

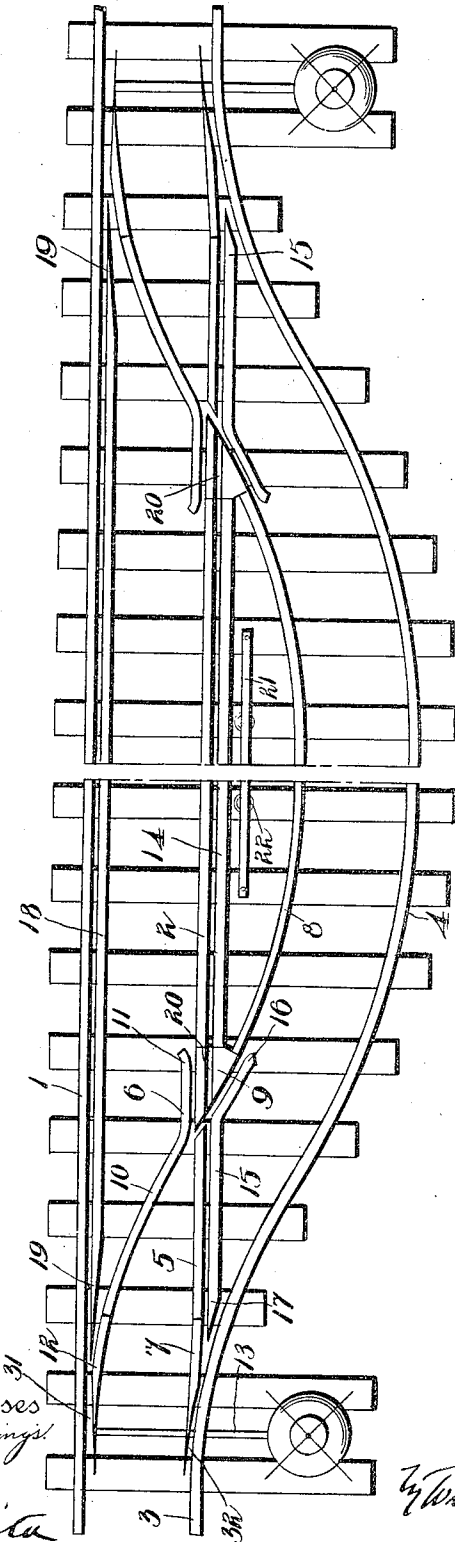
J. T. ANDREW.
SAFETY SWITCH.
APPLICATION FILED NOV. 22, 1909.

949,693.

Patented Feb. 15, 1910.

2 SHEETS—SHEET 1.

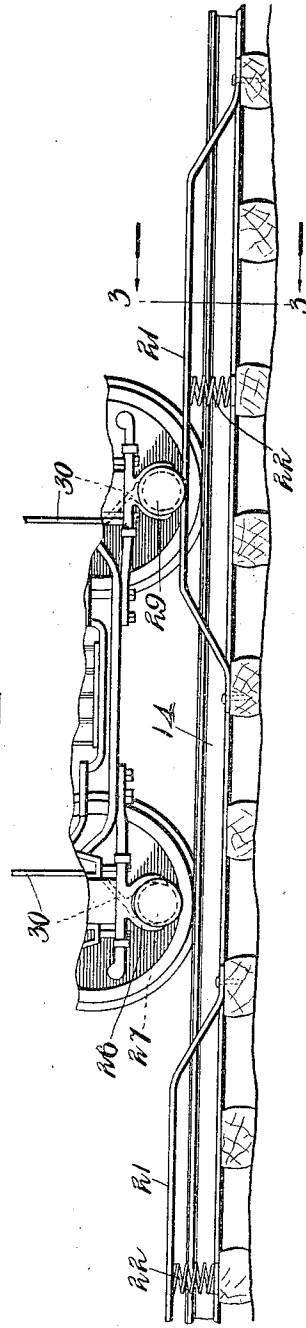
FIG. 1.



Witnesses
B. B. Collins

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FIG. 2.



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2 SHEETS—SHEET 2.

Fig. 5-

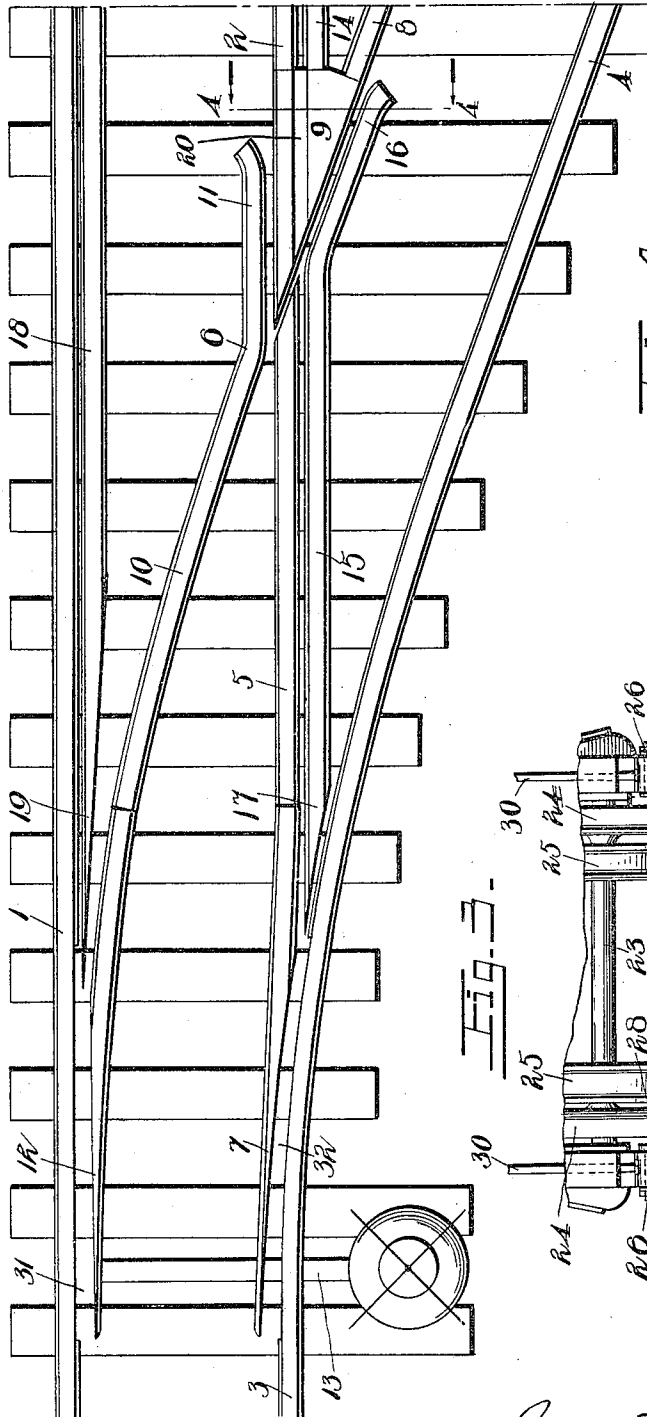


Fig. 4-

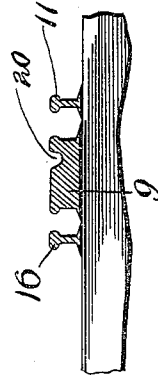
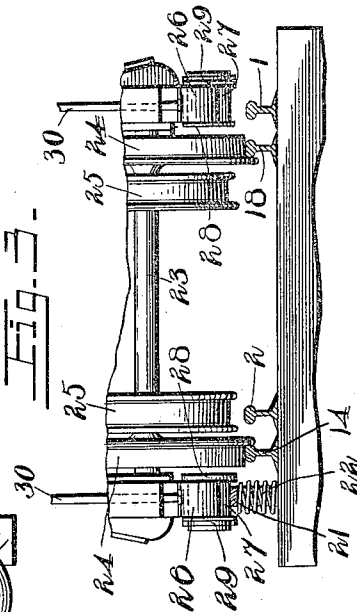


Fig. 3-



Witnesses
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UNITED STATES PATENT OFFICE.

JAMES T. ANDREW, OF MONTGOMERY, ALABAMA.

SAFETY-SWITCH.

949,693.

Specification of Letters Patent. Patented Feb. 15, 1910.

Application filed November 22, 1909. Serial No. 529,500.

To all whom it may concern:

Be it known that I, JAMES T. ANDREW, a citizen of the United States, residing at Montgomery, in the county of Montgomery and State of Alabama, have invented certain new and useful Improvements in Safety-Switches; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in safety attachments for railroad switches, and it is particularly designed to avoid accidents caused by split or half thrown switches.

The object of the invention is to provide means whereby should a train run through a split switch the train will not be derailed but will be carried along the main line on auxiliary tracks and will either be replaced upon the main rails of the track or will be brought to a standstill by the automatic application of brakes.

The invention may be used in connection with railroad switches generally, as well as with sidings and in railroad yards, where switches are constantly being thrown and where there is more or less likelihood of a switch being left in the half open position.

While the invention is not restricted to the exact details shown and described, still for the purpose of disclosure reference is had to the accompanying drawings illustrating a practical embodiment of the invention, and the particular features of novelty will be more succinctly pointed out in the claims.

In the drawings, in which like characters designate the same parts in the several views, Figure 1 is a broken plan view showing a portion of the track of a main line and a siding, with the switches shown in the half open position. Fig. 2 is a fragmentary view in elevation showing an arrangement adjacent the tracks adapted in some cases to engage a roller on a moving train and automatically set the air brakes. Fig. 3 is a section on the line 3—3 of Fig. 2. Fig. 4 is a cross sectional view on line 4—4 of Fig. 5, and Fig. 5 is an enlarged view in plan showing more clearly the arrangement of auxiliary rails and frog.

1 designates the continuous rail of a main line track, 2 one portion of the non-continuous main line rail abutting against the

rear ends of the frogs, and 3 the other portion of same diverging to form the continuous rail 4 of a siding.

5 designates the intermediate section between the sections 2 and 3 of the non-continuous main line rail, being spaced from the pointed end of the frog, as at 6, and being provided at its other end with the movable switch point 7.

8 designates the inside rail of the siding abutting against the rear end of the frog 9.

10 designates the main track section of the siding having the end guard 11, and terminating in the movable switch point 12, the switch points 7 and 12 being connected by the operating rod 13, all as in the usual track structure.

14 designates an auxiliary rail parallel to the main rail 2. It will be observed that this rail lies between the main rail 2 and the siding and at its ends abuts against the rear ends of the solid frogs. 15 designates a continuation of said auxiliary rail, disposed between the rails of the siding, terminating at one end in the guard portion 16 parallel with the siding rail 8, and at the other end terminating in a beveled point 17 resting between the outside rail 4 of the siding and the switch point 7, the guard portion 16 and the guard portion 11 forming the open-ended V-shaped member of the common form of frog.

18 designates a continuous auxiliary rail parallel to the main line rails and lying adjacent the inside face of the main line rail 1. This auxiliary rail, like the section 15, terminates in beveled points 19 disposed between the main line rail 1 and the switch points 12.

In carrying out my system of safety track structure at switches, I form a deep groove or flange way 20 through the solid portion of the frog to allow the flanges of the wheels to pass across the inside track of the siding when the train is running on the auxiliary rails.

It will be understood that the auxiliary rails 14 and 18 extend from one switch of a siding to the switch at the other end, being suitably spaced apart from the main rails, but this is not absolutely essential where the train is to be brought to a standstill by the automatic action of braking means to be now referred to.

21 designates any suitable tripping shoe disposed at one side of the switch and lying along the main line track, several inches above the main and auxiliary rails, in a position to automatically engage means carried by a moving train to set the air brakes thereon, in cases where the trains are so equipped. In the drawings this tripping shoe 21 is illustrated as comprising a metal strip bent downwardly at its ends and secured to the ties, the bent down ends being disposed on an incline so that the rollers carried by the train will ride easily thereon. Also, as shown in the drawings, these metal plates 21 may have stiff springs 22 disposed thereunder which will give the tripping shoe proper resiliency to force the contacting roller upwardly, as hereinafter described.

In a former patent No. 898,165, dated September 8, 1908, I have fully described suitable mechanism for operating air brakes and giving a signal to the engineer on a train equipped with my improved safety appliances therein referred to, and in the present application suitable mechanism may also be employed along the same lines for automatically setting the brakes and signaling the engineer. In the present drawings, in Figs. 2 and 3 I show a fragmentary view of a truck equipped with this automatic mechanism, which construction I will now briefly describe.

23 designates an axle of the truck provided with the usual car wheels 24, and this axle is also provided with my improved safety wheels 25 disposed inside the main wheel on the same axle, but of a lesser diameter than the main wheels, in order that their tread portion will lie above the track when the train is running under normal conditions. On the outside of the main wheels and depending from a suitable support, as described in the patent aforesaid, is a cylindrical casing 26 for each wheel, which casing contains rollers 27 extending there-through of a diameter greater than the width of the opening in the bottom of the casing so that the rollers will be retained therein when inserted, considerable play being allowed at the upper end of the casing for the rollers to move upwardly when contacting a rail or a tripping shoe. In order that these rollers may be inserted in the casing they are constructed with an enlarged head 28 at one end, and at the other end are provided with a removable washer 29 held in position by a cotter pin, not shown. Extending down into the casing above said rollers, is an arm 30 extending upwardly above the trucks and connected with suitable levers (not shown) for operating the air valves, or for giving the signal to the engineer referred to.

Having thus described my invention I will now give a short description of the op-

eration, first with reference to the improved tracking, and secondly with reference to the coöperation of the improved tracking with the automatic system of setting air brakes.

It will be observed that with the switch thrown in the half open position shown in Figs. 1 and 5, the flanges on the wheels of the train approaching the switch will pass along through the openings 31 and 32, and under normal conditions the wheels would drop to the ties. With the construction shown, however, instead of dropping to the ties the treads of the wheels will ride up on the auxiliary rails 15 and 18, the flanges engaging against the inside faces of points 17 and 19, guiding the wheels to the auxiliary rails. Passing along these rails the flanges on the right hand wheels, when the frog is reached, pass through the flange way 20, cut through the frog and the train will run along on the auxiliary track until it reaches the other end of the siding, whereupon it will be observed that the flanges on the right hand wheels will pass along the flange way 20 of the frog at that end of the siding, the right hand wheels passing thence on to the intermediate rail 15, and finally on to the outside rail 4 of the siding, whereupon the train will be guided smoothly on the main line rails again. In other words, the train, while derailed in one sense of the word, meets with no obstruction whatever, and is replaced upon the main line rails at the other end of the siding. This replacing would occur to trains equipped with any kinds of trucks, but in the case where the train is equipped with my safety mechanism, and with automatic mechanism for setting the brakes, a further safe guard is provided.

The object of the general construction shown in Figs. 2 and 3 is that should a train leave the track for any cause on either side, one of the safety wheels 25, together with the opposite roller 27, would drop to the track and prevent derailment, the train being supported temporarily by the series of safety wheels and rollers. In addition to this the roller 27 would operate the levers 30 and hence set the air brakes and give a signal. Should a train so equipped pass through an open switch having my improved auxiliary rails associated therewith, the train would not jump from its regular wheels to the safety wheels, and the safety rollers 27 now perform a second function. That is to say, under normal conditions the rollers 27 would pass to the inside of the tripping mechanism or the tripping shoe 21, but under abnormal conditions when the train is run on the auxiliary track the rollers would be engaged by the tripping shoe 21 and the air brake applied so that the train would be stopped a short distance

from the switch. With this equipment the auxiliary tracks would not necessarily have to run the full length of the siding, and the train could be backed and the switch properly thrown.

In carrying out my invention it may be observed that I do not necessarily provide new frogs, but simply cut flange ways through the solid frogs, and as the auxiliary rails are only used under emergencies they need not be kept in the better condition required of constantly used rails, so that in applying my invention to tracks already laid the auxiliary rails may be provided from discarded tracking, thus decreasing expenses quite materially.

By combining the use of my improved train equipments with the improved form of track structure, it will be observed that there are three factors of safety presented, in as much as under ordinary running conditions the safety wheels 25 and rollers 27 guard against derailment and wreckage by taking the place of the main wheels. Also, the rollers 27 perform a second function of being a part of the operating means for automatically setting the air brakes and giving a signal, and the third factor of safety resides in the prevention of derailment where a train should run into a half thrown switch.

Having thus described the invention, what I claim is:—

1. The combination with a main line, a siding and movable switch points therefor, of auxiliary rails adjacent to and arranged parallel to the main rails and terminating in pointed ends extending between the movable switch points and their adjacent rails, substantially as described.

2. The combination of the main line, siding tracks and switch points, an auxiliary rail adjacent the inside face of the unbroken rail of the main line and terminating between said rail and its switch point, a second auxiliary rail adjacent the outside face of the non-continuous rail of the main line and terminating adjacent the siding rail, and a short section rail lying between the siding rails, forming a broken continuation of said second auxiliary rail and terminating at a position between its main line rail and switch point, a flangeway being provided through the siding rail adjacent said second auxiliary rail to allow the flanges of

the wheels to ride past said siding rail when the train is running on the auxiliary tracks, substantially as described.

3. The combination of the main line, siding tracks and switch points, an auxiliary rail adjacent the inside face of the unbroken rail of the main line, extending the length of the siding and terminating between said main line rail and its switch point, a second auxiliary rail adjacent the outside face of the non-continuous rail of the main line, said second auxiliary rail terminating adjacent to the inside siding rail and extending along said main line substantially the length of the siding, and a short section rail disposed between the siding rails, forming a broken continuation of said second auxiliary rail and terminating at a position between its main line rail and switch point, substantially as described.

4. The combination with a main line, siding tracks and movable switch points, a frog member provided with a flangeway cut therethrough parallel to the main line tracks, an auxiliary track parallel to the main line and terminating between one main line rail and its switch point, a second auxiliary rail abutting against said frog at one end adjacent said flangeway, and a short section rail disposed between the siding rails, forming a broken continuation of said second auxiliary rail and terminating between the outside rail and its switch point, substantially as described.

5. The combination with a main line, side tracks and movable switch points therefor, of auxiliary rails for supporting a train when running through a split switch, a frog provided with a flangeway cut therethrough and cooperating with one of said auxiliary rails, a tripping shoe adjacent said auxiliary rail, the whole cooperating with a roller carried by a train and connected to the air brake system of said train, whereby when said train runs through a split switch said roller contacts said tripping member to bring the train to a standstill, substantially as described.

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

JAMES T. ANDREW.

Witnesses:

H. L. QUARLES,
W. S. ALLEN.