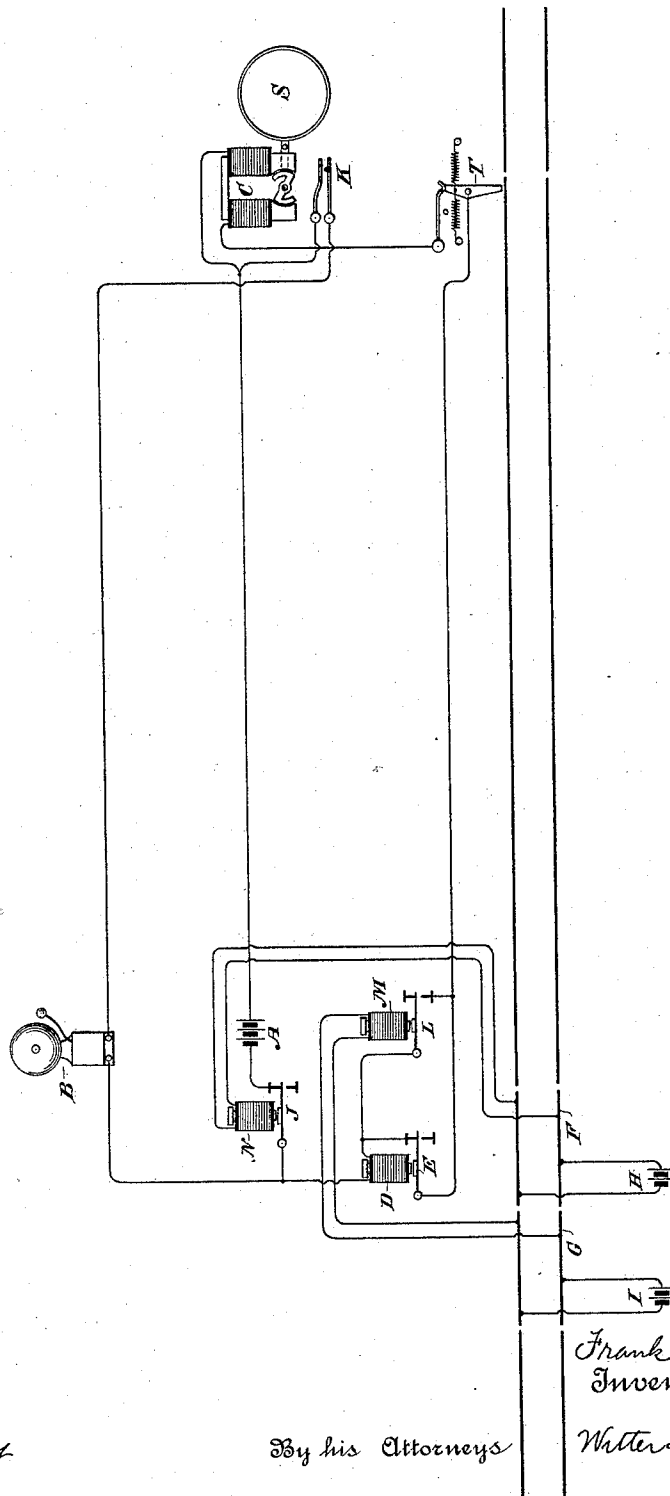


(No Model.)

F. I. MYERS.
RAILWAY SIGNALING APPARATUS.

No. 469,438.

Patented Feb. 23, 1892.



Witnesses
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FRANK I. MYERS, OF NEW YORK, N. Y., ASSIGNOR TO THE HALL SIGNAL COMPANY, OF MAINE.

RAILWAY SIGNALING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 469,438, dated February 23, 1892.

Application filed July 9, 1891. Serial No. 398,397. (No model.)

To all whom it may concern:

Be it known that I, FRANK I. MYERS, a citizen of the United States, residing at New York city, in the county and State of New York, have invented a certain new and useful Improvement in Railway Signaling Apparatus, which improvement is fully set forth in the following specification and the accompanying drawing, which forms a part hereof.

The invention relates to automatic railway signaling apparatus in which a signal is automatically displayed by the operation of the train on entering a block or section of the track and is cleared when the train leaves the block or section.

The invention has special reference to the clearing of the signal as the train leaves the end of the block where the main signaling-circuit of the block is a wire circuit and not a rail circuit.

The invention has for its object to clear a signal at once on the last wheel of the train leaving the block, whether the train be a long train or a short train or a single locomotive; and it consists of the apparatus herein described and claimed.

Heretofore where wire circuits have been used the signal at the entrance to a block has been not only set at "danger" by the operation of the train upon the track-instrument at the entrance to the block, but has also been cleared by the operation of the train upon a track-instrument near the end of the block. To insure that a signal shall not be cleared before the rear of the train is off the block, especially on roads where occasionally very long trains are run, it is common to set the track-instrument which clears the signal of the preceding block two thousand feet or so on into the next block. In such a case the signal is not cleared, even when a short train is running, until the front wheels of that train have reached the track-instrument, and thereby the signal is often kept an unnecessarily-long time at "danger." By my invention I combine a wire signaling-circuit operated by the train at the entrance to the block in any well-known way with two short track-circuits placed at the end of the block, whereby the long-wire signaling-circuit is restored to its normal condition and the signal

cleared by the last wheels of the train leaving the first of these short-rail circuits and when entering upon the second.

It is also an advantage of my invention that if the train or locomotive backs down upon a block it will set the signal at "danger" the moment the first wheels of the backing train leave one of these short-rail circuits and enter upon the other, and the signal will be continued at "danger" until the train moves off the block, as before.

The accompanying drawing represents, diagrammatically, my improved apparatus in the form best known to me.

The drawing represents a complete system for one block or section. In this block or section and at the end of it the two rails are insulated for a short distance from each other and from the rest of the track, as at F, and similarly another short section is insulated, as at G, and local batteries H and I are provided for these respective local track-circuits. The length of these insulated sections of the track need not be more than a few yards. The rest of the block may be of any convenient or desired length.

The track-instrument T is of any ordinary construction and stands at the entrance to the block. It forms part of the normally-closed wire signaling-circuit, which includes the battery A and the single magnet C, controlling the signal S.

The operation of the train upon the track-instrument is to immediately break the circuit at T while the train is passing over the track-instrument, thus demagnetizing the signal-magnet C, which permits or causes the signal S to go to "danger," and it also demagnetizes the magnet D, thereby breaking the said signal-circuit permanently at E. The signal S acts when it goes to "danger" upon the circuit-maker K in a normally-open shunt branch, including the distance-bell or other signal B. This latter operation completes the circuit of the battery A through the shunt branch B K, and thereby rings the bell B or otherwise by the action of the bell, or signal B indicates at the point where that signal is placed that the signal S has gone to "danger" and remains at "danger." The signal S remains at "danger" by reason of its circuit being per-

manently broken at E, and the bell or other signal B continues ringing or at "danger" by reason of its circuit having been permanently made at K so long as the train remains upon the block and until the front wheels of the train strike the short insulated rail-section F. By that act the electro-magnet N is demagnetized, (the current from the battery I being shunted through the axle of the train,) and the main signaling-circuit, both of the signal S and of the bell or signal B, is broken at J and remains so broken so long as there are any wheels of the train on the said short section F. The first wheels of the train which strike the short section G demagnetize the magnet M, and thereby permit of a normally-open shunt branch around the permanent break at E to close at L, and said shunt branch remains closed at L so long as any of the wheels of the train are upon the short section G. When the last wheels of the train leave the short section F, the electro-magnet N is instantly magnetized, attracts its armature J, and remakes the signaling-circuit of S and B at that point. Instantly the current of the battery A flows through the magnet D, shunt branch L, signal-magnet S, and back to battery, thereby clearing the signal S and closes the break in the signaling-circuit at E and reopening the circuit-closer K, and as the last wheels of the train leave the short section G the magnet M is demagnetized and the branch L is reopened at L, and the apparatus thereby restored to its normal condition, with the signals clear ready for the next train. The bell B may be in any convenient place, as in a signal-tower, or it may be a second signal at a distance—as, for instance, farther back on the road.

A train going against traffic will, when its first wheels strike the short section F, demagnetize the magnet N, and thereby break the main branch of the signaling-circuit and throw the signal S to "danger." When the last wheels of such a train have left the short section F, the signal will remain at "danger" by reason of the circuit having been permanently broken at E, and from that time the bell B will begin to ring by reason of its circuit having been closed at K, and also now at J, and that will continue until the train moves off the block over the short sections F and G, as heretofore described.

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

1. In an electric railway block signaling ap-

paratus, a normally-closed wire signaling-circuit operating or controlling a signal guarding a block, the said circuit adapted to be operated by a train on its entering the block and having a circuit-breaker in its normally-closed main branch, and a circuit-maker in a normally-open shunt branch, in combination with two local circuits, each including a short section of the rails at the end of the block and adapted to be acted upon in succession by the train, the first of said two local circuits operating upon the circuit-breaker in the main branch of the signaling-circuit and the second of said local circuits operating upon the circuit-maker in the shunt branch first above mentioned, whereby the signaling-circuit is restored to its normally-closed condition and the signal is cleared by the last wheels of the train leaving the first of the two short sections of the rails at the end of the block, substantially as shown and described.

2. In an electric railway block signaling apparatus, a normally-closed wire signaling-circuit operating or controlling a signal guarding a block, the said circuit adapted to be operated by a train on its entering the block and having a circuit-breaker in its normally-closed main branch and a circuit-maker in a normally-open shunt branch, and a second circuit-maker in a second normally-open shunt branch, the latter circuit-maker being adapted to be operated by the moving of the signal to "danger" and the circuit thereby made, including a second or distant signal or bell, in combination with two local circuits, each including a short section of the rails at the end of the block and adapted to be acted upon in succession by the train, the first of said two local circuits operating upon the circuit-breaker in the main branch of the signaling-circuit and the second of said local circuits operating upon the circuit-maker in the shunt branch first above mentioned, whereby the movement of the signal in going to "danger" is indicated by a second signal or bell at a distance and the signaling-circuit is restored to its normally-closed condition and the signal is cleared by the last wheels of the train leaving the first of the two short sections of the rails at the end of the block, substantially as shown and described.

FRANK I. MYERS.

Witnesses:

I. N. MOORHEAD,
WM. P. HALL.