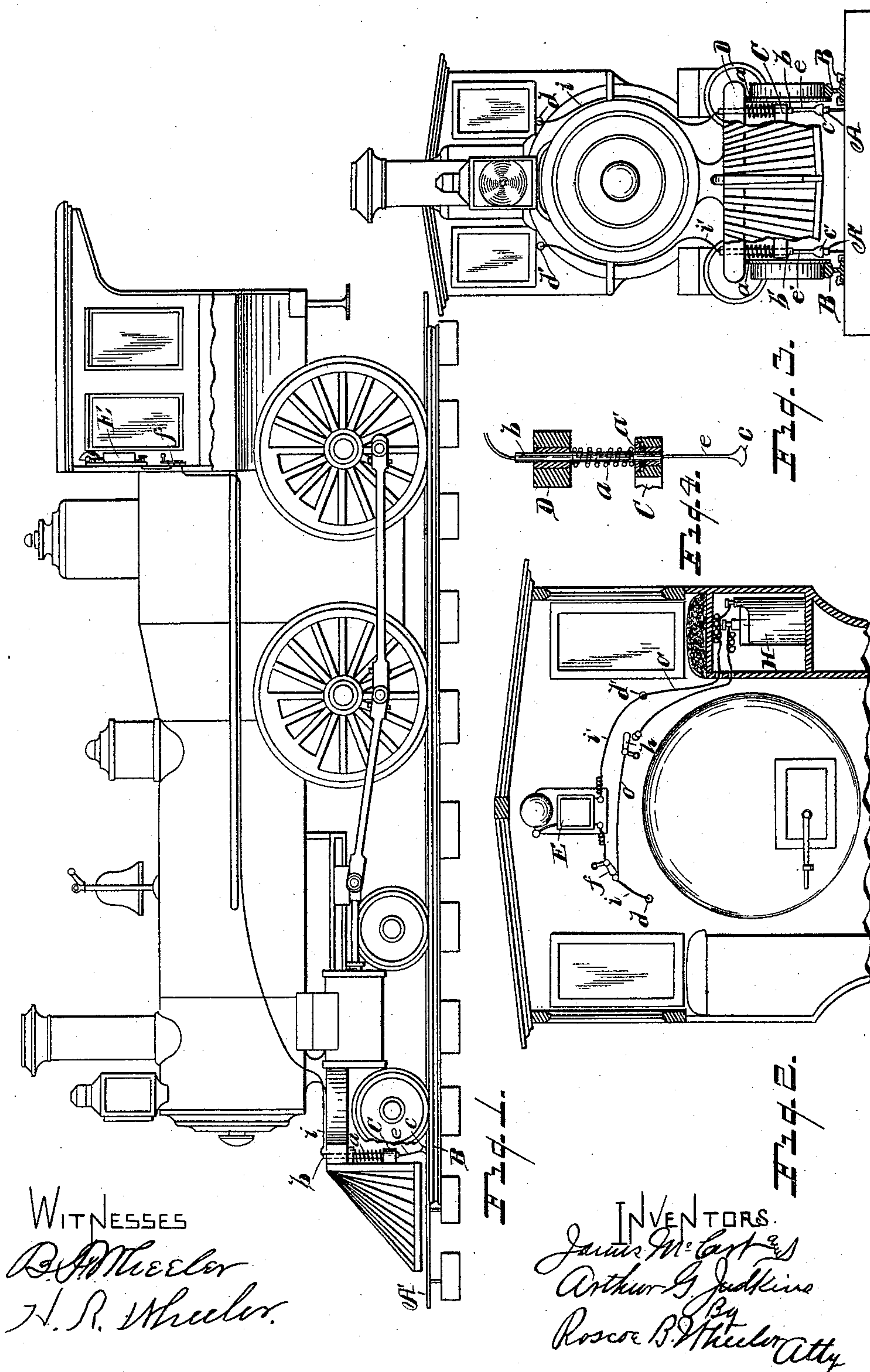


(No Model.)

J. McCART & A. G. JUDKINS.  
ELECTRIC DANGER SIGNAL FOR MOVING TRAINS.

No. 485,473.

Patented Nov. 1, 1892.





# UNITED STATES PATENT OFFICE.

JAMES McCART AND ARTHUR G. JUDKINS, OF TRENTON, MICHIGAN.

## ELECTRIC DANGER-SIGNAL FOR MOVING TRAINS.

SPECIFICATION forming part of Letters Patent No. 485,473, dated November 1, 1892.

Application filed September 26, 1891. Serial No. 406,948. (No model.)

*To all whom it may concern:*

Be it known that we, JAMES McCART and ARTHUR G. JUDKINS, citizens of the United States, residing at Trenton, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Electrical Danger-Signals for Moving Trains; 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 of reference marked thereon, which form a part of this specification.

This invention relates to new and useful improvements in electric danger-signals for railways, especially designed to prevent the collision of trains; and it consists in a certain construction and arrangement of parts, as hereinafter fully set forth, the essential features of which being pointed out particularly in the claims.

The object of the invention is to provide means whereby notice of danger may be given the engineers of all trains on the road, whether caused by a wrong order from the dispatcher or by the breaking down of a train at some point on the line, the warning thus conveyed enabling the engineers to stop their trains in time to avoid the danger, obviating collisions. This object is attained by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a locomotive provided with our improved device, a portion of the front truck-wheel being broken away to show the spring-actuated contact or shoe attached to the cow-catcher and a portion of the track-rail being broken away, showing one of the conducting-rods that carry the electric current. Fig. 2 is an enlarged view, partly in section, of the interior of the cab, showing the electric bell, battery, and connecting-wires. Fig. 3 is a front elevation of a locomotive provided with our improved features, portions of the cow-catcher being broken away to show arrangement of parts. Fig. 4 is an enlarged detail, partly in section, showing the manner of mounting the spring-actuated shoe.

Referring to the letters of reference, A A' designate the conducting-rods for conveying

the electrical energy. The rods are rectangular in form and extend the entire length of the track and have a switch connection with an electric battery, (not shown,) the circuit of which is normally open. Said rods are located between the rails B of the track, as shown in Fig. 3, or may be located on the outside of said rails, and are supported some distance above said rails and insulated from the ties in any suitable manner.

c c' designate two soft-metal shoes that bear upon the rods A A' and are attached to the lower ends of the spring-stems e e', which are secured at their upper ends to the rods b b', mounted in insulating-bearings secured in the beams C D of the cow-catcher, so as to slide vertically. Said rods are environed by the coiled springs a, the lower ends of which are secured to a collar a', attached to said rods, and the upper ends bear up against the under face of the beam D, as clearly shown in Fig. 4, whereby a downward tension is exerted by said springs upon the rods b b' to hold the shoes in yielding contact with the conducting-rods A A', the spring-stems of the shoes adding to the pliancy of said contact.

Attached to the upper end of the rod b is a wire i, that extends rearward under the foot-board of the locomotive and into the cab through the aperture d, as shown in Figs. 2 and 3, and connects with an electric bell E. Leading from said bell is a wire i', that passes out of the cab through the aperture d', forward under the foot-board and connects with the rod b', thereby forming a circuit from the conducting-rail A through the bell in the cab to the rail A'. In the circuit-wire i within the cab is a switch or circuit-breaker f, which normally remains closed.

It will be apparent that in consequence of a wrong order from the dispatcher or other cause two trains are likely to meet on the track. The battery that supplies the current to the rods A A' and which is under the control of the dispatcher is connected with said rods. The current passing along the rod A will be taken up by the contact-shoe c, which bears continually upon said rod, and will be conveyed through the rod b and wire i to the bell E in the cab, thence through the wire i' to the shoe c', and through the conducting-rod A' back to the battery, thereby



ringing the bell in the cab, thus warning the engineer and signaling him to stop. As soon as the engineer in the first engine has received the signal he opens the switch *f*, breaking the circuit through his bell, when the current will pass along the conducting-rods and in like manner warn the next train, and so on until all trains on a given section have been notified and stopped, when such orders for their movement may be given as to avoid the impending collision.

To avoid rear collisions or running into a wrecked train, a battery *H* (shown in Fig. 2) is located in the cab of each engine, which is connected by the wires *o o'* with the wires *i i'*, leading to the contact-shoes of the respective rods *A A'*. In the wire *o* is a switch *h*, which is normally open and which when closed will connect the battery with the rods *A A'*, whereby if the engine or train breaks down the engineer by closing the switch *h* may warn approaching trains in the same manner as before described and prevent them running into the wreck.

It will be seen on looking at Fig. 4 that the under face of the shoe is rounding, so that it will rock upon the conducting-rod and remain closely in contact therewith when the train is going in either direction.

Having thus fully set forth our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In an electrical alarm for moving trains, the combination of the conductors along the track, the car, the vertically-adjustable conducting-rods mounted in insulating bearings

on the car, the spring-stems depending from said rods, the contact-shoes attached to said stems and bearing upon the track-conductors, the coiled springs environing the vertical conducting-rods and attached thereto, whereby said shoes are held in yielding contact with the track-conductors, the bell in electrical circuit with said vertical rods, and the auxiliary circuit in the car, adapted to be placed in electrical circuit with said rods.

2. In a device for the purpose set forth, the combination of the continuous and unbroken track-conductors normally in open circuit, the vehicle having the vertically-adjustable conducting-rods mounted thereon, the spring-stems depending from said rods and having the contact-shoes on their lower ends, that bear upon the track-conductors, the circuit in the vehicle, in which is located a source of electricity and a switch and which is connected with the vertically-adjustable rods, and the bell-circuit in the vehicle, having a switch and adapted to be cut into and out of circuit with the contact-shoes independently of the battery-circuit, whereby provision is made in the vehicle for sending and receiving a communication at any point on the track, whether the train be in motion or standing upon the track, as set forth.

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

JAMES MCCART.

ARTHUR G. JUDKINS.

Witnesses:

OLIVER G. FREDERICK,  
WILLIAM SANDERS, Jr.