

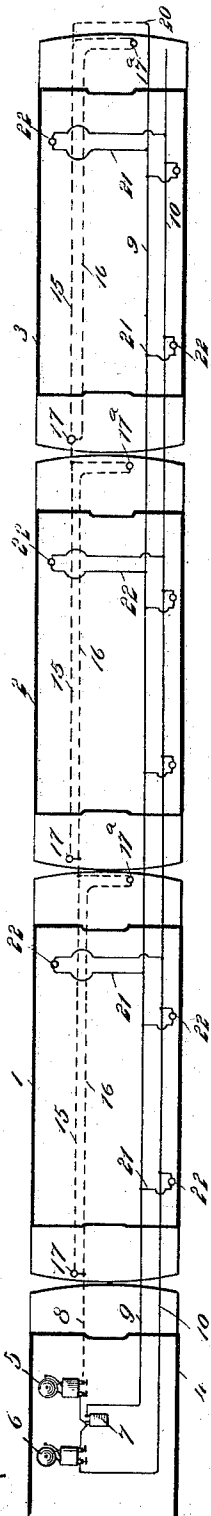
(No Model.)

F. C. E. VON STERNBERG.
ELECTRIC TRAIN SIGNAL.

No. 544,937.

Patented Aug. 20, 1895.

Fig. 1.



WITNESSES:

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Fig. 4.

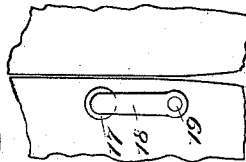


Fig. 3.

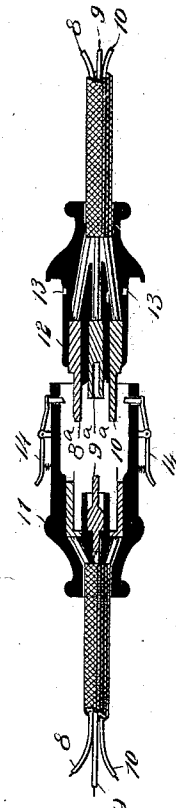
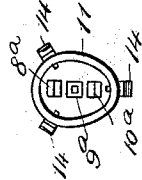


Fig. 2.



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FRANCIS C. E. VON STERNBERG, OF BROOKLYN, NEW YORK.

ELECTRIC TRAIN-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 544,937, dated August 20, 1895.

Application filed April 13, 1895. Serial No. 545,628. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS C. E. VON STERNBERG, of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Electric Train-Signal, of which the following is a full, clear, and exact description.

This invention relates to certain improvements in that class of electric-signal systems which are employed on railway-trains for signaling to the engineer in charge of the train when it is desired to start or stop; and the object of the invention is to provide a signal system of this character of a simple and inexpensive nature which shall present certain advantages for use over other similar systems heretofore employed.

The invention consists in an arrangement of circuit-wires extending along the entire length of the train and adapted to be controlled by the brakeman or guard in charge of each particular car in such a manner that the train may be stopped at any time by any of the guards or brakemen, but when stopped may only be started by the simultaneous action of all of the guards or brakemen.

The invention also contemplates certain features of construction whereby the system is especially fitted for use on elevated, electric, and cable railways, all as will be herein-after fully set forth.

The novel features of the invention will be carefully defined in the claims.

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

Figure 1 is a somewhat diagrammatic view representing a train of cars provided with my improved signal system. Fig. 2 is an end view of one of the members of the coupling employed for connecting the circuit-wires between the several cars. Fig. 3 is a section taken longitudinally through both the members of the coupling, and Fig. 4 is a view showing the device for holding the circuit-closer in its closed position when not required for use.

1, 2, and 3 represent, respectively, the first, second, and third cars of a railway-train, and 4 represents the locomotive whereon are arranged electric bells, buzzers, or similar signal

devices 5 and 6, which I will designate herein as the "starting" and "stopping" signals, respectively. The starting-circuit comprises a line-conductor 8 and a return-wire 9 extending longitudinally of the train, and said circuit includes a battery or other generator 7. The stopping-circuit includes a line-wire 10 and the return-conductor 9, together with the battery 7, whereby it will be seen that the return-conductor 9 is employed as a common return for both the stopping and starting circuits; but this is not essential to my invention, since, if desired, the circuits may be provided with independent return-conductors. The employment of the common return-conductor 9 is of importance, inasmuch as by its use the cost is lessened and the size of the coupling used for connecting the ends of the conductors between the cars reduced, and also the liability of derangement of the said couplings is lessened by reducing the number of contacts required.

In Fig. 1 I have shown wires 8, 9, and 10 separated for the sake of clearness, but they will usually be insulated and grouped together, as indicated in Fig. 3, and at the points between the respective cars of the train said conductors will be provided with coupling devices of any preferred nature. For this purpose I preferably employ the coupling device illustrated in Figs. 2 and 3. As shown in said figures, the coupling device comprises a tubular member 11 of insulating material and having an open end adapted to receive the other member 12, which is made in the form of a plug and also composed of insulating material, and these members 11 and 12 are elliptical in cross-section, being adapted to be secured together when inserted one in the other by means of a series of spring-actuated dogs or levers 14, the ends of which project through the walls of the tubular member 11 and are adapted to engage sockets or recesses 13, formed in the outer surface of the member 12 of the coupling, as indicated in Fig. 3, the several circuit-wires 8, 9, and 10 being inserted in the rear end of the members 11 and 12, and being held in place therein in any preferred manner, and at their extremities said conductors 8, 9, and 10 are respectively provided with contact-pieces 8^a, 9^a, and 10^a, adapted when the members of the coup-

ling are assembled to contact with one another in such a way as to close the circuit between the respective sections of said conductors, as will be readily understood.

5 The starting-circuit on each car comprises two partial or shunt circuits 15 and 16, which are connected at their opposite ends, arranged in multiple, as indicated in Fig. 1 of the drawings, and are merged in the line-conductor 8
10 of the starting-circuit, and each of said partial circuits 15 is normally open, being provided with a circuit-closer 17 of any preferred form, located by preference at one side of the platform at one end of the car, and each of the
15 partial circuits 16 is also normally open, being provided with a circuit-closer 17^a, located at the opposite side of the platform at the other end of the car.

By preference each of the circuit-closers 17
20 and 17^a will be of the ordinary spring-button type, set in a socket in the platform and adapted to be pressed down therein to close the circuit, and when it is not desired to use either of the several buttons the same may
25 be held in its depressed position, as indicated in Fig. 4, by means of a finger 18 pivoted at 19 to the car-platform. At the rear end of the train the line-conductors 8 and 9 of the starting-circuit are electrically connected together, as indicated at 20 in Fig. 1.

The stopping-circuit, which includes the stopping bell or signal 6, is a normally-open circuit, the line-conductors 10 and 9 of which
30 are connected in series by wires 21, each of which includes a circuit-closer 22 of any preferred form, there being any desired number of said circuit-closers 22 arranged at suitable points in each of the wires, as indicated in Fig. 1.

40 The signal system as above described is especially designed for use on elevated railway and similar passenger trains, where the several cars are provided with platform-gates, and the stations are arranged some on one
45 and some on the other side of the line of railway, the gates being under the control of guards or brakemen.

The operation is as follows: When it is
50 desired to stop the train, any one of the circuit-closers 22 may be operated to close the stopping-circuit and actuate the stopping-signal 6. When the train has stopped, the station being, for example, on the right-hand side of the train, the guards or brakemen open
55 the gates at the right-hand sides of the several platforms to permit the entry and exit of the passengers. When the passengers have all passed into or out of the cars, as the case may be, and it is desired to start the train,
60 each brakeman or guard will press upon the button or circuit-closer 17 at the right-hand side of the car-platform, so as to close the circuit through the several partial circuits 15 of the starting-circuit to actuate the starting-signal 5. When the station is upon the left-
65 hand side of the track, the brakemen or guards

of course face to the left, and when it is desired to start the train each guard or brakeman presses upon the button 17^a at the left-hand side of his platform, so that the circuit
70 is closed through the respective partial circuits 16 of the starting-circuit, and the starting-signal 5 is sounded.

In ordinary cases there will be no guard at the first and last platforms of the train,
75 and consequently the circuit closers or buttons 17 17^a at these platforms will be thrown out of use by being depressed and held in the depressed position by means of the fingers 18, as above described. These fingers 18 may be
80 locked in place by means of padlocks or other devices to prevent derangement of the circuit by unauthorized persons.

The signal system above described is especially well adapted for use on elevated, electric, and cable railways where the stations
85 are arranged some on one and some on the other side of the track-line of railway, since the arrangement of the buttons 17 and 17^a at opposite sides of the platform permits the
90 guard or brakeman to transmit the required signal for starting the train without altering his position. The arrangement of the starting-circuit in a series of partial circuits also requires that each guard or brakeman shall
95 simultaneously depress the proper button 17 or 17^a at his platform, as otherwise the circuit would remain open and no signal could be given. In this way is avoided the danger
100 of the train being started before all the passengers have passed in or out of the same.

The peculiar cross-sectional formation of the members 11 and 12 of the coupling insures that the circuit-wires will be properly
105 connected when the said members are united, and some such device as this is necessary in a system of this character for the reason that otherwise the starting-circuit conductors might be short-circuited when the members
110 of the coupling are united. By giving the members an irregular or unsymmetric cross-sectional form—such, for example, as the form of an irregular rounded or irregular polygonal figure—and arranging the circuit terminals in such manner that when the said
115 members are fitted together, with their irregular surfaces corresponding, respectively, to one another, the terminals will contact to make the circuit connections properly, and the
120 easy and correct coupling of the circuit-wires is insured without the necessity of testing the circuits after the connections are made.

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

1. An electric signal system for trains and the like, having a starting circuit including a generator and a signal and comprising two partial circuits located on each car of the
130 train, each partial circuit on each car being provided with a circuit-closing device arranged to hold it normally open and being

arranged to form when closed a shunt or short circuit to the other partial circuit on the same car, as set forth.

2. An electric signal system for trains and the like, having a starting circuit including a generator and a signal and comprising two partial circuits arranged in multiple on each car with their ends connected and adapted for connection to the connected ends of the partial circuits on the next car, each partial circuit on each car being provided with a circuit-closing device arranged to hold it normally open and being arranged to form when closed a shunt or short circuit to the other partial circuit on the same car, as set forth.

3. An electric signal system for trains and the like, having a starting circuit including a generator and a signal and comprising two partial circuits arranged on each car of the train and a circuit-closing device for each of the partial circuits arranged to hold its respective partial circuit normally open, the respective circuit-closing devices on each car being located at the opposite platforms thereof, and each partial circuit being arranged to form when closed, a shunt or short circuit to the other partial circuit on the same car, as set forth.

4. An electric signal system for trains and the like, having a starting circuit including a generator and a signal comprising two partial circuits arranged in multiple on each car with

their ends connected and adapted for connection to the connected ends of the partial circuits on the next car, a circuit-closing device for each partial circuit arranged to hold its respective circuit normally open, the two circuit-closing devices on each car being arranged on the opposite platforms thereof, and each partial circuit being arranged to form when closed, a shunt or short circuit to the other partial circuit on the same car, as set forth.

5. An electric signal system for trains and the like, having a starting circuit including a generator and a signal and comprising two partial circuits located on each car of the train, each partial circuit being provided with a circuit-closing device arranged to hold normally open and being arranged to form when closed, a shunt or short circuit to the other partial circuit on the same car, a stopping circuit including a generator and a signal and comprising two conductors extending longitudinally of the train, one of said conductors forming a common return for the starting circuit, and circuit-closing devices arranged at intervals along the stopping circuit and connecting the conductors thereof in parallel, as set forth.

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Witnesses:

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E. A. CHAPMAN.