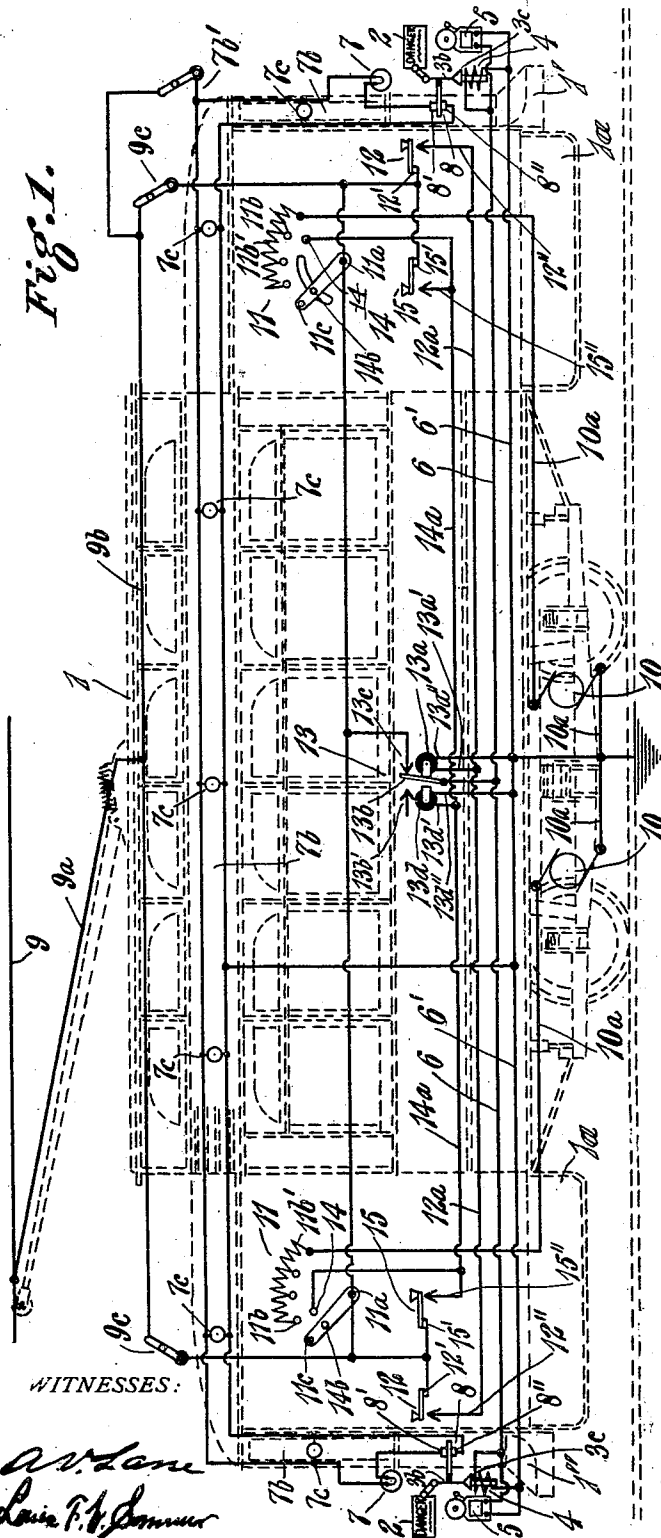


APPLICATION FILED AUG. 29, 1910.

2 SHEETS—SHEET 1.

Fig. 1.



WITNESSES:

A. V. Lane
Louis F. F. Lamm

Fig. 5.

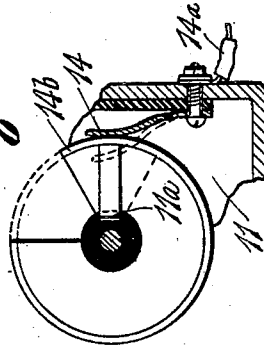


Fig: 4.

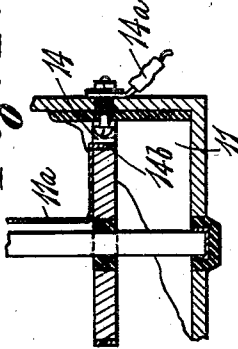
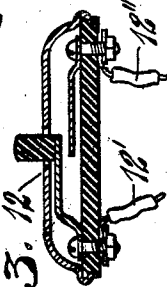


Fig. 2. 15



Fig. 3. 12



INVENTORS

Joseph H. Alandas
Raymond McGregor

1,018,026.

Patented Feb. 20, 1912.

2 SHEETS—SHEET 2.

Fig. 6.

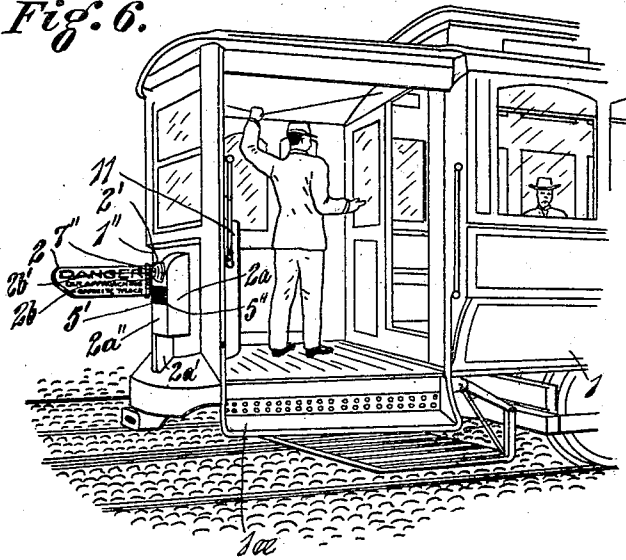


Fig. 7.

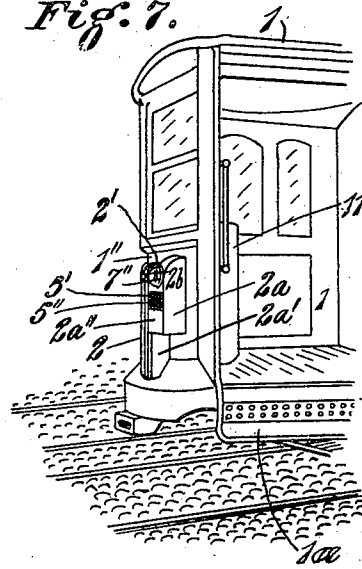


Fig. 8.

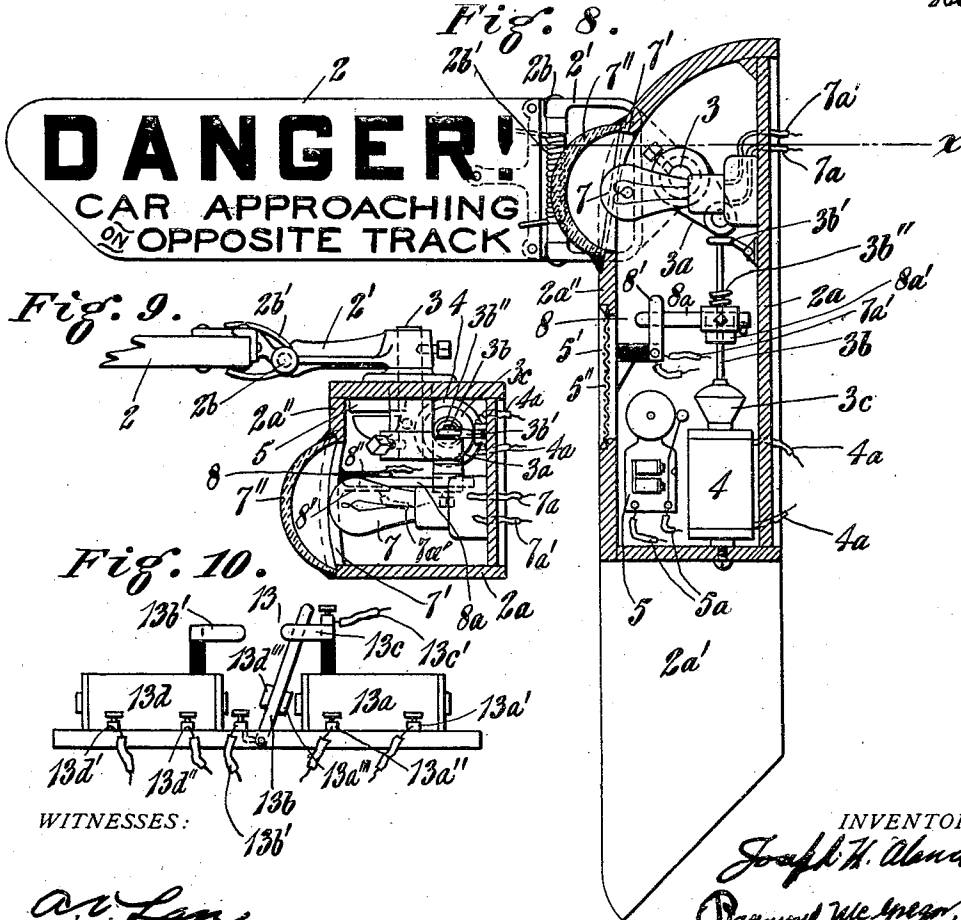


Fig. 9.

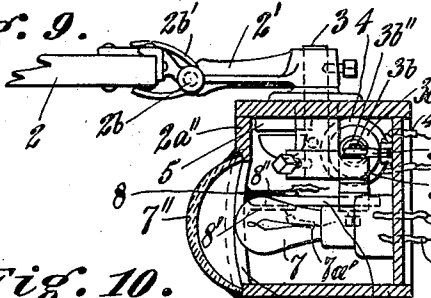
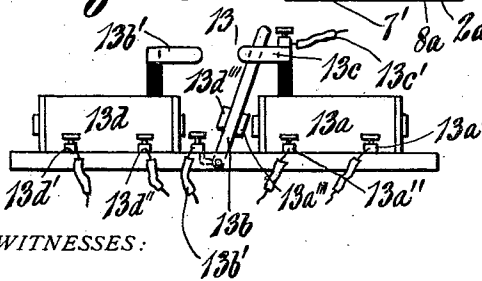


Fig. 10.



WITNESSES:

at Lane
Louis F. H. Corcoran

INVENTORS

Joseph H. Alandar
Raymond McGregor

UNITED STATES PATENT OFFICE.

JOSEPH H. ALANDAR AND RAYMOND MCGREGOR, OF CHICAGO, ILLINOIS.

SAFETY SIGNAL APPARATUS.

1,018,026.

Specification of Letters Patent.

Patented Feb. 20, 1912.

Application filed August 29, 1910. Serial No. 579,620.

To all whom it may concern:

Be it known that we, JOSEPH H. ALANDAR and RAYMOND MCGREGOR, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Safety Signal Apparatus, of which the following is a specification.

Our invention relates to signal apparatus, and has for its object the warning of persons alighting from a car, such as a street car, of the approach of any vehicle obscured by the car from which the person is alighting, so as to prevent the passage of the person from behind the car into the path of the approaching vehicle.

Our invention is especially applicable to street cars and other railway vehicles operating on double tracks, where all cars run in one direction on one track, as in the street railway systems of the larger cities, where accidents of the character above alluded to are frequent.

Our invention consists in the details of construction and arrangement as will hereinafter be more fully described and claimed.

In the drawings, Figure 1 is a general diagrammatic view of the arrangement of car improved signal apparatus, together with certain details of the car equipment associated therewith, the car being represented by the dotted outline. Figs. 2 and 3, are, respectively, a sectional detail view of the actuating push button and a side elevation of the releasing or discontinuing push-button, these two push-buttons preferably being identical in structure. Fig. 4 is a partial vertical section of the controller, illustrating the arrangement of the contact finger and segment therein. Fig. 5 is a partial cross section of same. Fig. 6 is a perspective view of the rear end of the car with our improved signal attached thereto, the arm being represented as raised into displaying position. Fig. 7 is a similar view, representing the arm dropped out of displaying position. Fig. 8 is a vertical sectional side elevation of the signal, with the arm raised and the various other parts in corresponding positions. Fig. 9 is a cross section on the line X of Fig. 8, part of the arm being broken away. Fig. 10 is a detail of the actuating switch.

As we prefer to embody our invention, the car 1 has its forward and rearward ends 1' and 1'', respectively, each provided with

a signal arm 2, pivotally mounted on a signal box 2^a by means of a mounting 2' on a shaft 3, which shaft extends inside the box 2^a, where it has a crank 3^a rigidly secured thereto. A hinged connection 2^b is preferably provided between the arm 2 and its mounting 2' with a spring 2^{b'} to normally hold the arm substantially in line with the track, but to allow it to yield to either side if struck, as by a wagon, to avoid breakage of the arm or its supporting structure. Preferably, the signal arm 2 is provided with a sign as indicated, and may be red in color, to more readily attract the attention. When in displaying position the arm 2 is designed to extend horizontally outward as illustrated in Figs. 1, 6, 8 and 9, but when not in displaying position to assume, under the action of gravity, a vertical position at the side of the box 2^a and be concealed thereby. The signal box 2^a with the arm 2 mounted thereon is located near the side of the end of the car adjacent to the step or exit 1^a, as indicated in Figs. 6 and 7, at about the height of the eyes of a person on the ground near the step, and the signal arm 2 is located on the side of the box away from the step, so that when the arm is behind the box it is concealed from the passenger alighting from the car. The box 2^a may have a downward extension 2^{a'} on the side adjacent to the arm, forming a support for the box and a concealment for the arm in its lowered position. It will be readily understood that it is highly desirable that the signal shall not display any warning except on those occasions when the danger is imminent, so that passengers may not grow accustomed to the warning and thus heedless of it.

Inside the box 2^a, pivotally attached to the crank 3^a and depending therefrom, is a rod 3^b having a guide 3^{b'} and carrying on its lower end a pole-piece 3^c which is attracted by an electro-magnet 4 secured to the bottom of the box 2^a, and when this pole piece is attracted by the magnet the arm is raised to displaying position. When the magnet is disengaged the pole-piece being released, the arm will fall to its vertical position as above explained; a spring 3^{b''} may be provided on the rod 3^b to engage with the guide 3^{b'} when the arm falls, and acts as a cushion. An electric bell 5 is also mounted in the box 2^a, and the front 2^{a''} of the box has an opening 5', with a screen

5'' to allow the bell to be clearly heard. The terminals 5^a of this bell and the terminals 4^a of the magnet 4 are connected, in multiple, to leads 6 and 6' common to the apparatus at both ends of the car, as illustrated in Fig. 1.

An electric lamp 7 is preferably provided inside the box 2^a near its top, and an opening 7', in the front of the box, has a glass cover 7'', preferably in the form of a lens or "bull's-eye," in such position that a light will be thrown on the arm 2 and its sign to illuminate it at night. The glass of the cover 7'' may be red, to further heighten the effect of the signal. One terminal 7^a of this lamp is connected directly to one of the leads of the regular electric-lighting circuit 7^b, of the car, as shown, but the other terminal 7^{a'} leads to a switch 8 mounted on an insulated bracket inside the box 2^a, and is connected to one blade 8' thereof; the other blade 8'' is connected to the other lead in the lighting circuit 7^b. The bar 8^a of the switch 8 is rigidly mounted on the rod 3^b in an insulated clamping head, 8^{a'}, in which it may be horizontally adjusted, and with which it may be adjusted up and down on the rod 3^b; this bar is so adjusted that it can come between the blades 8' and 8'' and make electrical connection between them when the rod comes down in drawing the arm 2 upward, thus keeping the lamp 7 lighted as long as the arm 2 is displayed, but will be withdrawn from therebetween when the rod 3^b rises during the falling of the arm to its concealed position, extinguishing the lamp when the displaying of the signal is discontinued. The lamp 7 may be turned off permanently during the day, along with the regular car lights 7^c by means of the switch 7^{b'} that controls the lighting circuit.

The current for operating the signal magnet 4 and the bell 5 is part of the current from the trolley wire 9 and trolley 9^a, through the lead 9^b, and is shunted from the main circuit that supplies the motors 10 of the car, these being diagrammatically indicated, along with their circuits 10^a, merely to illustrate clearly the relations of the various signal circuits thereto, as may also be said of the lighting circuits 7^b and lamps 7^c. As is well known, the current is supplied to the motors 10 through controllers 11 which receive the current from the lead 9^b when the switch 9^c located in the "hood" of the car, is closed; this current is received on the shaft 11^a of the controller and supplied through any one of the series of fingers 11^b and corresponding resistances 11^b to the motors, by means of segments 11^c on the shaft, as diagrammatically indicated in Fig. 1.

For initiating the actuation of the signal, push buttons 12 are located in convenient positions at the end of the car, to be

pressed by the motorman or by the conductor, as the case may be, when he sees a car or other vehicle approaching, on the side of his car where such car or other vehicle will be concealed from the alighting passenger as hereinbefore described, at a time when his car is about to stop, or has stopped, to discharge passengers. One terminal 12' of the push button 12 is connected with the current supply of the controller shaft 11^a, and the other terminal 12'' is in connection through a lead 12^a with an electromagnetic switch 13, immediately controlling the signal, and common to the apparatus at both ends of the car. The switch has an electromagnet 13^a, to one terminal 13^{a'} of which the aforesaid terminal 12'' of the push button is connected. The other terminal 13^{a''} of this magnet is grounded through the lead 6' which also grounds the bell 5 and signal magnet 4. Thus when the push button contacts engage, a current will flow from this controller 11 to energize the magnet 13^a; this attracts a lever 13^b of the switch, by means of a pole piece 13^{b'} thereupon, causing it to make contact with a blade 13^c.

It is the purpose to discontinue the display of the signal immediately upon the starting of the car after it has discharged passengers with its signals displayed. For discontinuing the display of the signal, the switch 13 has a second electro-magnet 13^d. This magnet is in connection with a special finger 14 in the controller 11, through a lead 14^a connected to the terminal 13^{d'}. The other terminal 13^{d''} of said magnet is grounded by connection to the lead 6' above mentioned. The lever 13^b of the actuating switch 13 has another pole piece 13^{b''} which is attracted by the magnet 13^d, so that it is withdrawn from contact with the blade 13^c and held in the opposite side 13^{b'} of the switch, when the magnet 13^d is energized, thus breaking the circuit that actuates the signal as above described. To engage with the special finger 14 in the controller 11, for closing a circuit through the magnet 13^d and thus energize it, a special segment 14^b is mounted on the controller shaft 11^a in such position that it will not engage with the finger until the shaft has been turned sufficiently to close a circuit through the motors and start the car. By this means, the discontinuance of the display of the signals by the reverse action of the switch 13 is automatically accomplished when the car is started, and not left dependent upon the memory of the motorman or conductor.

The segment 14^b, above mentioned, is best illustrated in Fig. 5. It will be noted that this segment is so nearly a complete circle that the finger 14 will make contact with its periphery throughout the greater part of the revolution of the controller shaft.

This greater part corresponds to the range of manipulation provided for changing the speed of the car after it is started. By thus maintaining this contact at all times when the motive current of the car is turned on, in any degree, the opening magnet 13^a will be kept energized during such times, and will act as a safeguard against closure of the switch 13, by pressure on the button 12, at all times except when the motive current is turned off. This is generally when the car is to stop, or to slow down, in either case giving a passenger opportunity to alight and thus be exposed to the danger our signal is to warn against. Always, whether or not the car is stopped when the current is turned off, the turning of the current on again is sure to discontinue the display, if the signal was displayed, and to prevent its display, in any event, while the car is under propulsion. Each display of the signal must be made after the current is turned off. At no other time is it proper, and at no other time is it possible.

A second push button 15, with terminals 15' and 15'', is provided by which the magnet 13^a may be grounded independently of the controller contacts 14 and 14^b to open the signal actuating circuit without starting the car, when it is desired to do so, as when the cars are compelled to remain stationary for some time when not discharging passengers, as in a blockade or disablement, at which time it would not be desirable to display the signals. As will be seen, this button does not interfere with the automatic release of the signals upon starting.

The box 2^a may be made weather-proof to protect the inclosed mechanism and the switches and connections may be conveniently located on the platform and inside the car, in no way interfering with any of the regular appointments thereof.

As will be readily seen, the apparatus at both ends of the car are connected in multiple with each other, as well as with the motor and lighting circuits of the car, and both apparatus may be operated simultaneously from either end of the car by such small proportion of the current as is taken through the relatively high resistance of the magnets of the apparatus, but it will be understood that one end only of the car may be equipped with the signal apparatus and operated from both ends, or both ends may be provided with apparatus to be actuated from one end only by mere minor changes in the wiring connections. Likewise, the current for actuating the apparatus may be ob-

tained from another source, such as batteries, or the apparatus may be used in connection with vehicles other than electric cars, by means of minor changes in details of throwing out devices in connection with the starting device of said vehicles, as, for instance, the connection with the throttle of a steam, gas or compressed air operated vehicle. Therefore, we do not wish to be understood as limiting ourselves to the precise disclosures herein contained, but

What we claim as new and desire to secure by Letters Patent is:

1. In combination, a car and starting and stopping means therefor, and safety signal apparatus therefor comprising a signal member, an actuating magnet and means whereby the actuating magnet displays the signal member when energized, an immediate signal-controlling switch, closed to energize and opened to deenergize the actuating magnet, opposed magnets, one closing and the other opening the immediate signal controlling switch, contacts to momentarily energize either of said opposed magnets, and a switch, operated with said starting and stopping means, and adapted to close a circuit through and energize the magnet that opens said immediate signal controlling switch.

2. In combination, an electric car and a controller for starting and stopping and changing the speed of said car, a signal member, an actuating magnet and means whereby the actuating magnet displays the signal member when energized, an immediate signal-controlling switch, closed to energize and opened to deenergize the actuating magnet, opposed magnets, one closing and the other opening the immediate signal controlling switch, contacts to momentarily energize either of said opposed magnets, and a switch, operated with a segment and a finger moved relatively by the operation of said controller, contact between the finger and segment being made when the car is started, and being maintained throughout the speed-changing operation of the controller, but the contact being broken when the controller is operated to stop the car, said switch, thus composed and operated, being adapted, when said contact is made, to close a circuit through and energize said magnet that opens the immediate signal controlling switch.

JOSEPH H. ALANDAR.
RAYMOND MCGREGOR.

Witnesses:

A. V. LANE,
LOUIS F. W. SOMMERS.