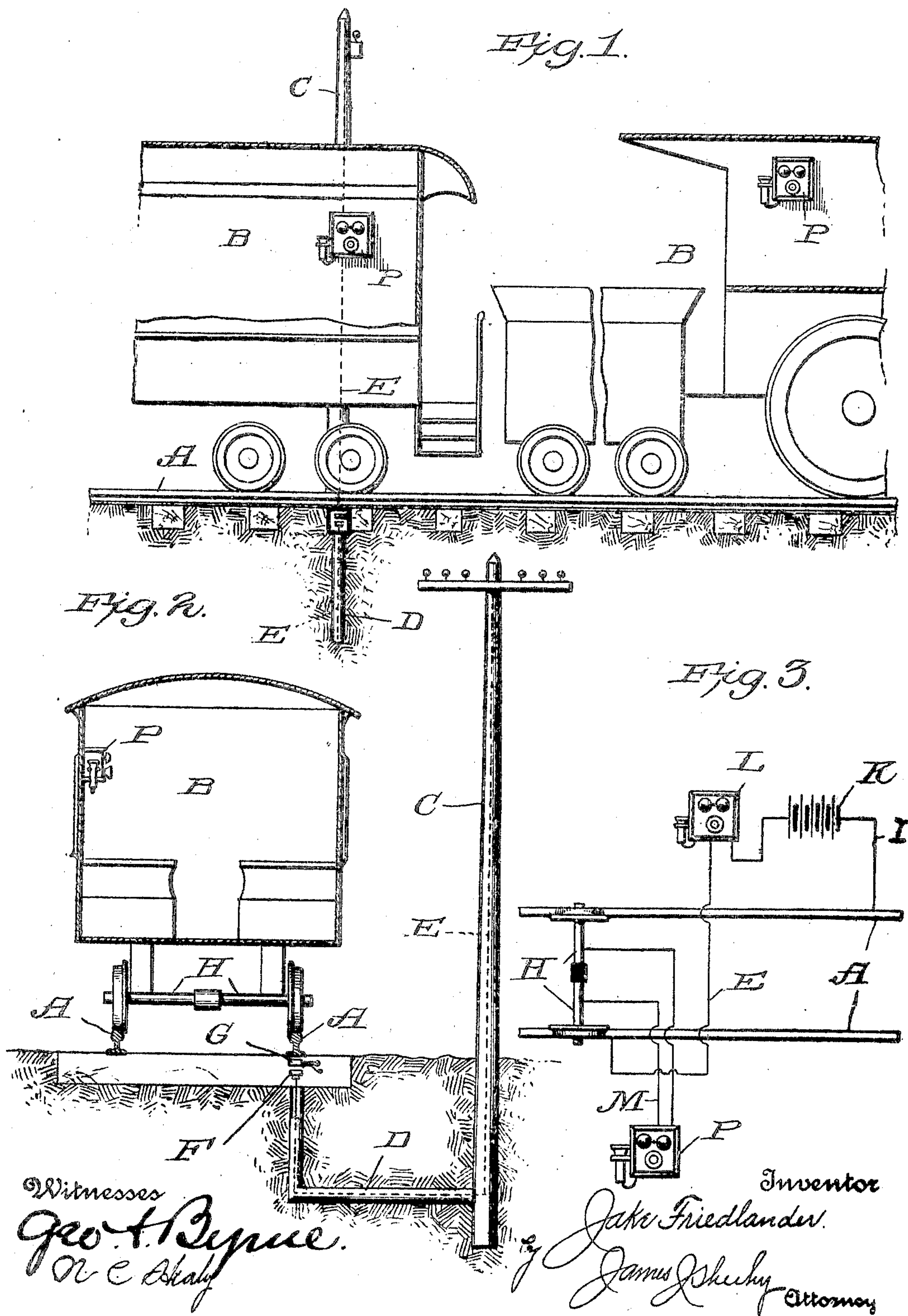


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PATENTED AUG. 22, 1905.

J. FRIEDLANDER.
ELECTRIC RAILWAY SIGNAL.
APPLICATION FILED DEC. 27, 1904.



UNITED STATES PATENT OFFICE.

JAKE FRIEDLANDER, OF FARGO, NORTH DAKOTA.

ELECTRIC RAILWAY-SIGNAL.

No. 797,678.

Specification of Letters Patent.

Patented Aug. 22, 1905.

Application filed December 27, 1904. Serial No. 238,476.

To all whom it may concern:

Be it known that I, JAKE FRIEDLANDER, a citizen of the United States, residing at Fargo, in the county of Cass and State of North Dakota, have invented new and useful Improvements in Electric Railway-Signals, of which the following is a specification.

My invention pertains to railway-signals of the electric type; and it has for its object to provide means whereby those in authority on a train may readily communicate with a train-despatcher or other person at a station with a view of receiving information and instructions, and thereby avoiding collisions and other accidents.

With the foregoing in mind the invention will be fully understood from the following description and claims, when taken in connection with the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation of so much of a railway and a train thereon as is necessary to illustrate the preferred embodiment of my invention. Fig. 2 is a transverse section of the same, and Fig. 3 is a diagrammatic view illustrating the electric circuit and hereinafter referred to in detail.

Referring by letter to the said drawings, A A are the rails of a railway, which in general may be of the conventional or any other suitable construction. B B are the cars of a train on the railway, and C is a telegraph-pole disposed at one side of the railway in the ordinary manner. The said pole C is preferably hollow, and intermediate of the lower portion of the same and the adjacent rails A is a conduit D, preferably of non-conducting material.

E is a wire extending through the pole C and the conduit D and designed to lead to the station presently referred to.

F is a contact-piece connected to the end of the wire E at a point immediately below one of the rails A and designed to be engaged by a complementary contact-piece G when the latter is depressed by the weight of a train on the meeting ends of the said rail A and the adjacent rail, and H H are the axles of the cars B, which are each equipped with the usual wheels and are divided by insulating material into two sections, as best shown in Fig. 2. The contact-piece G is connected to one of the ties at one side of the railway, and when

said contact-piece is pressed into engagement with the contact-piece F and the sections of the axles adjacent to said side of the railway are electrically connected to sections at the opposite side of the railway by means presently described it will be observed that the electric current will pass through the wire E, the contact-piece F, the contact-piece G, the adjacent rail A, one section of one axle H, the electrical connection before mentioned, the opposite section of the same axle or another axle, a rail at the opposite side of the railway, and a wire I back to the source of electric energy. This source of electric energy is preferably a battery K, Fig. 3, to one pole of which the wire E leads.

The wire I, as before stated, leads to a station where it is connected to any suitable signaling apparatus, (indicated by L.) This signaling apparatus may be a telephone, as illustrated, a telegraph-sounder, or any other device compatible with the purposes of my invention, and it is connected in turn to the opposite pole of the source of electric energy K with reference to the wire I.

The means before described for effecting electrical connection between the opposite sections of one or more axles of the cars B is best shown in Figs. 1 and 3 and comprises a wire M, connected electrically at one end with one section of an axle H and electrically connected at its opposite end to the opposite section of the same or another axle and one or more telephones P or other signaling devices connected to the said wire M and arranged in one or more cars of the train.

While I prefer to employ the contact-piece G, which is resilient, and therefore adapted to normally rest out of engagement with the contact-piece F, I do not desire to be understood as confining myself to such construction, inasmuch as when desired the rail or rails above the contact-piece F may be pressed by the weight of a car directly into engagement with the contact-piece F to complete the circuit.

In the practical use of my novel apparatus the contact-piece F is located at a certain predetermined point, and the engineer of the train who is cognizant of the location of the said contact-piece, by reason of the fact that the bells commence to ring, stops the train over the same whenever it is desired to have

communication with a train-despatcher or other person in authority at the station. When the train is so stopped, the bells complementary to the telephones in the train and station will ring, and the engineer and the train-despatcher will each be apprised that communication is established with the other. With this done the telephones are used in the ordinary well-known manner, and the engineer is given any information or instructions which the despatcher may have to deliver, with the result that collisions and other accidents are effectually avoided. The device may also be made use of at crossings as a signal.

From the foregoing it will be gathered that my novel apparatus is possessed of material advantages, and yet is simple and inexpensive in construction and adds but little to the cost of equipping a railway.

I have entered into a detailed description of the construction and relative arrangement of the parts embraced in the present and preferred embodiment of my invention in order to impart a full, clear, and exact understanding of the said embodiment. I do not desire, however, to be understood as confining myself to such specific construction and relative arrangement of parts, as such changes or modifications may be made in practice as fairly fall within the scope of my invention as claimed.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In an electric, railway-signal, the combination of the rails of a railway; one of said rails being movable vertically, a contact-piece resting normally out of engagement with said rail, a source of electric energy, an electrical connection between the said contact-piece and one pole of the source of electric energy, a signaling device connected electrically with the opposite pole of the source of electric energy, an electrical connection between one of the rails at the opposite side of the railway, with reference to the contact-piece, and the said signaling device, a car movable on the railway and having its axles divided by insulation into two sections, respectively, an electric conductor connected at one end to one section of one axle and connected at its opposite end to another section of the same or another axle, and a signaling device arranged in and forming part of the said conductor.

2. In an electric, railway-signal, the combination of the rails of a railway, a source of electric energy, a signaling device arranged between and electrically connected with one pole of the source of electric energy and the rails at one side of the railway, a car movable on the railway, a signaling device carried by the car, an electrical connection between said

signaling device and one of the wheels of the car and through the latter to the last-mentioned rails, a contact-piece, an electrical connection between the last-mentioned signaling device and the contact-piece; part of said connection being stationary and part carried by the car, and an electrical connection intermediate the contact device and the opposite pole of the source of electric energy.

3. In an electric railway-signal, the combination of the rails of a railway; one of said rails being movable vertically, a source of electric energy, a stationary signaling device arranged between and electrically connected with one pole of the source of electric energy and a rail other than the vertically-movable rail, insulation electrically isolating the said rails, a car movable on the railway and having a wheel for depressing the vertically-movable rail, and a wheel arranged to engage the second-mentioned rail, a signaling device carried by the car and electrically connected with the said wheels, a contact-piece arranged to make electrical connection with the vertically-movable rail when the latter is depressed, and an electrical connection between the opposite pole of the source of electric energy and the contact-piece.

4. In an electric, railway-signal, the combination of the rails of a railway; one of said rails being movable vertically, a source of electric energy, a stationary signaling device arranged between and electrically connected with one pole of the source of electric energy and a rail other than the vertically-movable rail, insulation electrically isolating the said rails, a car movable on the railway and having wheel for depressing the vertically-movable rail, and a wheel arranged to engage the second-mentioned rail, a signaling device carried by the car and electrically connected or arranged in circuit with the said wheels, a contact-piece arranged to make electrical connection with the vertically-movable rail when the latter is depressed, a hollow pole disposed at one side of the railway, a conduit extending under ground from said pole to a point adjacent to the contact-piece, and a wire extending through said pole and conduit and electrically connecting the contact-piece and the opposite pole of the source of electric energy.

5. In an electric, railway-signal, the combination of the rails of a railway, a stationary signaling device connected electrically with the rails at one side of the railway, a car movable on the railway, a signaling device carried by the car, an electrical connection between said signaling device on the car and one of the wheels thereof and through the wheel to the last-mentioned rails, a contact-piece, an electrical connection between the signaling device on the car and the contact-

piece; part of said connection being stationary and part carried by the car, and an electrical connection intermediate the contact-piece and the stationary signaling device; the circuit carried by the car or that in which the stationary signaling device is arranged being also provided with a source of electric energy.

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

JAKE FRIEDLANDER.

Witnesses:

B. I. KEATING,
GEO. H. HOLLISTER.