

No. 859,182.

PATENTED JULY 2, 1907.

J. A. SHIRES.

RAIL SPREAD DETECTOR FOR RAILWAY TRAINS.

APPLICATION FILED FEB. 16, 1907.

2 SHEETS—SHEET 1.

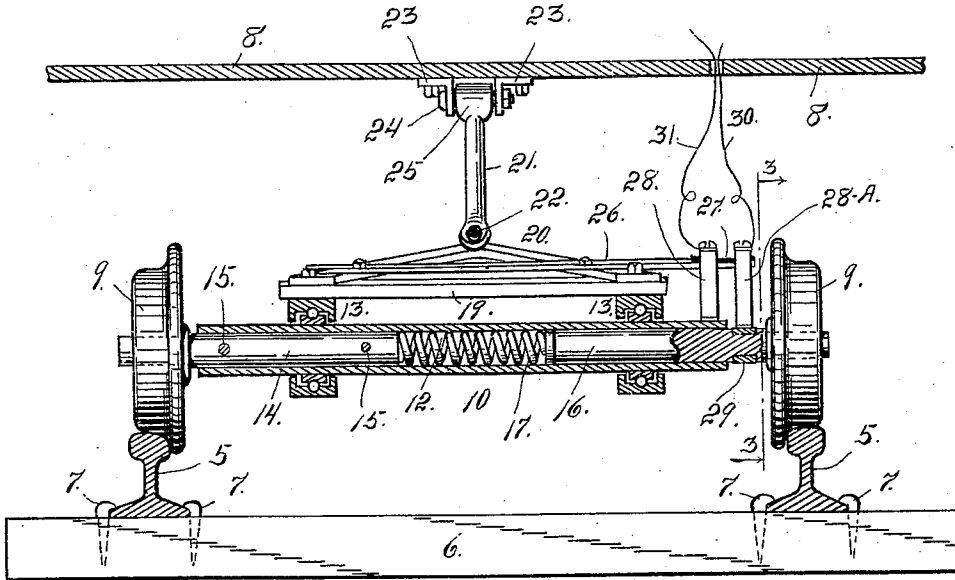


Fig. 1.

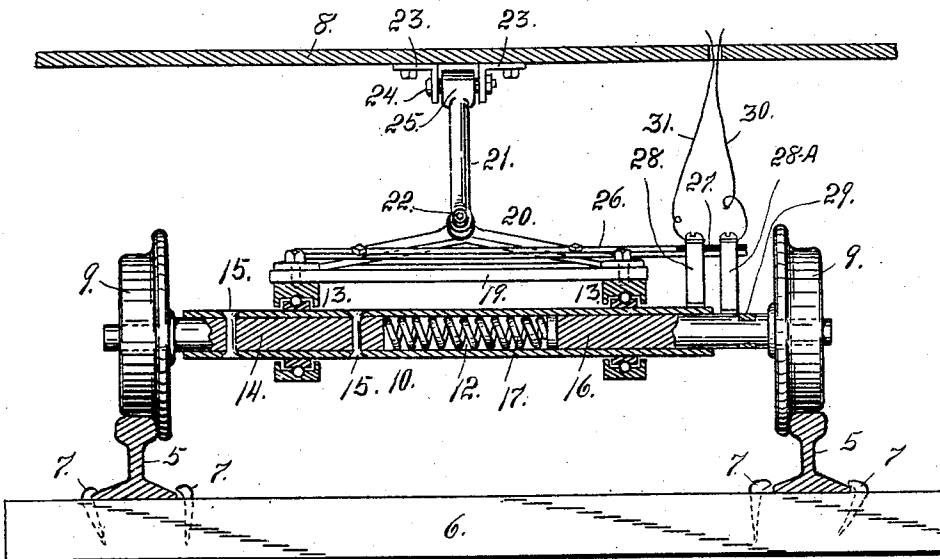


Fig. 2.

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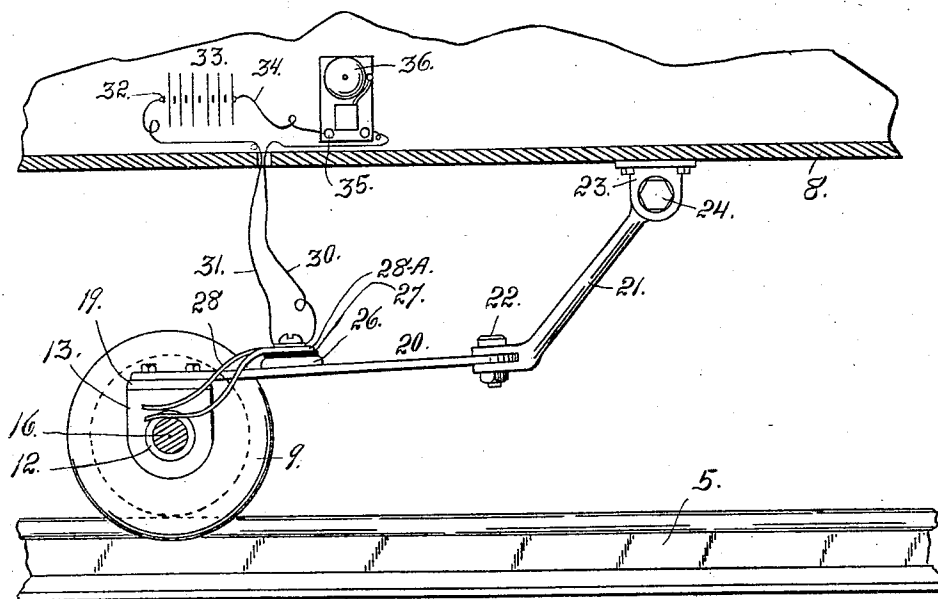


Fig. 3.

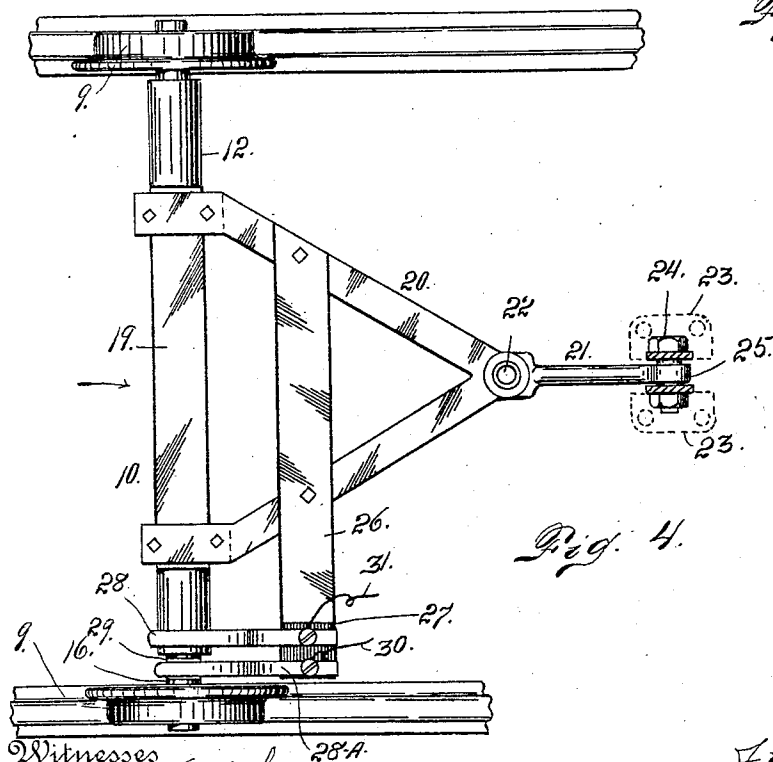


Fig. 4.

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UNITED STATES PATENT OFFICE.

JOSEPH A. SHIRES, OF DENVER, COLORADO.

RAIL-SPREAD DETECTOR FOR RAILWAY-TRAINS.

No. 859,182.

Specification of Letters Patent.

Patented July 2, 1907.

Application filed February 16, 1907. Serial No. 357,776.

To all whom it may concern:

Be it known that I, JOSEPH A. SHIRES, a citizen of the United States, residing at the city and county of Denver and State of Colorado, have invented certain new and useful Improvements in Rail-Spread Detectors for Railway-Trains; and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in apparatus adapted to be applied to railway trains, for automatically detecting the spread of the rails, and thus avoiding accidents, by notifying the men in charge of the train, in time to prevent the derailing of the train.

My improved apparatus may be connected with any part of the railway train. It may also be connected with a hand car, and is so arranged that in the event of a spread in the rails, an electrical circuit will be closed, and a warning alarm sounded.

The invention will now be described in detail reference being made to the accompanying drawing in which is illustrated an embodiment thereof.

In this drawing, Figure 1 is a cross section taken through the rails, showing my improved device in use, the latter being shown partly in elevation and partly in section. Fig. 2 is a similar view showing a rail spread sufficiently, to close the circuit and sound the alarm. Fig. 3 is a side elevation of the apparatus showing the bottom of the car with which the device is connected in section. Fig. 4 is a top plan view of the apparatus, the platform of the car being removed in order to disclose the mechanism beneath.

The same reference characters indicate the same parts in all the views.

Let the numeral 5 designate the rails of the track; and 6 the ties upon which the rails are laid, said rails being held in place by spikes 7. It may be assumed that the numeral 8 designates a car or the platform thereof, of any suitable construction. Underneath this platform is located my improved apparatus which will now be described.

Let the numeral 9 designate two wheels adapted to run upon the rails and having inner flanges, the same as the ordinary car wheels. These wheels are mounted on an axle 10 composed of a tubular member 12 journaled in boxes 13, and connected with an axle member 14 by rivets 15. Upon this axle member 14, one of the wheels 9 is mounted and made fast. Mounted to telescope within the tubular member 12 is an axle member 16 arranged to telescope within the member 12. Interposed between the axle member 14 and the axle member 16, is a coil spring 17, having a tendency to force

the axle member 16 outwardly. Upon the axle member 16 is mounted the other wheel 9. The two boxes 13 are connected by a transverse bar 19 with which is connected a V-shaped yoke 20 whose apex is connected by means of a rod 21 with a platform of the car underneath. The connection of the rod 21 with the yoke is shown at 22. The yoke is allowed to rock or swing vertically, since the portions of the journal boxes carried by the yoke construction, are allowed to rotate around the axle members. The connection or joint 22 also permits of a horizontal swing, to permit the wheels of the structure to vary their relative position with reference to that of the body of the car, in going around curves for instance. The upper extremity of the rod 21, is connected with two separated angle brackets 23 secured to the bottom or platform 8 of the car. A bolt or pin 24 passes through an eye 25 formed in the upper extremity of the rod 21, and through registering openings formed in the depending arms of the angle brackets. By virtue of this connection it is evident that a loose joint is formed between the rod 21 and the car, to permit a vertically swinging movement. Secured to the yoke 20 is a supporting bar 26 provided at one extremity with an insulating plate 27 to which are secured two brushes or contacts 28 and 28A. The extremities of these brushes remote from the bar 26, are adapted to engage the axle of the wheel 9. The brush 28 engages the sleeve 12 and when the track is in its normal condition the brush 28A, engages an insulating ring or band 29 located in a circumferential groove formed in the axle member 16 (see Fig. 1). From these brushes lead wires 30 and 31, the conductor 31 as shown in the drawing (see Fig. 3) leads to a pole 32 of an electrical source 33; while from the other pole of the battery leads a wire 34 to a binding post 35 of an electric bell or alarm 36. When the brush 28A is in engagement with the insulating ring 29, the track is in its normal condition and the electrical circuit is open. If, however, we assume that the rails are slightly spread (see Fig. 2), whereby the wheels 9 are allowed to separate by virtue of the telescoping action of the axle member 16, the said member is shifted sufficiently to disengage the insulating ring 29 from the brush 28A, causing the brush to engage the axle member 16, whereby the circuit is closed, and the current may be said to pass from the pole 32 of the battery through the conductor 31, to the brush 28 thence through the axle to the brush 29, and thence through the conductor 30 to the bell and from the bell through a conductor 34 to the opposite pole of the battery closing the circuit and ringing the bell.

It is evident from the axle construction which I employ, that the two wheels of the car do not need to rotate in unison when the train is in motion. This is an important advantage particularly in turning curves, since the wheel on the outside of the curve is free to

travel more rapidly than the wheel on the inner rail, thus permitting two distinct speeds of travel for these wheels.

Having thus described my invention, what I claim is:

- 5 1. In a rail-spread indicator for cars, the combination with a car, of a pair of wheels, an axle upon which said wheels are mounted, one member of the axle being endwise movable, an electrical circuit normally open, an alarm device suitably mounted and located in said circuit, contact brushes located in the circuit and engaging the axle of the wheels, the endwise movable member of the axle having an insulating portion engaged by one of the brushes when the rails are in their normal condition, the spring being such, however, that as soon as the movable axle member is shifted due to the spread of the rails, the said brush is disengaged from the insulating band and the circuit closed through the alarm device or bell, substantially as described.
- 20 2. A rail spread detector comprising a pair of wheels, an extensible axle, an electrical circuit normally open, an alarm device located in the circuit, and means for closing the circuit through the alarm device due to the extension of the axle resulting from the spread of the rails, substantially as described.
- 25 3. The combination with a car, of a rail-spread detector comprising a pair of wheels, an axle, an electrical circuit, an alarm device located in the circuit, means for closing the circuit due to the spread of the rails, the axle being

extensible, and a connection between the car and the detector permitting the detector to change its relative position with reference to the position of the car as in turning curves, substantially as described. 30

4. The combination with a car, of a rail-spread detector including a pair of wheels, an axle, an electrical circuit, an alarm device, means for closing the circuit through the alarm device, and a connection between the rail spread detector and the car, comprising a rod connected with the parts to allow the car a vertical vibration, and permitting the detector to change its relative position on curves, substantially as described. 35 40

5. The combination with a car, of a rail spread detector comprising a pair of wheels, an axle, an electrical circuit, an alarm device, the circuit being normally open, means for closing the circuit due to the spread of the rails, a yoke connected with the axle, and a rod connecting the yoke with the car, one extremity of the rod being movably connected with the yoke to permit the necessary relative change of movement on curves, the connection between the rod and the car being such as to permit free vertical vibration of the rod, boxes in which the axle is journaled, the yoke being connected with these boxes, to facilitate freedom of vertical vibration, substantially as described. 45 50

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

JOSEPH A. SHIRES.

Witnesses:

DENA NELSON,
MAY GAWLEY.