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RAILWAY SIGNAL.

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Fig. 1.

The diagram illustrates a telegraph system with two main horizontal tracks, labeled b^1 and b^2 . These tracks are connected by several curved cross-connections, labeled c^1 and c^2 . A battery, represented by a series of vertical lines, is connected to the tracks through a switch mechanism labeled f . The switch mechanism includes components labeled f^1 , f^2 , and f^3 . Other components shown include d^1 , d^2 , e^1 , e^2 , g^1 , g^2 , h^1 , h^2 , i^1 , i^2 , j^1 , j^2 , k^1 , k^2 , l^1 , l^2 , m^1 , m^2 , n^1 , n^2 , o^1 , o^2 , p^1 , p^2 , q^1 , q^2 , r^1 , r^2 , s^1 , s^2 , t^1 , t^2 , u^1 , u^2 , v^1 , v^2 , w^1 , w^2 , x^1 , x^2 , y^1 , y^2 , z^1 , and z^2 .

WITNESSES
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Fig. 2.

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RAILWAY-SIGNAL.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, NICOLA MUCCI and ALFONSO CELENZA, citizens of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Railway-Signals, of which the following is a specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to railway signals, and the object thereof is to provide improved devices of this class particularly designed for use in connection with a single track railway having side tracks at intervals in order that trains going in opposite directions may pass, whereby track-men or signal men along the track or stationed at the ends of a side track as well as the engineers of trains may be notified in case an error has been made by a train moving in one direction taking the side track when it should not have done so, or a train moving in another direction failing to take the side track when it should have done so.

The invention is fully disclosed in the following specification, of which the accompanying drawing forms a part, in which the separate parts of our improvement are designated by suitable reference characters in each of the views, and in which;—

Figure 1 is a diagrammatic view of our improved railway signal apparatus; Fig. 2 a side view of a locomotive mounted on one part of a track and showing parts of the apparatus in detail; and, Fig. 3 a side view of a contact shoe carried by a locomotive.

In the drawing forming part of this specification, we have shown a main railway track *a* and side track *b* connected with the railway by switches at *b*² and *b*³, and for the purpose of this description, it may be understood that, in practice, all trains moving in the direction of the arrow *x* are under directions to take the side track in order to permit trains moving in the direction of the arrow *y* to pass.

In the practice of our invention, we place adjacent to one of the rails of the side track *b*, adjacent to the switch *b*², contact devices *c* and adjacent to the switch *b*³ is placed a signal man's or track-walker's house *d* in which is placed an electric signal device *d*² and battery *d*³, and the contact devices *c* are connected by wires *c*² with the battery *d*³ and signal device *d*², and said signal device and battery are connected by a wire *c*³. We also place adjacent to one of the rails of the main track *a* and inwardly of the switch *b*³ two contact devices *e*, and adjacent to the switch *b*² is placed a signal man's or track-man's house *f* in which is placed an electric signal device *f*² and battery *f*³ and the contact devices *e* are connected by wires *e*² with the signal device *f*² and battery *f*³, and said signal device and battery are connected by a wire *e*³.

In Fig. 2 of the drawing, we have shown the locomotive *g* of a train and said locomotive is indicated dia-

grammatically in Fig. 1, and at one side of the rear truck of the locomotive we place two hangers *h* and *h*², and to the lower end of the hanger *h*² is pivoted a contact shoe *i* which is preferably of the curved form shown in Figs. 2 and 3, and which is divided into top and bottom portions *i*² and *i*³ which are insulated from each other as shown at *i*⁴, and the hanger *h*² serves as a contact device with which the free end of the shoe *i*, or the free end of the upper part *i*³ of said shoe is designed to make contact, and the hangers *h* and *h*² are insulated from that part of the locomotive *g* with which they are connected as shown at *j*.

The locomotive *g* is provided in the engineer's cab with an electric signal device *k* which is in electrical connection with the hangers *h* and *h*² by means of wires *k*² and *k*³ respectively, and through the hanger *h* and wire *k*² the signal device *k* is also in electrical connection with the top portion of the shoe *i*, and placed in the partial circuit formed by the wire *k*² is a battery *k*⁴.

It will be understood, of course, that the locomotives of trains moving in opposite directions are provided with one of the contact shoes *i*, and these contact shoes are adapted to make connection with the contact devices or shoes *c* and *e*, and the operation will be readily understood from the foregoing description when taken in connection with the following statement thereof. If a train moving in the direction of the arrow *y* should accidentally be switched at *b*² onto the side track *b*, the contact shoe *i* of the locomotive of said train would make connection with the contact devices *c* and the engineer of the train would at once be notified as would also the signal-man in the signal house *d*² adjacent to switch *b*³, and said signal-man could notify the engineer of a train moving in the direction of the arrow *x*, and the engineer of the train moving in the direction of the arrow *y* being notified that his train had taken the switch would, of course, be able to stop and move back onto the main track and proceed thereon. If, on the other hand, a train moving on the main track in the direction of the arrow *x* should fail to take the switch *b*³ the contact shoe on the engine of said train would make connection with the contact devices *e* and the engineer of said train would be notified that his train had failed to take the switch at *b*³ and the signal-man at *f* would also be similarly notified and the signal-man at *f* could notify the engineer of a train moving in the direction of the arrow *y* that the track between the two switches was not open, and the engineer of the train moving in the direction of the arrow *x* could move his train back onto the main track and take the switch onto the side track.

It will thus be seen that by means of our signal apparatus the operation of trains on a single track and the avoidance of accidents or collisions may be simplified and the danger of collisions largely obviated.

In order to avoid danger of breaking the contact

hanger h^2 when the contact shoe i is thrown into contact therewith, the said hanger is preferably made of two parts as shown in Fig. 3, the lower part k^5 being movable in the upper part and provided with a pin k^6 movable in a slot k^7 formed in the upper part and which limits the movement in the lower part and between the lower end of the lower part and the lower end of the upper part is placed a spiral spring k^8 which normally holds said lower part in its lowest position but permits it to be forced upwardly by the free end of the contact shoe i .

The end of the shoe i which is pivoted to the hanger h is also provided with a lug i^5 which operates in connection with said hanger to hold the shoe in operative position and prevent it from dropping too low.

Having fully described our invention, what we claim as new and desire to secure by Letters Patent, is;—

1. In a railway signal apparatus for single track railways provided with side tracks for the passage of trains, a pair of contact devices located adjacent to a rail of the side track near one end thereof and in electrical connection with a signal at the opposite end of the side track, a pair of contact devices located near a rail of the main track near the last named end of the side track and in electrical connection with a signal device at the opposite end of the side track, the circuits formed by said contact devices, signal devices and electrical connections being adapted to be closed by circuit closing and breaking devices connected with the locomotives of trains.

2. In a railway signal apparatus for single track railways provided with side tracks for the passage of trains, a pair of contact devices located adjacent to a rail of the side track near one end thereof and in electrical connection with a signal at the opposite end of the side track, a pair of contact devices located near a rail of the main track near the last named end of the side track and in electrical connection with a signal device at the opposite end of the side track, the circuits formed by said contact devices, signal devices and electrical connections being adapted to be closed by circuit closing and breaking devices connected with the locomotives of trains, said locomotives being also provided with signal devices in open electrical circuits adapted to be closed by said circuit closing and breaking devices.

3. In a railway signal apparatus, a locomotive provided with an electric signal device, hangers connected with the truck of the locomotive, a contact shoe pivoted to one of said hangers and adapted to make contact with the other hanger, wires connected with said signal device and with said hangers, and signal devices placed at different points adjacent to the track and in open circuits adapted to be closed by said contact shoe.

In testimony that we claim the foregoing as our invention we have signed our names in presence of the subscribing witnesses this 22nd day of March 1907.

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Witnesses:

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