

(No Model.)

G. D. BURTON.  
RAILROAD SIGNAL.

No. 354,827.

Patented Dec. 21, 1886.

Fig. 1.

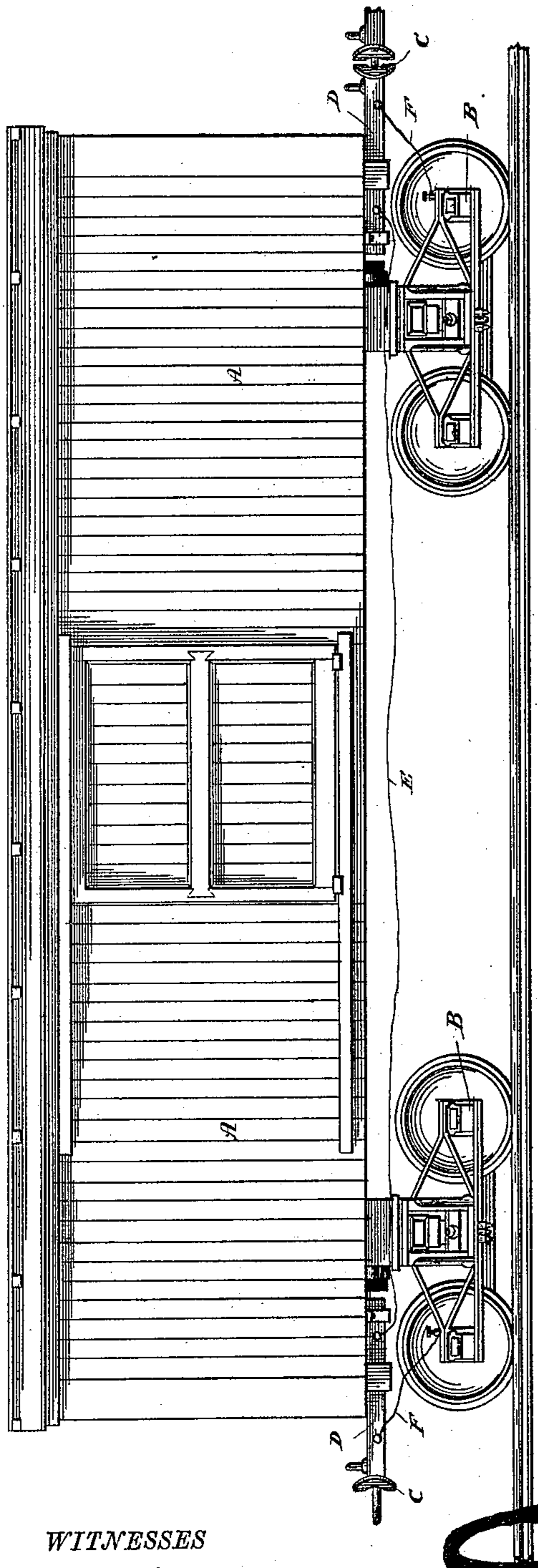
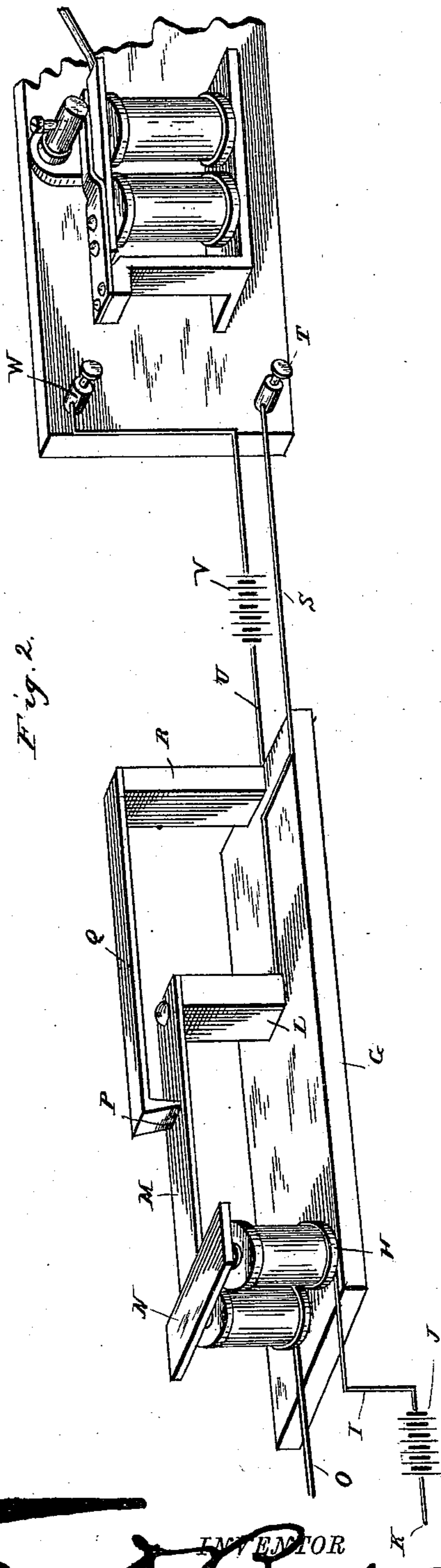


Fig. 2.



WITNESSES

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# UNITED STATES PATENT OFFICE.

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## RAILROAD-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 354,827, dated December 21, 1886.

Application filed March 19, 1886. Serial No. 195,823. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE D. BURTON, a citizen of the United States, residing at New Ipswich, in the county of Hillsborough and State of New Hampshire, have invented certain new and useful Improvements in Railroad Signals, &c., of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to certain new and useful improvements in signals for railway-trains; and it has for its object to provide means whereby the engineer of a train will be automatically notified should one or more of the cars constituting his train become detached.

As usually made up freight-trains have no bell-cord, so that it frequently happens that one or more of the cars become detached and the train runs for miles before the engineer is aware of the fact. This causes serious delay, as the engineer has of course to go back in search of his lost car; and, moreover, it is often the cause of serious accident, inasmuch as the engineer of a succeeding train, believing the track to be clear, in turning a curve frequently finds himself upon one or more of such lost cars, and is unable to check his train in time to prevent a wreck or accident.

30 My invention is designed to overcome this difficulty, and it provides means whereby the engineer of a freight-train will be informed automatically, on the detachment of a car, of its severance with the rest of the train, and at the same time the very act of coupling the cars makes the electrical connections throughout, save on the last car.

In the accompanying drawings, forming a part of this specification, and on which similar letters of reference indicate the same or corresponding features, Figure 1 represents a side elevation of a freight-car, showing the wires forming the electric circuit, and Fig. 2 shows the means for notifying the engineer when the circuit shown in Fig. 1 is broken.

45 The letter A designates a freight-car of the ordinary or any approved construction, mounted upon the trucks B, and provided at each end with the usual couplers, C. The draw-bar D is, in this instance, electrically insulated from the rails on which the car travels,

so that by uniting the two draw-bars of the car together, and then uniting said bars with the rails, I form an electric circuit.

The letter E shows a wire, preferably insulated, uniting the two draw-bars together, and just forward of this connection I connect by the wire F the draw-bar and the rails, through the iron frame-work of the truck and the axle of the car. The other end of the car is similarly electrically connected, and in this manner a complete electric circuit is formed.

As above shown and described, the circuit is completed on a single car, but in a train the arrangement is somewhat modified. The several cars through their links and pins form a continuous electrical communication from the engine to the last car of the train. The wire F of this last car only is then connected with the rails through the frame-work of the truck, the other wires F on the other cars being disconnected from the frame-work of their respective trucks, and a similar wire in the engine connects it with the rails, so that we have a continuous circuit from end to end of the train, a battery in the engine or on any convenient point of the train furnishing the electric fluid. Now, should one of the cars become detached, the current is, of course, broken, and I have arranged, as will presently appear, that this breakage of the current shall cause an immediate alarm, and thus notify the engineer of the trouble.

As seen in Fig. 2, I mount upon a base-board, G, a magnet, H, and connect said magnet by a wire, I, with one pole of the battery J, the other pole of said battery being connected by means of the wire K with the rails. The current passes along the rails rearward to either truck of the last car, which is electrically connected with the adjacent coupler through the wire F, (the intermediate trucks and couplers being insulated from each other,) and thence, through the wire E and the succeeding couplers, back to the magnet H through the wire O. This completes the primary circuit, which is normally closed, and which holds the spring M normally out of contact with the lug P. This spring is provided with an armature, N, and is mounted upon a metallic post, L, fitted to the base-board G. Now with respect to the secondary circuit; also mounted

upon the board G is a metallic post, R, and to this post is secured a spring, Q, having a lug, P.

From the post L extends a wire, S, to the binding-post T of the ordinary electrical alarm-bell, and from the post R extends a wire, U, through a battery, V, to the other binding-post, W, of the alarm-bell. Now, when the main circuit is broken by reason of the detachment of a car, the lug P is engaged by the spring M, and the second circuit, just described, is completed through the metallic post L, the wire S, binding-post T, through the electro-magnet of the bell, the binding-post W, wire U, post R, spring Q, back to the lug P. It will thus be seen that when this secondary circuit is completed the alarm-bell is thrown into action and continues to ring as long as the primary circuit remains broken, so that the engineer is immediately notified on the detachment of a car of its severance from the rest of the train. As soon as the car is overtaken and coupled with the train, the bell of course ceases as the first or primary circuit is again completed, and the attraction of the armature N by its electro-magnet breaks the connection between the spring M and the lug P.

It will be noticed that this system will necessitate no change in the cars, but merely the attaching thereto of a few wires, and the whole of the mechanism shown in Fig. 2 may be placed upon a single narrow board and hung up in the cab of the engine.

While I have described the above invention as particularly applicable to freight-cars, it may of course be used with the ordinary passenger-coaches, doing away with the bell-cord which is now used, and this without any departure from the spirit of the invention.

It is understood of course that the rails are so laid as to be properly insulated, and all necessary precautions are taken to insure the circuit remaining closed throughout the entire train.

I am aware that it is not broadly new to make a complete electric circuit on a train of cars, and also that it is not broadly new to complete an electric circuit on a train of cars through the rails; but

What I claim as new, and desire to secure by Letters Patent, is—

1. In a system for automatically informing the engineer of the loss of a car, the combination, with an alarm-signal, a secondary electrical circuit in which said alarm is included, and an electrical generator for said circuit, of one or more cars having their draw-bars electrically connected, and the draw-bar on the last car electrically connected with the rail, a main electric circuit through the draw-bars and the rails, an electrical generator for this circuit, and an electro-magnet included in said circuit, and mechanical means to close the secondary circuit by the breaking of the main circuit.

2. In a system for automatically informing the engineer of the loss of a car, the combination, with an alarm-bell, a normally-open electric circuit, a generator and a spring included in said circuit, of a normally-closed circuit, a spring carrying an armature and adapted to engage said other spring when the normally-closed circuit is broken, an electro-magnet to control said armature, and one or more cars the draw-bars of which are electrically connected, one of the draw-bars of the last car being electrically connected with a rail, and one of the draw-bars of the forward car connected with the magnet and the rail with said magnet.

3. In a system for automatically informing the engineer of the loss of a car, a railway-car having its draw-bars insulated from the trucks and electrically connected with each other, and having one of its draw-bars electrically connected with a rail through its truck.

4. In a system for automatically informing the engineer of the loss of a car, the combination, with a railway-car and its draw-bars insulated from the trucks, of a wire connecting said draw-bars with the respective trucks and capable of being detached, whereby either truck is electrically connected or disconnected from its draw-bars.

In testimony whereof I set my hand in presence of two witnesses.

GEO. D. BURTON.

Witnesses:

CHAS. F. ADAMS,  
E. F. PERKINS.