

(No Model.)

2 Sheets—Sheet 1.

D. J. HAYNES & O. ALLEN.
RAILWAY DANGER ALARM.

No. 459,456.

Patented Sept. 15, 1891.

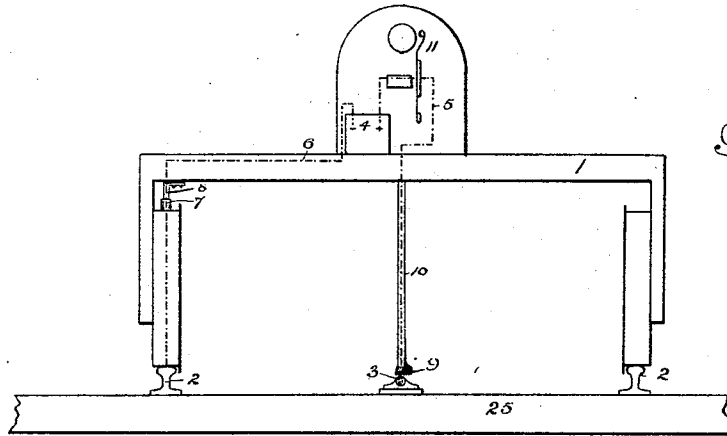


Fig. 1

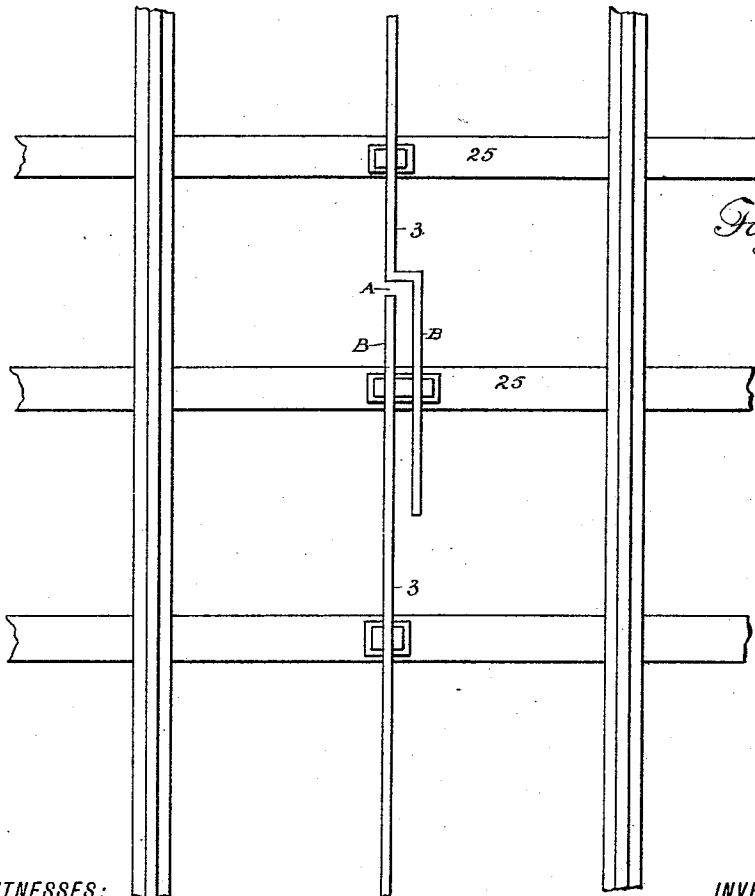


Fig. 2

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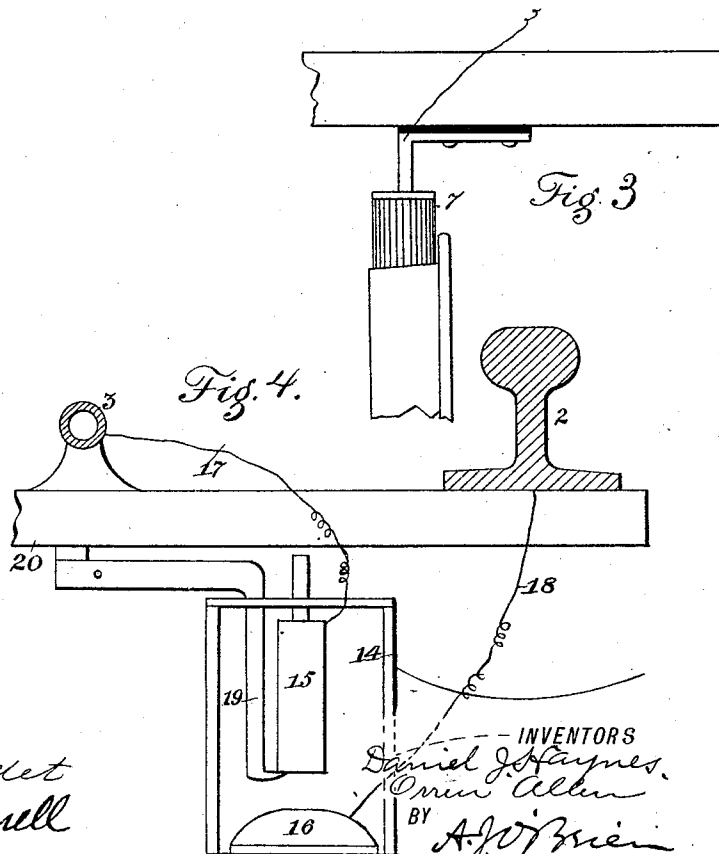
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UNITED STATES PATENT OFFICE.

DANIEL J. HAYNES AND ORREN ALLEN, OF DENVER, COLORADO.

RAILWAY DANGER-ALARM.

SPECIFICATION forming part of Letters Patent No. 459,456, dated September 15, 1891.

Application filed September 16, 1890. Serial No. 385,187. (No model.)

To all whom it may concern:

Be it known that we, DANIEL J. HAYNES and ORREN ALLEN, both citizens of the United States of America, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Railway Danger-Alarms; and we 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.

Our invention relates to a new and improved railway danger-alarm designed specifically to indicate the destruction of a culvert or bridge.

It consists in the circuit-operating apparatus located at the culvert and the alarm apparatus located on the approaching train, whereby an alarm is sounded on said train in case of the destruction of the culvert.

In carrying out our improved system we locate a suitable source of electricity at a convenient point upon the train—as, for instance, upon the locomotive in the case of trains propelled by steam-power and upon the motor-car where electricity is the propelling agent.

Hereinafter in this specification where the term “car” is employed alone it will be used as a general term for the motor (steam, electricity, or other) connected with the train, supposed to occupy the foremost position and to afford the best location for the mechanism necessary in equipping a train for carrying out our signaling system, though this mechanism may be located on any other portion of the train. Leading from said source of electricity one of the wires (positive or negative) is electrically connected with one of the rails of the track, the other wire leading to a suitable electrical conductor lying between the rails of the track, arranged in sections with the ends overlapping, as shown in Fig. 2, all locomotives or motor-cars on the same system being similarly equipped.

In the accompanying drawings is illustrated an embodiment of our invention, in which—

Figure 1 is a front view of a car equipped in accordance with our system. Fig. 2 is a

plan view of the track, showing the central conductor secured to the ties supporting the rails. Fig. 3 is a detail view on an enlarged scale, showing a means of carrying the current from the electric source to the rail. Fig. 4 illustrates the means of completing the circuit by the destruction of a culvert or bridge.

In the views, wherein similar reference-characters indicate corresponding parts, let the numeral 1 designate a conventional locomotive or car mounted on wheels engaging rails 2, resting upon ties 25. Located, preferably, midway between the rails and lying parallel therewith is a suitable electric conductor 3, supported by the ties in such a manner as to be insulated from the ground. The continuity of the central conductor is broken at points A any desired distance apart, the conductor being doubled, as shown at B B, the brush engaging the central conductor being of sufficient size to engage both parts of this doubled section B B.

Located at a convenient point on the locomotive or motor-car of the train is a suitable source of electricity 4, from which lead the positive and negative wires 5 and 6. One of these wires (as shown in the drawings the negative) leads to a metal or other suitable brush rigidly connected with the frame-work of the car 1 by means of an arm 8, the brush being insulated from the surrounding parts of the car and in contact with one of the wheels.

The other wire (the positive) communicates through the medium of a bar or handle with a brush 9, the brush engaging the central conductor 3. Handle 10 is rigidly secured to the frame-work of the car and suitably insulated therefrom.

Conveniently located upon the car for signaling purposes is the alarm mechanism 11, connected with one of the wires leading from the source of electricity and consisting, as shown in the drawings, of a small electromagnet, a spring-armature forming the clapper, and a gong, these parts being typical of any suitable alarm mechanism operated by the closing of the circuit.

It is obvious that in order to sound the alarm on the train it is necessary to form a connection between the rail and the central conductor, which is done in this case by a circuit-closer operated by an abnormal con-

dition of a bridge or culvert, as will be specifically pointed out. The brush 7, connected with the car-wheel, may be, if desired, in direct engagement with the rail, or the brush
 5 may be dispensed with and the wire connected with any part of the car from which the current will be conducted to the rail. If the axles of the locomotives and cars are insulated from the rails by the use of paper or
 10 fiber wheels, or in any other manner, the central conductor may be dispensed with and both wires leading from the source of electricity connected with the rails, one communicating with each side of the track. In this
 15 case each wire may be carried to a brush 7, engaging the rim or tire of a wheel, (which is assumed to be of metal and therefore a conductor,) or the brush may be in direct contact with the rails.
 20 The circuit-closer for giving the alarm upon the destruction of the culvert or bridge is constructed as follows: A box 14 is located in the vicinity of each culvert. This box is provided on its interior with two parts 15 and
 25 16, both conductors, normally separated from each other and always insulated from their inclosure. One of these parts, as 15, is movable and electrically connected with the central conductor by a wire 17, while the other
 30 is stationary and connected with the rail 2 by a wire 18. The movable part 15 is normally supported from engagement with part 16 by means of a trigger 19, which is supported by a tie 20 on a culvert or trestle. In case the
 35 culvert is destroyed, the trigger is displaced,

and part 15 drops by gravity to engagement with part 16, closes the circuit, and sounds the alarm mechanism located on the approaching train. If the central conductor is dispensed with, the opposite side of the track instead would be connected with part 15 in a
 40 similar manner for the purpose of completing the circuit under similar circumstances.

Having thus described our invention, what we claim is—

In a railway system of signaling, the combination of a box located in the vicinity of a culvert or bridge, having within it a fixed contact electrically connected with one of the rails of the track supported beneath a movable contact, electrically connected with a
 50 conductor between the rails, and normally held out of contact by means of a supporting-trigger fixed to the culvert and operating to hold the movable contact out of engagement
 55 with the fixed contact as long as the culvert is intact, in combination with suitable electrical connections between the conductor and rail and a source of electricity, and alarm devices in circuit therewith on the train, whereby an alarm is sounded on an approaching
 60 train to give warning of the destruction of the culvert, as described.

In testimony whereof we affix our signatures in presence of two witnesses.

DANIEL J. HAYNES.
 ORREN ALLEN.

Witnesses:

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 G. J. ROLLANDET.