

(No Model.)

2 Sheets—Sheet 1.

E. C. WILEY.  
ELECTRIC RAILWAY SIGNAL.

No. 418,258.

Patented Dec. 31, 1889.

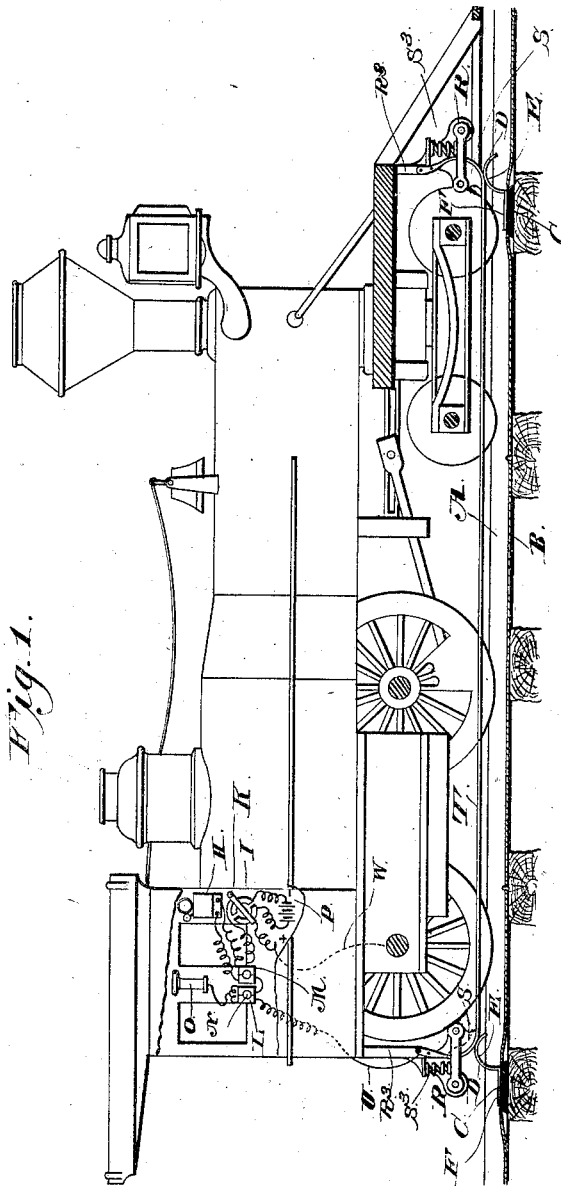
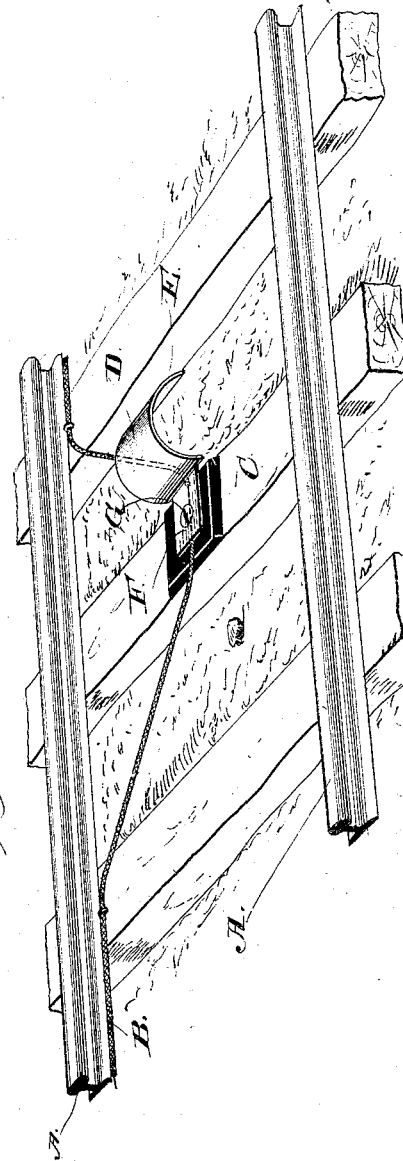


Fig. 2.



Witnesses  
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*J. Warner*

Inventor  
*Edgar C. Wiley*  
By his Attorneys  
*Chas. H. Snow & Co.*

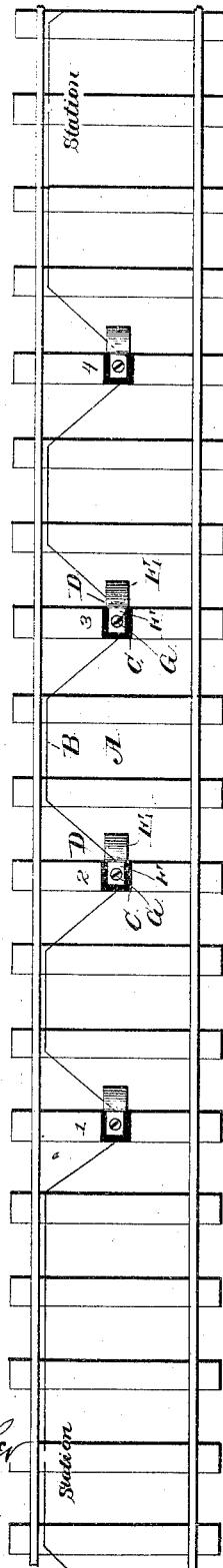
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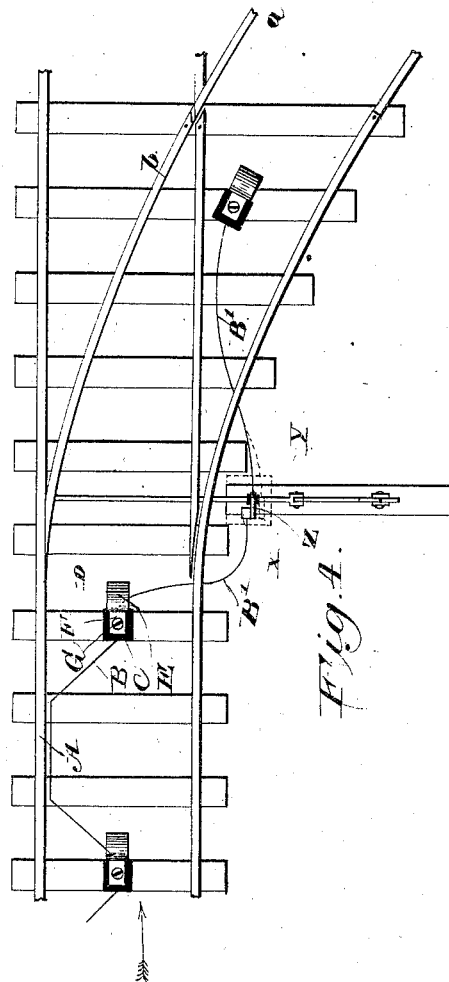


Fig. 4.

Inventor  
*Edgar C Wiley*  
By his Attorneys  
*C. Snow & Co*

# UNITED STATES PATENT OFFICE.

EDGAR C. WILEY, OF INDEPENDENCE, VIRGINIA.

## ELECTRIC RAILWAY-SIGNAL.

SPECIFICATION-forming part of Letters Patent No. 418,258, dated December 31, 1889.

Application filed March 8, 1889. Serial No. 302,498. (No model.)

*To all whom it may concern:*

Be it known that I, EDGAR C. WILEY, a citizen of the United States, residing at Independence, in the county of Grayson and State of Virginia, have invented a new and useful Improvement in Electric Railway-Signals, of which the following is a specification.

My invention relates to an improvement in electric railway-signals adapted to automatically signal between moving trains approaching from opposite direction, and thereby warn the engineer of each to be on the lookout; and my invention consists in the peculiar construction and combination of devices that will be more fully set forth hereinafter, and particularly pointed out in the claim.

In the accompanying drawings, Figure 1 is an elevation of a portion of a railroad-track and of a locomotive provided with my improved signaling apparatus. Fig. 2 is a detail perspective view of one of my improved electrical contact-brushes, showing the manner of arranging the same in position on a railroad-track. Fig. 3 is a diagrammatic plan view of a railroad-track provided with my improved electrical conductors. Fig. 4 is a similar view of an arrangement for the side track to indicate the position of the switch.

A represents the track-rails, which form the return-conductors, and B represents an insulated conducting-wire, which is arranged longitudinally on the road-bed and either midway between the tracks or in close proximity to the inner side of one of the track-rails, and the said conductor B is arranged in a series of disconnected blocks or sections—each of any desired length—thereby forming the conductor into sections or blocks, which are provided with contact devices, which will be hereinafter described more fully, and which are designated in Fig. 3 by the numerals 1 2 3 4. The disconnected ends of the conductor will be located at points of the track where there are stations or depots at which all trains stop or slack speed. It will be understood that any desired number of the said sections will be employed, according to the length of the track.

Arranged midway between the track-rails and at distances of, say, thirty feet apart are non-conducting blocks or plates C, and on the same are supported contact-brushes D, each

of which is formed from a single piece of plate, copper, or other suitable conducting metal and has the concavo-convex portion E and the horizontal arm F. The said arms F rest on the plates C, and are secured thereto by means of screws G or other suitable devices, and the conducting-wires B are passed between the plates C and the said arms F of the brushes and are clamped between them, and those portions of the said conducting-wires which are in contact with the arms F are stripped of their insulating materials, and are thereby caused to form electrical contact with the brushes.

In the cab of the locomotive or in any other suitable part of a railroad-train is an electrical gong H, which is electrically connected to a pole-changing device I, having a shifting-lever K, and to a pair of cut-out plates L M, of the usual construction, the said plates having central openings, in which a conducting connecting-plug N, of the usual well-known variety, is adapted to be inserted. A telephone O or telegraphic instrument is in circuit with the plates M, and included in circuit with the poles or conducting-plates of the pole-changer is a galvanic battery P, dynamo-electric generator, or any other suitable source of electricity.

The locomotive-frame is provided at its ends with downwardly-extending brackets R<sup>3</sup>, to which arms R are pivotally attached. Said arms are provided with segmental plates S, and springs S<sup>3</sup> are arranged to force the free ends of said arms in a downward direction. A flexible conducting-strip T, of copper or other suitable material, is extended under the segment-plates S and has its ends attached to the brackets R<sup>3</sup>. By the pressure of the springs S<sup>3</sup> upon the arms R it will be seen that the segmental plates S of the latter will constantly force the conducting-strip T in a downward direction to a point where it will be caused to engage at least one of the contact-brushes D at all times while the train is in motion, and thereby establish electrical connection between the conductor B and the conductor T. The latter is connected in circuit with the plates L or M by means of a wire or other conductor U, and one pole of the pole-changer is connected in circuit with

the metallic parts of the locomotive or cars, and hence in electrical circuit with the track, by means of a wire or other conductor W. It will be of course understood that the conductor T is insulated from the metallic parts of the locomotive.

From the foregoing description it will be understood that when the locomotive or train is on one of the sections the electric gong and battery will be electrically connected in open circuit with the track, and hence the bell or gong will be silent; but in the event that two locomotives or trains should be on the same section their signaling apparatus will be connected in closed circuit and the gongs of both will be continuously sounded, thereby giving ample notice to the engineer of each train of impending danger and enabling them to avert the possibility of a collision.

In order to prevent trains which may be simultaneously running on the track in the same direction from signaling each other, their pole-changers must be so arranged that the similar poles of their batteries will be connected to the conductor B and to the track or return-conductor, respectively, and when thus arranged the electric circuits will be in opposition and the gongs in both locomotives will be silent. Trains running on the track in the opposite direction will have their signaling apparatus connected to the conductors in reverse polarity, and when thus arranged no two trains proceeding in opposite directions can be on the same block or section without signaling each other in the manner before described.

In Fig. 4 I illustrate an arrangement whereby a train standing on a side track *a* will be signaled by an approaching train on the main track A before the latter reaches the switch *b*. This I accomplish by providing the side track with a conductor B', similar in all respects to the conductor B, previously described, providing the latter with a contact plate or point X, and providing the moving switch-rod Y with a contact-plate or circuit-closer Z, which is electrically connected to the

conductor B' and is moved from and out of contact with the contact-plate or electro X when the switch is open and is moved into contact therewith when the switch is closed. When the latter arrangement is effected, the conductors B and B' will be part of the same signal block or section, and as soon as a train enters said block or section, approaching the switch from the direction indicated by the arrow, it will immediately signal the train standing on the side track or moving thereon in the manner before described.

In order to enable communication to be established between two trains on the same blocks or section and moving toward each other, it is only necessary for the engineer of each to insert the plugs N in the cut-out plates M, and thereby cut out the gongs II from the electrical circuit and place the telephones or telegraphic instruments in said circuit, as will be very readily understood.

Having thus described my invention, I claim—

In a railway signaling apparatus, the continuous return-conductor A, the conductor B, arranged in disconnected blocks or sections and having the electrodes D, with the curved elastic contact-springs E, arranged at suitable intervals, the electrodes attached to a locomotive or train and comprising the hinged spring-pressed arms R, having the segments S, and the flexible conducting-strips T, extending under said segments S and adapted to be in contact with at least one electrode D at all times while upon one of the blocks or sections, and the signaling mechanism and electric generators in the locomotive or trains in electric circuit with the conductor A and with the electrodes having the conducting-strips T, all combined and arranged substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

EDGAR C. WILEY.

Witnesses:

J. H. SIGGERS,  
R. E. JOYCE.