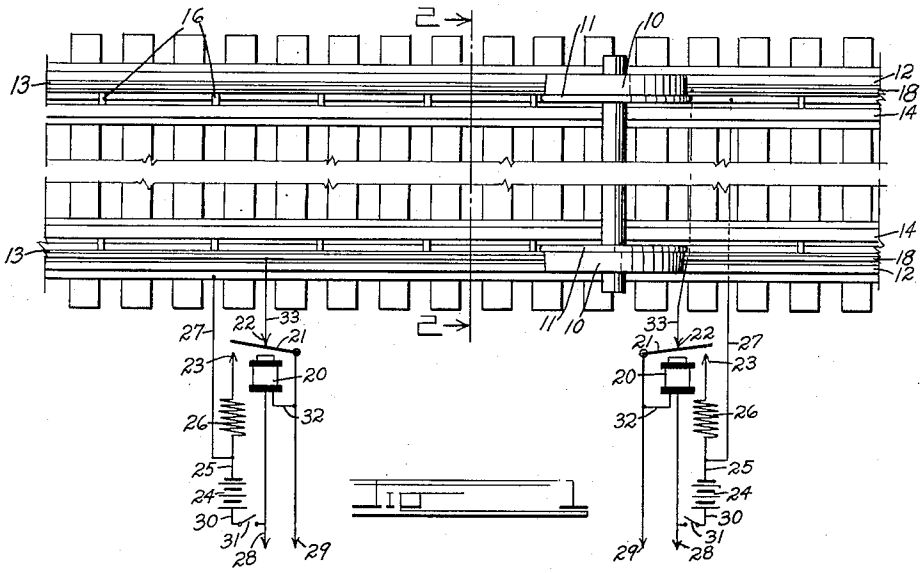
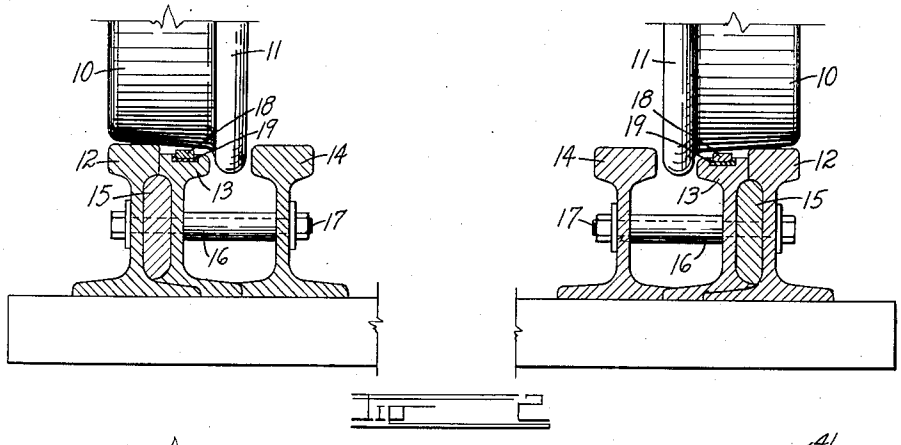
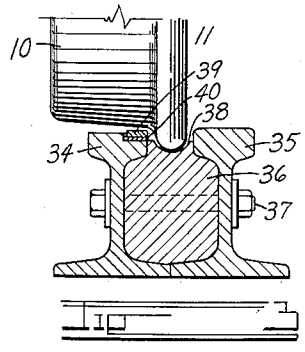
Nov. 13, 1951 M. W. GIESKIENG 2,574,474

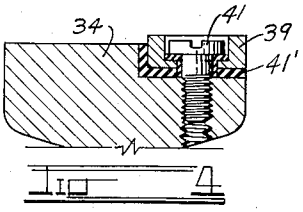
RAILWAY WHEEL CHECKING DEVICE

Filed Feb. 4, 1948 2 SHEETS—SHEET 1









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RAILWAY WHEEL CHECKING DEVICE

Filed Feb. 4, 1948 2 SHEETS—SHEET 2

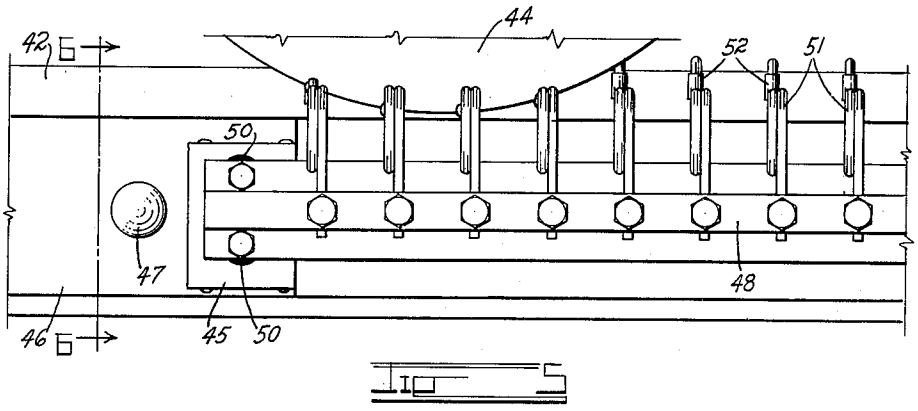


FIG. 5

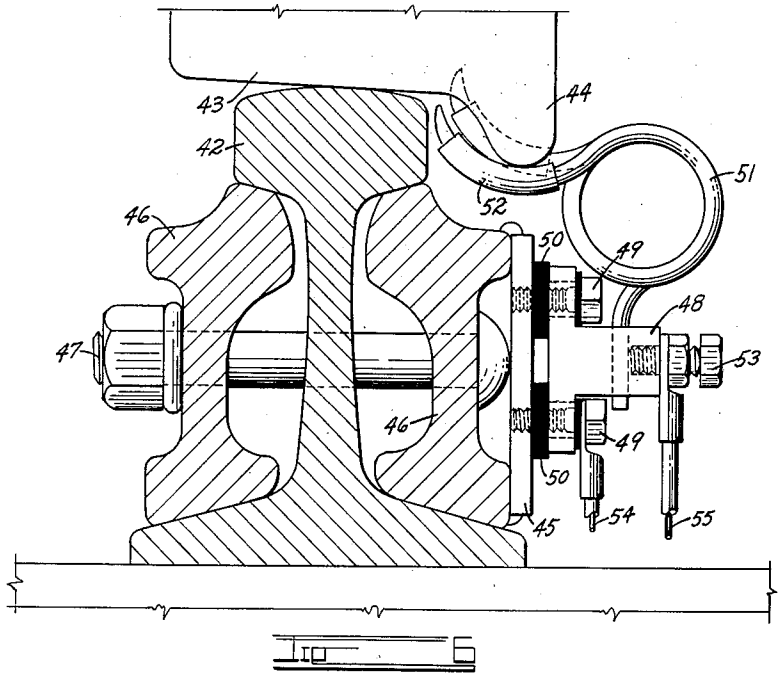


FIG. 6

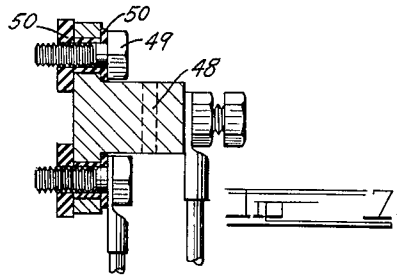


FIG. 7

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RAILWAY WHEEL CHECKING DEVICE

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4 Claims. (Cl. 246—246)

1

This invention relates to a damaged wheel checking device for railways. Many wrecks are caused by broken wheel flanges and broken wheel treads. It is difficult to locate all of these breaks by mere visual inspection. It is also impossible at present to inspect the wheels while the train is in motion.

The principal object of this invention is to provide a simple and highly efficient wheel checking device which will automatically inspect and locate damaged wheels on a train while the latter is in transit.

Other objects and advantages reside in the detail construction of the invention, which is designed for simplicity, economy, and efficiency. These will become more apparent from the following description.

In the following detailed description of the invention, reference is had to the accompanying drawing which forms a part hereof. Like numerals refer to like parts in all views of the drawing and throughout the description.

In the drawing:

Fig. 1 is a plan view of a section of railway track modified to incorporate the damaged wheel indicating circuits of this improved wheel checking device for detecting broken wheel rims;

Fig. 2 is an enlarged cross-section, taken on the line 2—2, Fig. 1, illustrating the position of conventional car wheels in place on the track;

Fig. 3 is a section through a track rail, arranged for indicating broken wheel flanges with the improved checking device; and

Fig. 4 is an enlarged detail section showing the attachment of a contact strip used in this invention.

Fig. 5 is a side view of a rail employing an alternate form of the invention;

Fig. 6 is an enlarged section taken on the line 6—6, Fig. 5; and

Fig. 7 is a detail section through a contact supporting bar employed in the alternate form.

In the drawing a conventional car wheel rim is indicated at 10 with its flange at 11.

The present wheel checking device is designed for indicating both broken wheel flanges and damaged rims. In Figs. 1 and 2 the arrangement for indicating broken rims is illustrated. This arrangement consists of a special section of track of any desired length, but at least of sufficient length to exceed the circumference of the largest wheel to be checked.

This section of track consists of two outer easer rails 12, two inner gauge rails 13 and two inner guard rails 14. The three rails at each side of

2

the track are maintained in fixed spaced relation by means of a filler strip 15, suitable spacers 16, and tie bolts 17. The inner edges of the gauge rails 13 are set at the standard gauge and the outer edges of the easer rails 12 substantially align with the outer edges of the wheel rims 10. The flangeways between rails 13 and 14 are standard width.

In applying this invention, the top of each gauge rail 13 is lowered out of contact with the rim 10 of the normal wheel and the top is mortised to receive a contact strip 18 supported from the rail upon suitable electric insulation 19. The strips 18 are preferably formed from hardened, wear-resisting steel or other hard metal. The insulation 19 may be of any suitable type capable of preventing the passage of electric current and of supporting relatively great weight, such as pressed fiber or the like.

The upper surfaces of the strips 18 are positioned sufficiently far below the upper surfaces of the easer rails 12 so that they will not contact the tread of a normal wheel, as shown in Fig. 2, preferably about 3/8" below the latter. Should the portion of the rim 10 which rides on the easer rail 12 be broken away or otherwise damaged, the entire wheel will drop sufficiently to cause the tread to contact the strip 18. This contact is employed to close an electrical circuit to any suitable indicating device or signal.

One circuit for this purpose is illustrated in Fig. 1, there being a similar independent circuit for each side of the track. Each circuit preferably employs a relay 20 operating an armature 21 between an opening contact 22 and a closing contact 23. The relay arrangement is such that the armature will close with the closing contact 23 before it breaks with the opening contact 22. A battery 24 or other source of power is provided. The capacity of the battery is such as to overload the relay 20.

A conductor 33 leads from the contact strip 18 to the opening contact 22 and a first battery conductor 25 leads from the battery, through a resistance 26, to the closing contact 23. A rail conductor 27 leads from the rail 12 to the battery conductor 25 between the battery 24, and the resistance 26. A first signal circuit wire 28 leads from the relay 20 and a second signal circuit wire 29 leads from the armature 21. A second battery conductor 30 leads from the other pole of the battery 24, through a switch 31, to the first signal circuit wire 28. The other side of the relay 20 is connected to the second signal circuit wire 29 by a connection 32.

The operation of the device is as follows: should a break in the rim 10 roll over the rail 12 it will allow the entire wheel to drop into contact with the strip 18. This throws the full battery charge through the relay 20, through conductors 33, 29, 32, 28, 30, 25, and 27. This snaps the armature 21 against the closing contact 23, which substitutes the resistance 26 for the rail and strip conductors 27 and 33. A circuit is now completed to the signal circuit wires 28 and 29 from the battery 24 through the conductors 30 and 25 and through the resistance 26 and armature 21. The signal circuit may be employed for operating any type of visible or audible signalling or recording device to indicate a broken rim exists on one side or the other of the track. After the indication has been recorded, the circuit to the relay is broken at the switch 31 and returns to normal.

For indicating a broken flange a second section of track is prepared similar in length to the section of Fig. 1 and having a cross section at each rail as indicated in Fig. 3. The broken flange indicating track consists of two gauge rails 34 spaced at the proper track gauge and in alignment with the gauge rails 13 previously described. A guard rail 35 is positioned inside of each gauge rail to provide the proper width of flange way therebetween, the two rails being separated by a flange block 36 and tied together by means of suitable bolts 37. They could, however, be formed as a single unit.

The wheels are supported on their flanges 11 which ride in a flange groove 38 in the tops of the flange blocks 36. The tops of the rails 34 are positioned below their normal position, and below the tops of the guard rails 35, and out of contact with the tread of a normal wheel. The tops of the rails 34 are grooves or mortised to receive second contact strips 39 mounted in suitable electrical insulation 40.

The second strips 39 are formed from hard metal such as hardened steel similarly to the first strips 18 and their upper surfaces project slightly above the upper surfaces of the gauge rails 34.

It can be readily seen that if the flange 11 be chipped or broken it will allow the wheel tread to descend onto the strip 39 closing a circuit therewith. The circuits may be similar to those shown in Fig. 1 in which event the conductors 33 would be connected with the strip 39 and the conductors 27 would be connected with the flange strip 35, in any desired manner.

The strips 18 and 39 may be secured to their respective rails in any desired manner. One method is shown in Fig. 4, in which cap screws 41 are counter-sunk into the strips and threaded into the rails. The cap screws are insulated from the strips by means of suitable surrounding insulation 41'.

The purpose of the resistance circuit is: first, to allow a momentary impulse of the full battery strength to close the relay so as to obtain a quicker closing action to facilitate rapid train movement; and second, to hold the relay closed sufficiently long after the momentary closing impulse has ceased to allow ample record to be made of the signal.

As illustrated, both rails of the track are adapted to the improved signal system in the same track section. It is of course possible to have only one rail so adapted at any given point and the other rail adapted at a different point if so desired.

In Fig. 5 an alternate form of broken flange indicator is illustrated which does not require the wheel to ride upon its flange as in Fig. 3 above.

In this form a running rail is indicated at 42 a wheel tread at 43 and a wheel flange at 44. A supporting bar 48 is supported along the inside face of the rail 42 in any desired manner. As illustrated the bar is supported from vertical straps 45 which are welded to standard splice bars 46. The splice bars 46 are bolted to the rail at suitable intervals by standard bolts 47. The bar 48 extends for a distance exceeding the largest expected wheel circumference preferably not less than eleven feet.

A plurality of vertical holes are drilled through the bar 48 at regularly spaced intervals throughout its length. The holes are positioned relatively close together, preferably two inches from center to center. The bar 48 is attached to the straps 45 by means of cap screws 49. The bar 48 is electrically insulated from the straps 45, and the screws 49 are also electrically insulated therefrom by means of suitable electrical insulation 50. A contact spring 51 is positioned in each of the vertical holes in the bar 48. Each spring extends upwardly forming a loop thence inwardly across the path of the flange 44 and thence upwardly alongside of the inner edge of the rail 42. The portion of the spring crossing the path of the flange 44 is surrounded by an insulating sleeve 52. The springs are adjustably locked in the lugs 48 by means of set screws 53.

Normally the springs 51 extend above the rail 42 as shown in broken line. When a normal wheel, however, passes along the rail 42 the springs will be successively depressed to the full line position by the flange 44. Should any portion of the flange be broken away, however, it will not depress the springs under that portion and will allow the extremity of those springs to contact the tread of the wheel thereby closing a circuit between the springs and the rail.

Electrical conductors 54 and 55 are connected to the rail and the bar 48 respectively. These conductors lead to any suitable signal circuit such as the one previously described.

It is preferred to employ the alternate form of Fig. 6 on but a single rail at a time so that a guard rail may be placed opposite the flange on the opposite rail to maintain the flange 44 properly positioned over the springs 51.

While a specific form of the improvement has been described and illustrated herein, it is desired to be understood that the same may be varied, within the scope of the appended claims, without departing from the spirit of the invention.

Having thus described the invention, what is claimed and desired secured by Letters Patent is:

1. A broken wheel flange indicator for railway car wheels, comprising: a track rail along which said wheels roll; a supporting member extending longitudinally of and electrically insulated from said rail along the flange side of the latter; a plurality of resilient contact members mounted on and extending upwardly from said supporting member at spaced-apart intervals, each of said contact members extending independently across the path of the flange of the wheel so that they will be successively depressed thereby as the wheel rolls along the rail said contact members being electrically insulated from said flange and having their outer extremities in the path of said wheel and uninsulated therefrom so as to make electrical contact with the wheels unless depressed by the flange thereof; and a signal circuit

adapted to be closed by the contact of any of said contact members with said wheel.

2. A broken wheel flange indicator for railway car wheels, comprising: a track rail along which said wheels roll; a supporting member extending longitudinally of and electrically insulated from said rail along the flange side of the latter; a plurality of resilient contact members mounted on and extending upwardly from said supporting member at spaced-apart intervals, each of said contact members extending independently across the path of the flange of the wheel so that they will be successively depressed thereby as the wheel rolls along the rail; insulating means preventing said flange from closing a circuit with said contact members, the extremities of said contact members being electrically uninsulated and extending upwardly between the rail and the path of the flange so that as a wheel rolls along said rail, the contact members will be successively depressed by said flange so that their uninsulated extremities will not contact said wheel unless a portion of said flange is broken away, in which event said contact members will electrically contact said wheel; and a signal circuit operative in consequence of the closing of a circuit between any of said contact members and said wheel.

3. A broken flange detector for a railway car wheel comprising: a track rail for supporting said wheel; supporting means positioned along the flange side of said rail and being insulated therefrom; a plurality of spaced-apart contact springs supported by said supporting means and having electrically uninsulated extremities, said springs extending across the path of the flange of said wheel, thence upwardly adjacent the flange side of said rail and in the path of the tread of said

wheel; means preventing said springs from electrically contacting said flange as the extremities of the former are depressed by the latter out of contact with said tread; and an electric signal circuit including said springs and said wheel and adapted to be closed by electrical contact of said wheel with the uninsulated extremity of any of said springs.

4. A broken flange detector for a railway car wheel comprising: a track rail for supporting said wheel; a supporting bar secured to and extending along the inside face of said rail and being electrically insulated therefrom, there being a plurality of vertical, spaced-apart holes formed in said bar throughout its length; a wire-like spring mounted in each of said holes, said springs extending first upwardly, thence forming a loop, thence extending inwardly toward said rail and terminating above the surface of the latter so as to be positioned across the path of the flange of a wheel on said rail; and insulating members surrounding said springs where the latter cross said path of said flange, the extremities of said springs electrically uninsulated so that they may make electrical contact with the tread of a wheel unless depressed by the flange thereof.

MARION W. GIESKIENG.

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