, and desire to secure by Letters Patent, is—

1. In a switching device, the combination of a movable rail placed at the edge of the track rail and so as to come in contact with a passing car wheel, arms loosely attached to the movable rail and to the thin part of the track rail through a block, a portion of said arms having a segmental part extending below the said attachment thereof to the track rail, a frame adapted to be secured to the under side of the track rail and to loosely hold the lower end of an arm lever, a segment upon said arm lever extending above said loose attachment thereof to the frame, said segment having cogs which interlock with cogs upon said first named segment, and a rod attached to a switch lever and to the upper end of said lever arm, substantially as set forth.

2. In a switching device, the combination of a movable rail placed close to and running with the track rail and so as to come in contact with a passing car wheel, arms loosely attached to the movable rail and to the thin part of the track rail, a portion of said arms

having a segmental part extending below the said attachment thereof to the track rail, a frame adapted to be secured to the under side of the track rail and to loosely hold the lower end of an arm lever, a segment upon said arm lever having cogs which interlock with cogs upon said first named segment, a rod attached to a switch lever adapted to throw the switch, a link attached to the outer end of said lever arm and connecting the same with said rod, and a spring adapted to return the switch to its first position and the movable rail to an elevated position, substantially as shown and described.

3. In a switching device, the combination of a movable rail placed at the edge of the track rail and so as to come in contact with a passing car wheel, arms loosely attached to the movable rail and to the thin part of the track rail, said arms having a segmental part extending below the said attachment thereof to the track rail, a frame adapted to be secured to the under side of the track rail and to loosely hold the lower end of an arm lever, a segment upon said arm lever having cogs which interlock with cogs upon said first named segment, a rod attached to the free end of said lever arm and to a switch lever adapted to receive the motion of said rod and throw the switch, a spring adapted to return the switch and to elevate the movable rail when the train has passed, and a switch stand connected with a connecting rod of the switch by a link, said connecting rod and link being provided with a head and loose collar, substantially as set forth.

4. In a switching device, the combination of a movable rail placed at the edge of the track rail, and so as to come in contact with a passing car wheel, arms loosely attached to the movable rail and to the track, a longitudinal bar loosely secured to said arms at an intermediate point, a rod connected with a switch lever and with a movable arm, mechanism to transmit the motion of one of said first named arms to said last named arm, to move the rod and throw the switch, substantially as set forth.

5. In a switching device, the combination of a movable rail placed at the inner edge of the track rail, and so as to come in contact with the flange of a passing car wheel, arms loosely attached to the movable rail and to the track, a longitudinal bar loosely secured to said arms at an intermediate point, a rod connected with a switch lever and with a movable arm, mechanism to transmit the motion of one of said first named arms to said last named arm, to move the rod and throw the switch, and a spring tending to keep said movable rail in an elevated position, substantially as shown and described.

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