

(No Model.)

F. P. SCHLOSSER.
ELECTRIC RAILWAY SIGNAL.

No. 488,615.

Patented Dec. 27, 1892.

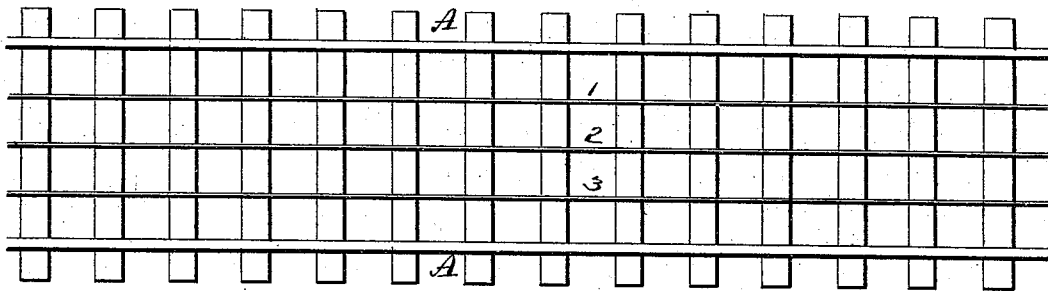


Fig. 1.

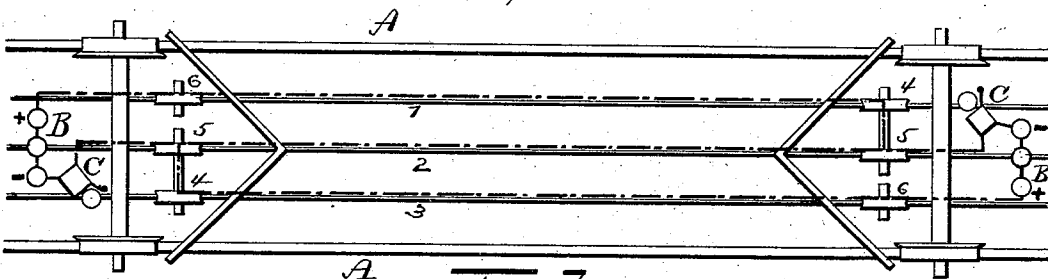


Fig. 2.

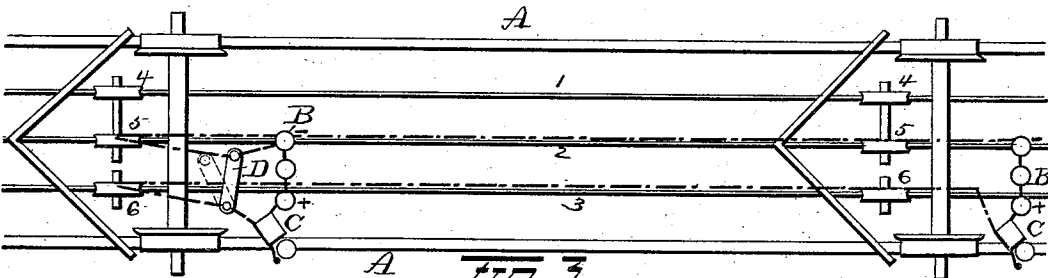


Fig. 3.

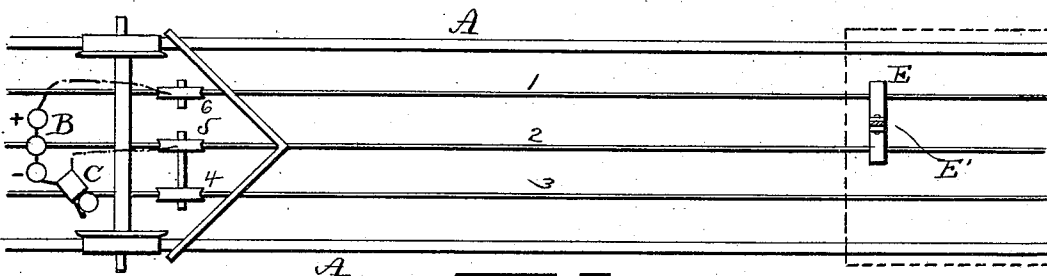


Fig. 4.

Witnesses

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UNITED STATES PATENT OFFICE.

FRANK P. SCHLOSSER, OF BIRMINGHAM, ALABAMA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE F. P. SCHLOSSER ELECTRIC SIGNAL AND ALARM COMPANY, OF SAME PLACE.

ELECTRIC RAILWAY-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 488,615, dated December 27, 1892.

Application filed June 21, 1892. Serial No. 437,442. (No model.)

To all whom it may concern:

Be it known that I, FRANK P. SCHLOSSER, a resident of Birmingham, in the county of Jefferson and State of Alabama, have invented certain new and useful Improvements in Electric Railway-Signals; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in electric railroad signals,—its object being to produce simple and efficient devices whereby the engineer of one train can, by means of devices located on the train, be notified of the approach of another train and thus prevent the collision of trains.

A further object is to so construct and arrange the devices that the engineer of one train will be notified of the proximity of another train running in either direction on the same track.

A further object is to produce a device for the purpose stated which shall be simple, cheap to manufacture, easy to apply and which shall be effectual in the performance of its functions.

With these object in view the invention consists in certain novel features of construction and combinations and arrangements of parts as hereinafter set forth and pointed out in the claims.

In the accompanying drawings: Figure 1 is a view of a portion of a track, showing the arrangement of the conductors between the rails. Fig. 2 is a diagrammatical view showing the arrangements of parts and circuits, with two trains running in reverse directions. Fig. 3 is a similar view showing the arrangement of parts and circuits with two trains on the same track, one standing still and the other running toward the standing train from the rear. Fig. 4 is a view of a modification.

A, A, represent the main rails of the track, between which are located, three rails or conductors 1, 2, 3. Carried by the train (preferably the fender at the forward end of the locomotive) are three wheels 4, 5, 6, which are adapted to make electrical contact with the

rails 1, 2, 3. The wheels 4, 5, may be carried by the same shaft or mantle so that they will be electrically connected together, while the wheel 6 may be carried by a separate shaft so as to have no electrical connection with the wheels 4, 5. If desired the conductors 1, 2, 3, may be arranged closer together than shown in Fig. 1 (say four inches apart) and the wheels 4, 5, 6 arranged on a single shaft, the wheel 6 being, of course, electrically insulated from the wheels 4, 5.

On each train a battery B is located, one pole of which is connected with the wheel 6 and the other pole with one end of the coil of an electric rheotome or vibrating bell C. The other end of said coil is connected with the wheel 5. By means of the construction and arrangement of circuits and devices as above described when two trains running in different directions on the same track, approach sufficiently toward each other the bells in both engines will be automatically thrown into circuit with the batteries B and both bells will therefore be caused to sound, thus notifying the engineers that the two trains are approaching each other on the same track and giving them time to reverse their engines. The batteries will be of such strength that a current sufficient to sound the bells will flow over the conductors when the trains are about three miles apart.

If desired, the conductors may be divided into sections of from three to ten miles in length as occasion may require, so that the path of the electric current between trains may not be longer than necessary.

On each train the positive pole of the battery is preferably connected with the wheel or contact 6 and the negative pole is connected with the bell C, the latter being connected with the wheel 5. With the parts connected when two trains approach each other, both in this manner, two circuits will be established including the central conductor 2. As rheotome bells are employed each circuit is rapidly made and broken. Thus when the circuit which passes through the bell at the right of Fig. 1 of the drawings, is closed, the current will pass from the battery B to the

wheel or contact 6 thence over the conductor 3 to the wheel 4 on the approaching train from which it will pass to the wheel 5, then over the central conductor 2, through the bell on the train at the right of Fig. 1, to the negative pole of the battery from which it started. Now when the circuit just described is broken by the bell at the right of Fig. 1, the circuit through the battery and bell on the approaching train shown at the left of Fig. 2 (which was open when the above described circuit was closed), will be closed and the current will flow from the battery B on the train at the left of Fig. 2, to the wheel 6, thence over the conductor 1 to the wheel 4 of the other train, thence to the wheel 5 and thence back over the central conductor 2, thence to the bell on the train at the left of Fig. 2 and finally to the negative pole of the battery from which it started. Both circuits therefore include the central conductor, but the currents pass over said central conductor alternately in opposite directions. That is to say,—when one bell closes the circuit, the current passes over the central conductor in one direction and when said bell opens its circuit, the other circuit is closed by the other bell and the current passes over the central conductor in the opposite direction.

It has been demonstrated by experiment that to employ two conductors such as 1 and 3, and two rheotome bells in the circuit, the operation of one bell will seriously affect the other bell, there being two circuit breakers in the same circuit, and the proper operation of the signals will be rendered uncertain and doubtful. In fact, unless the springs of the two bells are accurately adjusted to operate together and both batteries in perfect condition and of exactly the proper strength, the bells will not sound at all,—thus the importance of the central conductor 2, which serves to complete both circuits and insures the proper ringing of both bells.

A switch lever D will be provided as shown in Fig. 3, so that the bell and battery may be cut out of circuit. When a train is standing still on a track, this switch lever will be thrown to the position shown in full lines in Fig. 3, thus cutting the bell and battery of that train out of circuit. Now, should a train approach the standing train from the rear, a current will be established from the battery of the moving train, through the conductors 2, 3, the switch lever D and the bell on the moving train, thus sounding said bell and notifying the engineer on the moving train that a train is standing on the track. When the standing train commences to move, the switch D will be opened and the bell thus again thrown into circuit. Should a train be approaching, the bell on the train just starting will be sounded and the engineer will thus be notified that it is unsafe to proceed, owing to the approach of another train in the opposite direction.

If desired, telephones may be inserted in

the circuit so that the engineer on one train can speak to the engineer on the other train.

In lieu of the wheels 4, 5, 6, metallic brushes may be employed.

In the place of the switch lever D a conducting bar E may be attached to a rod or lever E' on the caboose or any car of the train, and adapted to let down on the conductors so as to close the circuit and thus give back signals to following trains, in case the train has separated or for other reasons there is no engine,—so that if cars are standing or running on the main track they can give a signal to a rear train by letting down the bar on the conductors, and in case of a wreck, an employe on the train can connect the conductors 1, 2, 3 and signal trains both ways.

If desired the caboose or any car of the train may be provided with brushes or wheels adapted to run on the conductors between the rails, said brushes or wheels having wires running therefrom into the caboose or car, whereby they can be electrically connected by a conducting bar within the car.

The devices above described are very simple, cheap to manufacture, easy to apply and effectual in the performance of their functions.

Having fully described my invention what I claim as new and desire to secure by Letters Patent is:

1. The combination with three continuous conductors arranged between the rails of a railroad track, of contact devices carried by a train and adapted to make contact with two of said conductors, a contact also carried by the train and adapted to make contact with the other conductor, each of said contacts being adapted to always make contact with the same conductor when the train is running in one direction, a rheotome bell carried by the train and a battery connected with said rheotome bell and contacts, substantially as set forth.

2. The combination with three continuous conductors arranged between the rails of a railroad track, wheels carried by a train and adapted to electrically connect two of said conductors, a wheel insulated from the first mentioned wheels and adapted to make contact with the other conductor, an electric rheotome bell connected with the last mentioned wheel, each contact being adapted to always run on the same conductor when the train is running in one direction, a battery connected with the electric bell and one of the first mentioned pair of wheels, and a switch adapted to short circuit said bell and battery, substantially as set forth.

3. In a system of electric railroad signaling, the combination with the tracks of the road and two trains thereof, of three continuous conductors arranged between the tracks, contacts carried by each train and adapted to electrically connect the central conductor with the side conductors respectively, a contact carried by each train and adapted to run

on the respective side conductors, a battery
carried by each train, one pole of said battery
being electrically connected with the single
contacts which run on the side conductors,
5 and the other poles of said batteries electrically
connected with the contacts which run
on the central conductor, and a rheotome bell
included in the circuit of each battery, substantially
as set forth.

10 4. The combination with a series of three
continuous conductors, of contacts adapted to
engage the outer conductors of said series,
contacts adapted to electrically connect the
outer conductors respectively with the cen-

tral conductor, two rheotome bells, each electrically
connected respectively with the contacts which engage the
central conductor, and
two batteries, each connected respectively
with the single contacts which engage the
outer conductors, substantially as set forth. 20

In testimony whereof I have signed this
specification in the presence of two subscribing
witnesses.

FRANK P. SCHLOSSER.

Witnesses:

CHAS. SCHWEND,
OLIVER J. MILES.