Aug. 18, 1925. 1,550,538

A. J. GRAYBILL

WARNING AND STOP SYSTEM

Filed Feb. 19, 1925

Fig. 1.

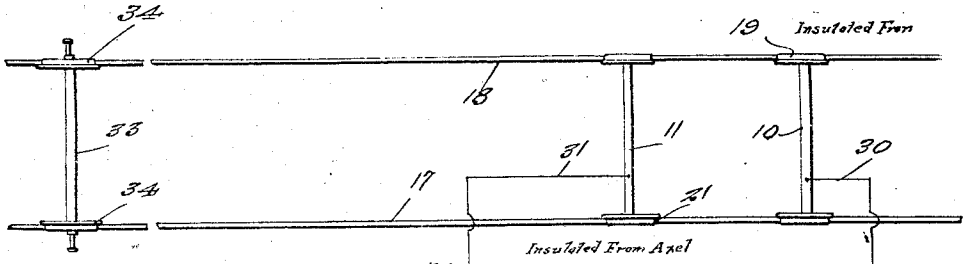
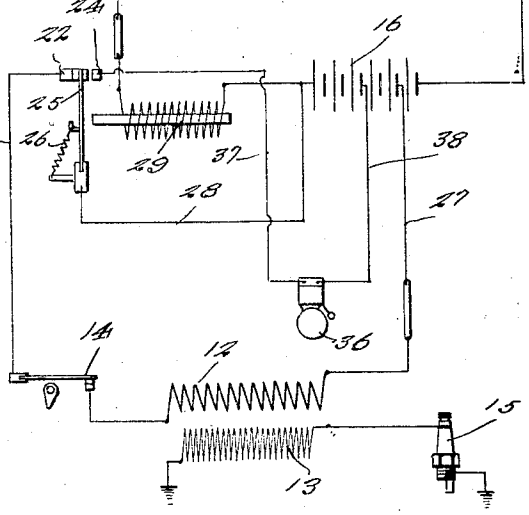


Fig. 2.



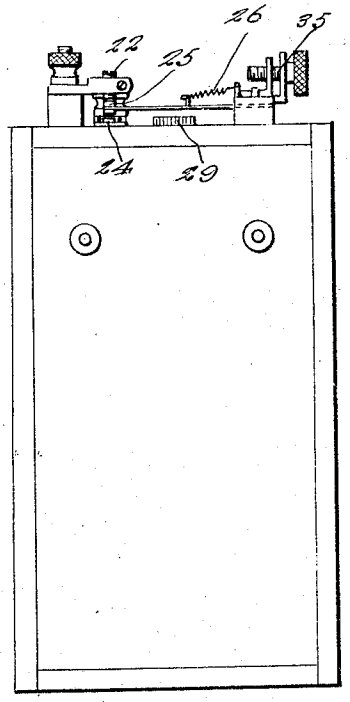


Fig. 3.

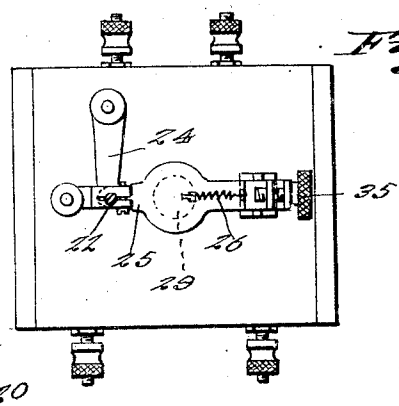
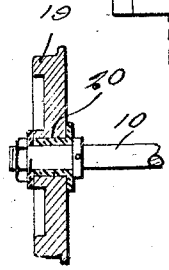


Fig. 4.



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Patented Aug. 18, 1925. 1,550,538

UNITED STATES PATENT OFFICE.

ANDREW J. GRAYBILL, OF GEARY, OKLAHOMA.

WARNING AND STOP SYSTEM.

Application filed February 19, 1925. Serial No. 10,391.

To all whom it may concern:

Be it known that I, ANDREW J. GRAYBILL, a citizen of the United States, residing at Geary, in the county of Blaine and State of Oklahoma, have invented new and useful Improvements in Warning and Stop Systems, of which the following is a specification.

This invention relates to railroad motor cars and contemplates the provision of means for automatically stopping said car and operating a signal when the car is within a predetermined distance or range of a train or other car on the same track.

More specifically stated, the invention comprehends the provision of means arranged in a normally open circuit, which also includes the rails of the track, and which support is adapted to be automatically closed when the rails of the track are bridged by a train at a more or less predetermined distance away from said car, thereby operating said means to break the circuit in the ignition system of the car with a view of stopping the latter, and also operating the signal.

The nature and advantages of the invention will be better understood when the following detailed description is read in connection with the accompanying drawing, the invention residing in the construction, combination and arrangement of parts as claimed.

In the drawing forming part of this application, like numerals of reference indicate similar parts in the several views, and wherein:

Figure 1 is a diagrammatic view.

Figure 2 is a side elevation of the box which supports the means above referred to and constitutes the subject matter of the present invention.

Figure 3 is a top plan view of Figure 2.

Figure 4 is a sectional view showing how certain wheels of a railroad car are insulated from their axle.

Referring to the drawing in detail, 10 and 11 represent respectively the front and rear axles of a railroad motor car of well known construction, although the car itself is not illustrated. These cars however are operated by a gas engine or the like, and includes an ignition circuit of the character shown, which circuit includes a primary coil 12, a secondary coil 13, a circuit breaker 14 and spark plugs 15. The source of current for this circuit is indicated generally at 16 and preferably consists of a plurality of dry cell batteries. The rails of the track over which the car travels are indicated at 17 and 18 respectively, and in accordance with the present invention, it is necessary to insulate one wheel 19 on each of the axles 10 and 11 from its respective axle. This is preferably accomplished in the manner shown in Figure 4, wherein it will be noted that the wheel 19 is mounted on a sleeve or bushing 20 of insulated material, which sleeve surrounds the axle as shown. Upon inspection of Figure 1, it will be noted that the wheel 19 of the axle 10 is insulated therefrom, while the wheel 21 arranged upon the axle 11 is insulated from the latter, the wheel 19 moving over the rail 18, while the wheel 20 moves over the rail 17 of the track.

As above stated, the present invention contemplates the provision of electrically operated means for automatically stopping the railroad motor car when the latter is within a predetermined distance of a train on the same track, so that the said car can be easily and conveniently lifted off the track until after a train passes, and subsequently used to continue its journey. This means essentially embodies a switch which is arranged in a normally open circuit, and which circuit includes the axles 10 and 11 of the said car and also the rails 17 and 18 of the track. The switch just referred to includes a fixed contact 22 which is connected in circuit with the circuit breaker 14 by means of the wire 23, and a fixed contact 24 which is arranged in the circuit including the axles above referred to and the rails 17 and 18. Arranged to operate between the contacts 22 and 24 is a movable contact 25 which is normally held in engagement with the contact 22 through the instrumentality of a coiled spring 26. When in this position, the said switch is arranged in the ignition circuit for the proper operation of the motor car, and upon inspection of Figure 1 it will be noted that the current passes from the source 16 through the wire 27, through the circuit breaker 14, the wire 23, through the switch just described, and then back to the source through the wire 28.

In addition to the switch just described, the invention further embodies a magnet indicated at 29 which is arranged in a normally open circuit including the axles 10 and 11 of said car and the rails 17 and 18 of the

track. In other words, one terminal of this circuit is connected with the axle 10, while the other terminal 31 is connected with the axle 11. Inasmuch as the wheels 19 and 21 are insulated from the respective axles, the circuit including the magnet 29 is normally opened, and cannot be closed only when the rails 17 and 18 are bridged by a train occupying the said track. In Figure 1 I have illustrated an axle 33 which represents a part of the train above referred to having wheels 34 on said axle arranged upon the rails of the track. Now, when the train is a considerable or a predetermined distance away from the motor car, the current from the source 16 will pass through the axle 10 and through the noninsulated wheel thereon to the rail 17 and conducted by the rail 17 to the axle 33 on the train, passing through the axle and wheels 34 from the rail 17 to the rail 18, and back to the rail 18 to the noninsulated wheel on the axle 11, through the latter to the terminal 31 of the circuit, and thence through the magnet 29 to the source 16. It is in this manner that the circuit is completed to energize the magnet 29, and the latter being operable to attract the movable contact 25 of the switch, moving said contact away from the contact 22, thereby breaking the ignition circuit, and moving it into engagement with the contact 24. Manifestly, the distance between the motor car and train, in which the invention will operate depends upon the resistance offered by the rails 17 and 18 of the track and the amount of current necessary to shift the movable contact 25 in the manner just described. In shifting the movable contact in this manner, it is necessary to overcome the tension of the spring 26, so after providing an adjusting means 35, whereby the tension of this spring 26 can be regulated to allow the apparatus to operate when the car is at almost any predetermined distance away from the train. When the contact 25 is shifted over into engagement with the contact 24, the circuit last described is closed to a signal 36, and while this signal may be of any suitable character, it is preferably an audible signal to attract the attention of the operator of said car, advising him of the approach of the train on the same track. The current passes through the wire 37 to the signal 36, and thence back to the source through the wire 38. By reasson of the invention, it is obvious that the motor operated car will be automatically stopped, and the operator warned of the approach of a train on the same track, while the latter is a considerable distance away from the car.

While it is believed that from the foregoing description, the nature and advantages of the invention will be readily apparent, I desire to have it understood that I do not limit myself to what is herein shown and described, and that such changes may be resorted to when desired as fall within the scope of what is claimed.

Having thus described the invention, I claim:

1. In combination with a railroad motor car and its ignition circuit, of means carried by said car and arranged in a normally open circuit including the axles of said car and the rails of the track, and adapted to be closed through said parts when a train occupies the same track at a predetermined distance from the car, and said means being operable upon the closing of said circuit to break said ignition circuit for the purpose specified.

2. The combination with a railroad motor car and its ignition circuit, of electrically operated means carried by said car and arranged in a normally open circuit including the axles of said car and the rails of the track, and adapted to be closed through a train on the same track at a predetermined distance away from said car, said means being operable when the circuit is closed to break said ignition circuit to stop said car, and a signal included in a normally open circuit as and for the purpose specified.

3. The combination with a railroad motor car and its ignition circuit, of means carried by said car and arranged in a normally open circuit, including the axles of said car and the rails of the track, and adapted to be closed through a train on the said track at a predetermined distance away from said car, said means being operable when the circuit is closed to break said ignition circuit, and including a switch normally closed in said ignition circuit, a magnet arranged in said normally open circuit and adapted when energized to operate the switch and included in the last mentioned circuit, thereby breaking the ignition circuit to stop the car, and an audible signal included in circuit and operated by said switch when the latter is actuated by said magnet as and for the purpose specified.

In testimony whereof I affix my signature.

ANDREW J. GRAYBILL.