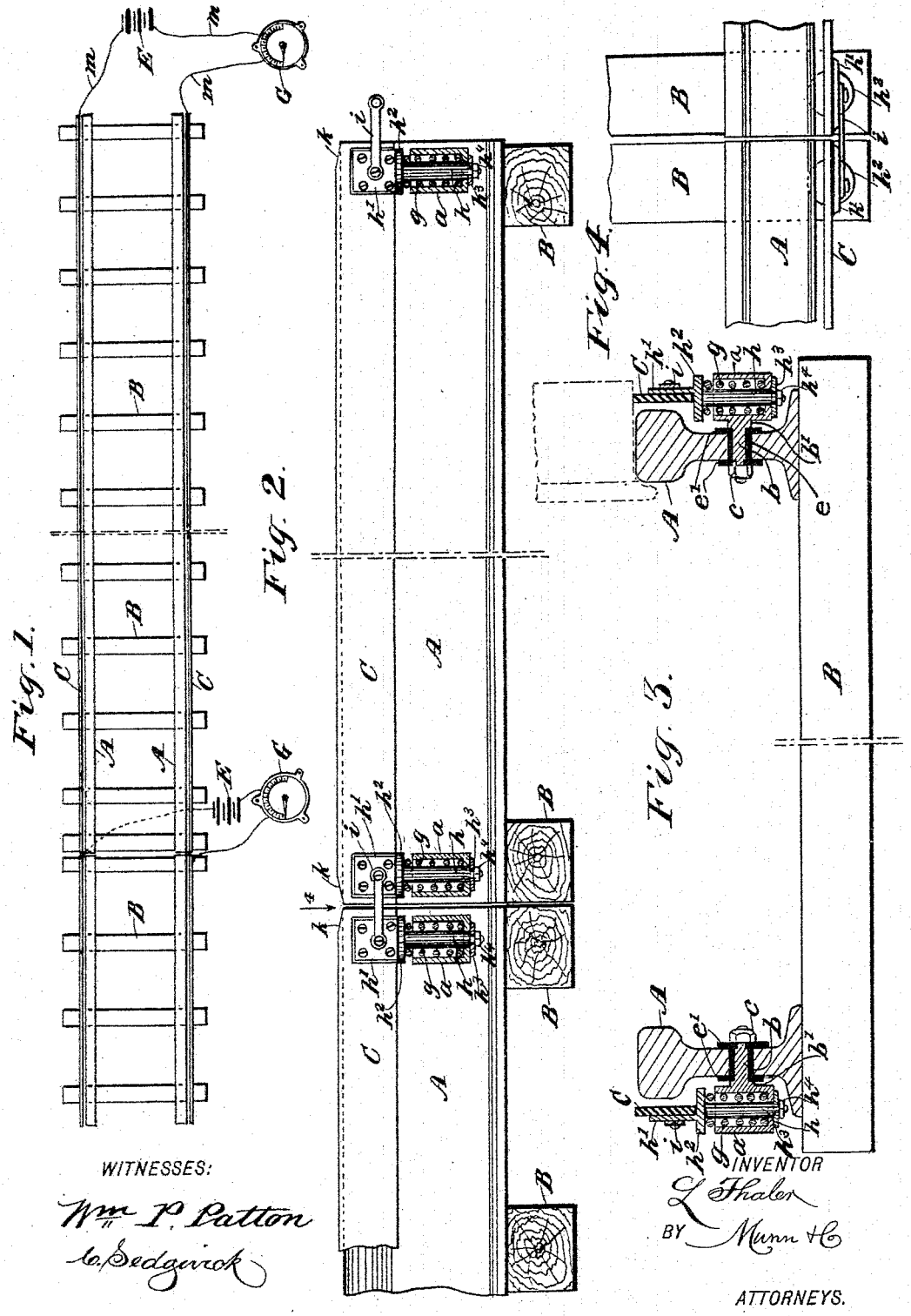
(No Model.)

L. THALER.

ELECTRIC CIRCUIT FOR RAILWAY SIGNALING.

No. 491,387. Patented Feb. 7, 1893.



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ELECTRIC CIRCUIT FOR RAILWAY-SIGNALING.

SPECIFICATION forming part of Letters Patent No. 491,387, dated February 7, 1893.

Application filed August 24, 1892. Serial No. 443,950. (No model.)

To all whom it may concern:

Be it known that I, LOUIS THALER, of New York city, in the county and State of New York, have invented a new and useful Improvement in Electric Circuits for Railway-Signaling, of which the following is a full, clear, and exact description.

This invention relates to improved means for completing an electric circuit and producing a warning signal at a station on a railroad employing the block signal system.

It has for its object to provide a simple and reliable mechanism for the automatic electric actuation of a visual or audible signaling device at a station on the line of railroad, when the block, of which said station is one terminal, is occupied by a car, train, or locomotive.

To this end, my invention consists in the construction and combination of parts which will be adapted to complete an electric circuit through the ground as part of said circuit, at any point on a block which is entered or occupied by a car or train, as is hereinafter described and claimed.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view broken, of two sections or "blocks" of a railroad, with the improvement applied, electric connections being diagrammatically shown; Fig. 2 is an enlarged side view, broken, and partly in section, of two track rails that are in sequence, and the improvements attached to them; Fig. 3 is an enlarged, transverse section of a railway track with the improvement connected to its parallel rails; and Fig. 4 is a broken plan view of parts opposite the arrow 4 in Fig. 2.

The track rails A, are held parallel by the cross ties B, in the usual manner, and may be of steel or iron, and if preferred, the cross ties may also be made of metal. It is essential for the efficient operation of the signaling device, that the track rails shall be in electric connection with the ground, hence no provision for track insulation is necessary.

There is a series of metallic conductor bars C, provided for the track rails A, which bars are by preference made of equal length with the rails, are parallel on the sides and edges, and have a yielding connection with the track rails and with each other, as will be explained.

At points near the ends of the track rails A, and at spaced intervals between said ends, the rails are perforated transversely through their webs a proper distance from the top and bottom faces, for the reception of a suitable number of similar guide boxes. As shown in Figs. 2 and 3, the guide boxes each consist of a spring receptacle *a*, from which laterally projects a stem *b*, that is threaded on its free end to receive a nut *c*. The stem is shouldered, and its reduced body made to fit an insulating sleeve *e*, that in turn fits within the perforation of the rail web it is to engage; similar insulating washers *e'* being placed on the stem, as indicated in Fig. 3, complete the electric insulation of the guide boxes from the rails whereon they are affixed by the nuts *c*, these having a bearing on one insulating washer of a set on a stem *b*, while the shoulder *b'* on the latter engages the washer nearest to it when the parts are in place.

In each guide box a spiral spring *g*, is inserted, that seats itself upon the bottom of said box in loose contact with its inner wall, and within each of these springs a cylindrical bolt body *h* is loosely introduced, that passes through a central perforation in the bottom of the guide box. The upper end portions of the bolt bodies *h*, are flattened longitudinally, as at *h'*, forming a pad on each that affords means for attaching the portions *h'* upon the outer sides of the conductor bars C, by screws or rivets, a preferably integral collar h^2, being formed on the lower edge of each pad, providing a shoulder for engagement of the upper end of a spring *g*. The lower end portions of the bolt bodies *h*, extend through the guide boxes and have a washer h^3 secured thereon by a nut h^4, or other means; which provision retains the parts in sliding connection, and for a proper action it is necessary that the collars h^2 should all be maintained by the springs *g* a short distance above the upper edges of the spring boxes *a*. The width of the conductor bars C, is so proportioned that their upper edges will be projected

slightly above the top faces of the track rails A, their connection with said rails maintaining them edgewise in a vertical plane, with a proper space between them and the outer faces of the rail heads, as shown in Figs. 3 and 4, the upper edges of the bars C, being sloped as at *k*, near each end. The conductor bars C, are connected in sequence by the link plates *i*, or other suitable device, to permit a depression of each bar and produce an electrical connection of each series of bars extending in parallel from one end of a railway block to its other terminal; it being understood that at the block stations the track rails and conductor bars of one block are not in circuit with these members on another adjacent block.

At the stations of blocks on a railroad having the improvement, a local battery E, is furnished for each track, and wires *m* connect the battery with the nearest ends of the conductor bars C, as shown in Fig. 1.

At any convenient point in the station office (not shown) an indicator for electricity, which may be a visual indicator, as G, or an audible signaling device is introduced into the circuit by connecting it with one of the wires *m*.

I do not limit the construction of the indicating device to any particular type, as it is only essential that such an instrument be capable of reliably producing a visual or audible signal to show when the block is occupied by a car, train or locomotive.

In operation, the two lines of elastically supported and electrically connected conductor bars of a block will normally be in open circuit with the battery E, and indicator such as G, or its equivalent. When a car, train or locomotive enters the block from either end, the wheels of the leading car will engage the track rails and also press the bars C downwardly; (see wheel broken and in dotted lines in Fig. 3;) this will establish an electric circuit through the treads of the wheels from the bars C to track rails A, and intervening ground across the track, so as to close the circuit and produce a warning movement of the indicator at the station that should receive notice of the occupation of the block.

It will be seen that any metallic body which will simultaneously depress two conductor bars on track rails that are in parallel, will actuate the signal device, and maintain it set as an alarm while the block is so occupied.

The apparatus described is for one track in a block; it is evident that by similar means, any number of tracks for railway service on a block may be protected, and automatic signals be given on each indicator for its respective track.

Having thus fully described my invention, I claim as new, and desire to secure by Letters Patent,—

1. The combination, with non-insulated track rails, of connected insulated bars in parallel with and sustained on said rails, projected slightly above their top faces, a battery, and an electric indicator in open circuit with the bars, which circuit will be closed by car wheels which impinge the track rails and depress the bars substantially as described.

2. The combination, with non-insulated track rails of a block, of electrically connected conductor bars non-electrically supported on said track rails at their sides, a battery, and an electric indicator in normally open circuit with the conductor bars, which circuit will be closed when a car traverses the track rails and its wheels depress the parallel bars substantially as described.

3. The combination, with parallel non-insulated track rails of a block, and lateral insulated supporting devices for parallel bars on each track rail, of electrically connected conductor bars engaging said devices and sustained by them in parallel with the rails but spaced therefrom, a battery, an electric indicator, and means to electrically connect the bars with the battery and indicator in normally open circuit, which will be closed by car wheels impinging the rails and depressing the bars substantially as described.

4. The combination, with the non-insulated track rails of a railway block, a set of insulated spring boxes for each rail secured thereon to project laterally, springs in said boxes, and slide-bolts loosely engaging the springs, of a conductor bar for each track rail having the upper ends of slide bolts attached thereto, an electric connection between adjacent conductor bars, a battery at a block station, an electric indicator therefor, and electric conductor wires connecting the bars near a station with the battery and indicator in normally open circuit, substantially as described.

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Witnesses:
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