

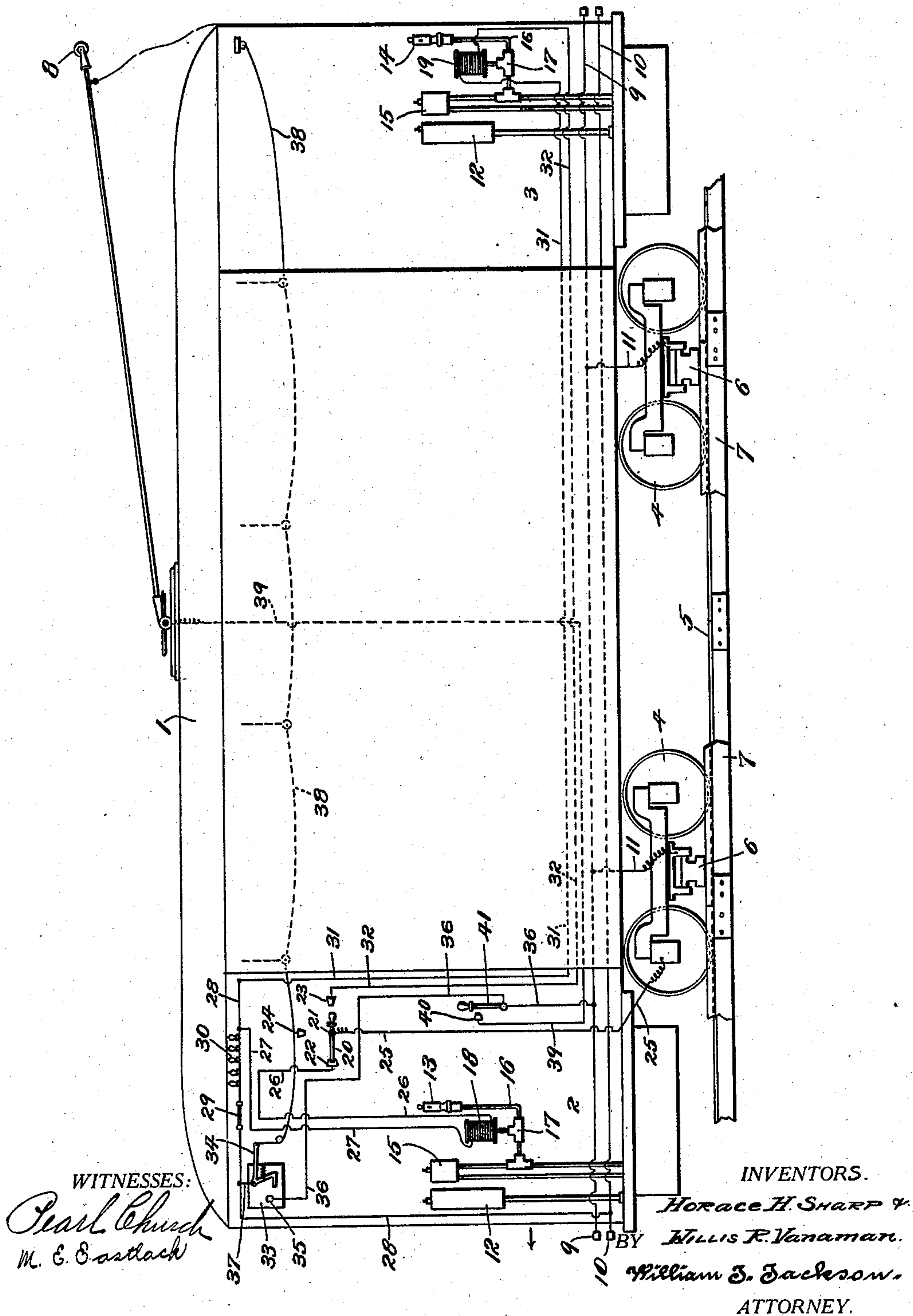
H. H. SHARP & W. R. VANAMAN.

TRAIN SIGNAL SYSTEM.

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916,038.

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UNITED STATES PATENT OFFICE.

HORACE H. SHARP AND WILLIS R. VANAMAN, OF ATLANTIC CITY, NEW JERSEY.

TRAIN-SIGNAL SYSTEM.

No. 916,038.

Specification of Letters Patent.

Patented March 23, 1909.

Application filed June 12, 1908. Serial No. 438,034.

To all whom it may concern:

Be it known that we, HORACE H. SHARP and WILLIS R. VANAMAN, citizens of the United States, residing at Atlantic City, in the county of Atlantic and State of New Jersey, have invented certain new and useful Improvements in Train-Signal Systems, of which the following is a specification.

This invention relates to that class of electric train signaling apparatus for conductor's use in signaling the motorman either by audible or visible signals or indicators to start or stop the train.

The principal object of the present invention is to provide simple, efficient and comparatively inexpensive apparatus for notifying the motorman of a train by audible or other signals to start or stop the train.

A further object of the invention is to provide electrically controlled signaling devices for the motorman operated by virtue of the ordinary signal cord carried by the train.

A still further object of the present invention is to provide signaling apparatus upon each end of a car or cars so arranged that when the signal mechanism is manipulated by the conductor, but one of said signaling devices will be caused to operate to the exclusion of all the others.

A still further object of the present invention is to provide upon each end of a car or cars air whistles, one of which whistles may be caused to operate to the exclusion of the other or others by certain electrically controlled mechanism.

A still further object of the invention is to provide air whistles upon each end of a car or cars provided with electrically controlled apparatus for operating said whistles and to provide shunting devices for rendering inoperative one of the said electrically controlled devices of said apparatus so as to cause but one of the air whistles to sound when the signal is given to the motorman to start or stop the train.

Other objects of the invention will appear hereinafter.

The invention consists in the improvements hereinafter described and finally claimed.

The nature, characteristic features and scope of the invention will be more fully understood from the following description

taken in connection with the accompanying drawing forming part hereof and in which there is shown a diagrammatic representation of a train signal system embodying the invention.

Referring to the drawings there is illustrated a motor car 1, having platforms 2 and 3, and equipped with wheels 4, adapted to run upon the track 5. The car is further equipped with third rail shoes 6, adapted to travel along the third rail 7, of the trolley system. The motor car is still further equipped with the usual trolley 8. Extending from end to end of the car is the usual bus line 9, and the train line 10, the bus line 9, being connected to the third rail shoes 6, by leads 11, and the trolley 8, being connected in circuit with the controllers 12, upon each platform of the car. Located upon each platform of the car 1, are signaling devices 13 and 14, shown as comprising air whistles which are the signaling devices which we prefer to use in connection with the signal system about to be described. However, other audible signaling apparatus may be used if desired, or if preferred visual signaling devices may be used. These air whistles 13 and 14, may be conveniently attached to the inlet side of the air brake controllers 15, by means of pipes 16. These pipes 16, are provided with valves 17, for regulating the admission of air to the whistles 13 and 14. These valves are operated by means of electrically controlled apparatus, a description of which will now be given. In this connection it may be remarked that current for operating the apparatus used for regulating the air valves 17, may be taken direct from the trolley wire by means of a trolley 8, or from the third rail 7, by means of third rail shoes 6.

Operatively connected with the air valves 17, are electro magnets 18, and 19, said electro magnets being adapted when energized or deenergized to open or close said valves 17. Interposed between the electro magnets 18, and 19, and in the drawings shown as being located adjacent to the platform 2, is means for shunting or rendering inoperative one or both of said electro magnets. Such means is illustrated as comprising a double-throw knife-switch 20, but of course other forms of shunting devices may be used. This double-throw knife-switch 20, is shown as being pivotally arranged as at 21, and is

adapted to contact with terminals 22, and 23, or rest in off position 24. Leading from the pivotal point 21, of said switch to the truck frame of the car 1, is a conductor 25.

5 Leading from the terminal 22, is a conductor 26, that leads to the electro magnet 18, and leading therefrom is a conductor 27, that leads to the main conductor 28, said conductor 28, being in turn connected with the

10 train lead 10. Located in the conductor 28, is a fuse 29, and resistance lamps 30. Also extending from the main conductor 28, is a conductor 31, that leads to the electro magnet 19, upon platform 3, that operates the

15 valve 17, of the whistle 14, and extending from this electro magnet 19, to the terminal 23, of the switch 20, is a conductor 32. Located in any convenient place, and in the present instance, shown as being adjacent to

20 the platform 2, of the car 1, is a circuit-closer 33, comprising a spring controlled pivotally arranged contact arm 34, adapted to contact with the terminal 35. Leading from the terminal 35, is a conductor 36, extending to the

25 bus line 9, and connecting the arm 34, with the main conductor 28, is a conductor 37. Operatively connected with the contact arm 34, is a signal cord 38, usually employed upon cars of the above described type. Leading

30 from the trolley 8, is a conductor 39, that extends to the terminal 40, of a switch 41, interposed in the conductor 36. By means of this switch the trolley 8, may be cut out if desired.

35 A description of the operation of the above described system will now be given and in this connection it may be remarked that cars of this type in traveling through a city or town use the trolley 8, and upon leaving

40 the city or town and traveling through the suburban or open country, use the third rail system. The description herein will be limited to the operation of the signal device as controlled by current derived from the

45 third rail 7.

Assuming the car to be moving in the direction of the arrow, platform 2, will obviously be the post of the motorman and whistle 13, upon said platform is of course

50 the only signaling device that needs to be operated upon the trip. Of course the car 1, may be provided with one or more trailers in which case the bus line 9, and the train

55 line 10, would pass entirely through the train. Prior to starting the train an attendant will move the double-throw knife-switch 20, into the position shown in the drawings, or in other words, into contact with conductor 26, leading from the electro

60 magnet 18. By throwing the switch 20, into this position clearly the electro magnet 19, is shunted or rendered permanently inoperative. If one or more trailers were coupled to this car 1, the switches of the

65 respective cars would be thrown to the off

position 24, thus cutting out of circuit all of the electro magnets on said cars. Assuming that the conductor wishes to give the motorman a signal to stop or start the train, he pulls the signal cord 38, thus causing the

70 contact arm 34, of the circuit-closer to contact with the terminal 35, and permit current to pass from the third rail 7, through the third rail shoes 6, conductor 11, conductor 36, terminal 35, contact arm 34, conductor

75 37, main conductor 28, fuse 29, resistance lamps 30, conductor 27, to electro magnet 18, and energize the same whereupon the valve 17, is opened thus permitting air to egress to the whistle 13, by way of the pipe

80 16, from the air brake controller 15, whereupon the motorman is notified of the conductor's wish and governs himself accordingly, current returned to ground by way of

85 conductor 26, terminal 22, switch 20, conductor 25, and then through the truck frame to the track 5. Of course the signal will continue to operate as long as the contact member 34, contacts with the terminal 35, but immediately upon circuit being broken

90 the valve 17, will return to place thus cutting off the supply of air to the whistle.

If it is desired to operate the car from platform 3, it will be readily understood that it is merely necessary to move the switch 20,

95 into contact with terminal 23.

It will be observed that each car is completely equipped with signaling devices and that each may be operated independent of or in conjunction with any other car or cars

100 in the train. In addition, each car may be operated from either platform by merely positioning the shunting devices accordingly.

It may be remarked that the resistance lamps 30, are of advantage in determining

105 defects in the signaling apparatus that may arise by virtue of defective wiring. However, should the signaling apparatus fail to operate and the lamps in the resistance members 30, burn properly the attendant

110 in charge will know that the defect lies with the air system.

From the foregoing description it will be apparent that the signal system may be readily, conveniently and inexpensively in-

115 stalled and operated upon ordinary electric cars and further possesses the advantage of having both ends of the car equipped with signaling apparatus and having connected therewith shunting means whereby one end

120 of the car may receive signals to the exclusion of the other end of the car.

What we claim is:

1. In a signaling apparatus for a train provided with one or more motor cars, indicators

125 located adjacent to each platform, a conducting system including a circuit controlling device, a signal cord for operating said device means interposed between and opera-

130 tively connected with said indicators and

said system for operating said indicators when said signal cord is pulled and means for permanently shunting or rendering inoperative all of the indicators except the one located at the head of the train.

2. In train signaling apparatus, an indicator located at each end of a car, a conducting system including a circuit-closer, a signal cord for operating said circuit-closer means for connecting one end of said system to a trolley and the other end of said system to ground, electromagnetically-actuated means interposed in said system for operating the indicators when said signal cord is pulled and means also in said system for permanently shunting or rendering inoperative one of said indicators.

3. In an electrically controlled train signaling apparatus, an air whistle located at each end of a car, a conducting system including a circuit-closer, a signal cord for operating said circuit-closer electromagnetically-actuated means interposed in said system for operating the said whistles when said signal cord is pulled, and means for permanently shunting or rendering inoperative one of said whistles.

4. In combination in an electrically controlled train signaling apparatus, an indicator at each end of a car, a conducting system including a circuit-closer, a signal cord connected with the circuit-closer, means in said system for operating the indicators and means for shunting or rendering permanently inoperative one of said indicators.

5. In a train system comprising two or more motor-cars, an indicator located adjacent to each platform, an electric circuit including a circuit-closer, a signal cord connected with said circuit-closer, electromagnetically-actuated means in said circuit for operating the indicators, and shunting means carried by each car for permanently render-

ing inoperative all of the indicators except the one located at the head of the train.

6. In a signaling apparatus for a train provided with one or more motor-cars, indicators comprising air whistles located adjacent to each platform, means for supplying air to said indicators, an electric circuit including a circuit-closer, resistance lamps and electro magnets, means operatively connected with said electro magnets for regulating the air supply and means for permanently shunting all of the indicators except the one located at the head of the train.

7. In a signaling apparatus for a train provided with one or more motor-cars, indicators comprising air whistles located adjacent to each platform, a source of supply for the indicators, an electric circuit including a circuit-closer, electromagnetically-actuated means interposed in said circuit for regulating the air supply, and one or more double-throw knife-switches for shunting or rendering inoperative all of the indicators with the exception of the indicator at the head of the train.

8. In combination a motor-car capable of operation from either end, an indicator adjacent to each platform of said car, an electric circuit including a circuit-closer, said circuit-closer being adjacent to one of said platforms, a signal-cord connected with said circuit-closer, electromagnetically-actuated means for operating the indicators and shunting means for permanently rendering inoperative the indicator opposite the working end of the car.

In testimony whereof we have hereunto signed our names.

HORACE H. SHARP.
WILLIS R. VANAMAN.

Witnesses:

R. H. INGERSOLL,
JOHN A. BURGER.