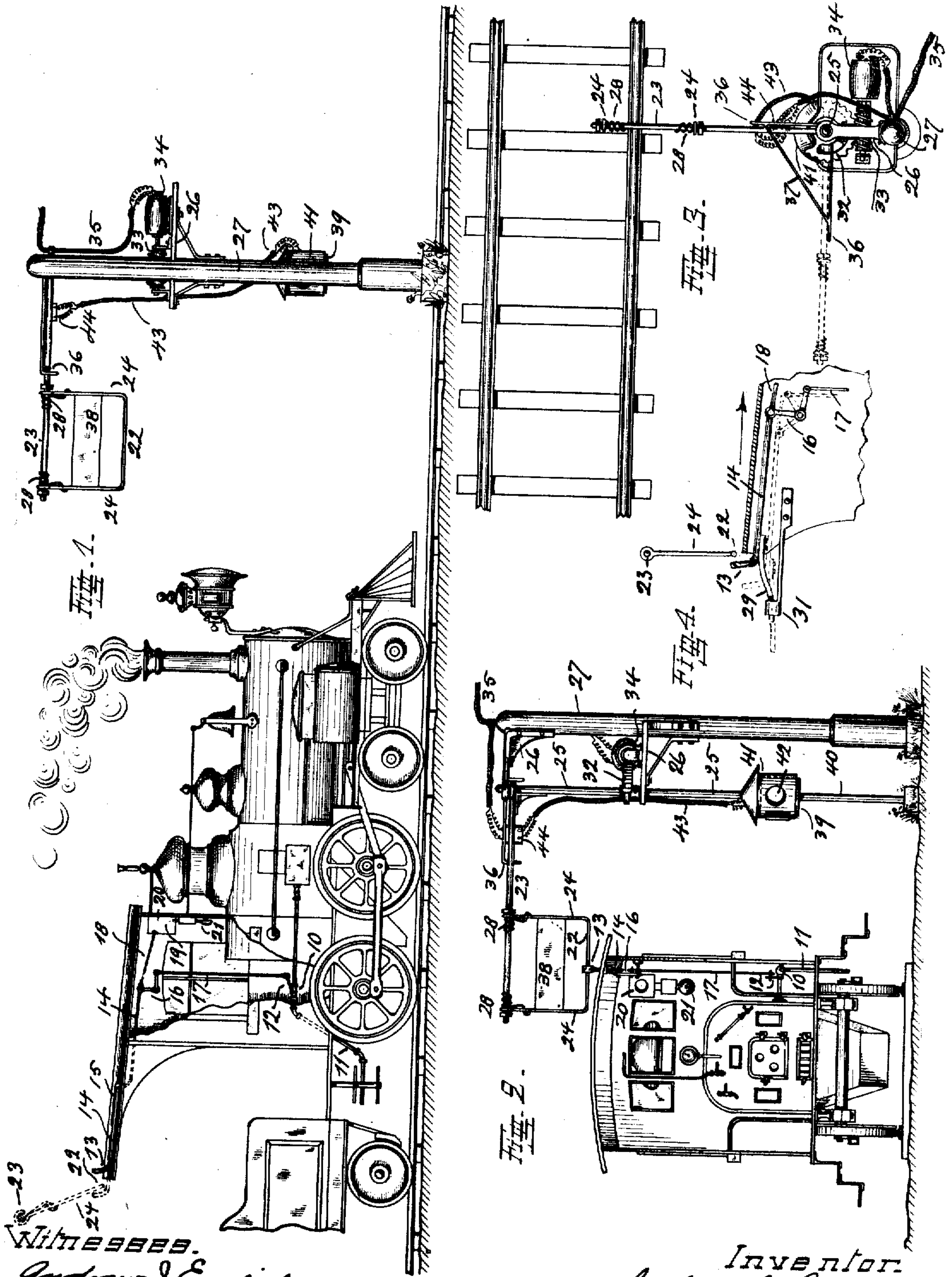


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 TRAIN CONTROLLING MECHANISM.  
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# UNITED STATES PATENT OFFICE.

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## TRAIN-CONTROLLING MECHANISM.

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*To all whom it may concern:*

Be it known that I, JOHN G. SCHLEE, a citizen of the United States, and residing at Cincinnati, Hamilton county, State of Ohio, have invented certain new and useful Train-Controlling Means; and I do declare the following to be a clear, full, and exact description of the invention, attention being called to the accompanying drawing, with the reference characters marked thereon, which form also a part of this specification.

The invention relates to means whereby some of the functions which a locomotive-engineer is expected to perform while in charge of his engine, may be carried out independently of him by devices beyond his control, and operating automatically at certain points or stations along the track.

The general object of such means is to enable maintenance of signal-communication with a train while the same is en-route and to eventually control the same independent of any action by the engineer when unexpectedly arising exigencies render such necessary.

The means provided by my invention enable me to stop a moving train independent of any action by the engineer. Thus for instance when this latter by reason of neglect, or suddenly arising inability, has failed to stop at a certain station, he may be stopped and if necessary re-called. Or in case of obstructions, and disturbance on the track caused by accident, wrecks, of which the engineer has no knowledge, he may be stopped in time and before he reaches those places.

My invention consists of the means and devices and their particular construction and arrangement as hereinafter described and pointed out in the claims and as illustrated in the accompanying drawing, in which:—

Figure 1, shows in side-elevation, with parts of one side of its cab broken out, a locomotive equipped as contemplated by my invention and as it appears on a track while approaching a stationary track-device which forms also a part of my invention. This latter has not yet however assumed operative position. Fig. 2, is a view at right angles to the preceding figure it showing the track in cross-section, the locomotive from its rear end and the track-device above mentioned adjusted to operative position. Fig. 3, is a top-view of this track-device as it appears in the preceding view, portions of the adjacent track being also shown. Fig. 4, illus-

trates a modified construction of the train-equipment.

For the purpose of stopping a train as contemplated by my invention, I use the air-brake equipment of the same and I render this equipment operative to set the brakes by means located at certain points which may be stations along the track and which means are manually controlled and adjusted to act as intended. The instrumentalities which I use comprise a train-equipment and a track-equipment.

The train-equipment consists substantially of a valve 10 tapping the train-pipe of the air-brake equipment and operatively connected with means which are adapted to be acted upon by devices of the track-equipment. This train-equipment may be carried by any part of the train, but by preference it is carried on the locomotive. Accordingly valve 10 is located on the engine-cab as shown, where it connects to that part of the train-pipe 11, which passes through the cab and to the usual engineer's valve. The effect of its operation (opening) is the same as results from the opening of the regular engineer's valve used by the engineer and manipulated by him for the purpose of setting the brakes. This valve 10 is provided with a short arm or lever 12, which is operatively connected with an element 13, which I call a heel, and which is so supported as to be capable of a rearwardly sliding motion and projects normally into the path of the stationary track-device to be described later. Its action and operative connection to arm 12 is such that when coming in contact with, or being retarded by a stationary object like the above mentioned track-device, it slides rearwardly and by this motion, acts upon arm 12 in a manner to cause this latter to operate valve 10. This operative connection is therefore accordingly arranged and preferably as shown. Heel 13 forms part of or is constituted to be the up-turned rear-end of a rod 14 which is formed so that part of it is outside and above the roof of the cab and part of it on the inside or below, a slot 15 being provided in the roof to admit the rod and to clear it. Its inner end connects to an angle-lever 16, supported inside of the cab, preferably on the wall of the same. Another rod 17 connects this lever to valve-arm 12.

The operation is obvious. When heel 13 comes in contact with the stationary track-device, it is caused to move rearwardly, drag-



ging with it rod 14, whereby the angle-lever by means of rod 17 acts upon the valve-arm. In order to bring this occurrence quickly to the engineer's attention, signals, either visible like a light, or audible like a bell, or both, are provided and operated by a rod 18, also connected to angle-lever 16 and actuated by it. If the train is electrically equipped, these signals may be electrically operated, the first being an electric light and rod 18 is used to switch in the current. Otherwise the operation is mechanical as shown, rod 18 connecting to a shade or door 19, of a lamp 20, and operates to uncover the light. Door 19 in turn acts upon a gong or bell 21 below the lamp, the arrangement being such that the door, while opening, strikes against, or releases a spring-actuated bell-hammer, or this bell might be electrically operated by a local battery, the door when opening closing a switch. In either event, the operation of the air-brakes started by action upon heel 13, causes light 20 to flare up and the bell to sound, thus arousing the engineer to act as circumstances may require it. If he has passed a station where he should have stopped or gone beyond a point which he should not pass he may return. For action upon heel 13 of the train-equipment, I provide a bar 22 suspended substantially horizontal from an arm 23 by links 24. This latter arm projects from an upright rod 25 which is sustained for rotation, bearings for it being formed for the purpose in brackets 26. These brackets project from a post 27 erected in proper position adjacent to the track. The arrangement is such that arm 23 with bar 22 may occupy either one of two extreme positions. They may extend transversely with reference to the track so as to partly project over the same, as shown in Figs. 2 and 3, or they may extend parallel to the track as shown in Fig. 1, and in dotted lines in Fig. 3, in which latter position they do not act upon the train-equipment. When in position as shown in Figs. 2 and 3, bar 22 is in the path of heel 13 carried by the train-equipment, so that when this latter encounters this bar, the air-brakes of the train and the signals on the engine are operated as before described. The connection of bar 22 to arm 23 is yielding as indicated in dotted lines in Fig. 1, (back of cab-roof,) springs 28 being used secured upon arm 23 and engaging links 24 which carry bar 22. These springs hold bar 22 in normal position and return it also to such position after each contact with heel 13. In the modified arrangement shown in Fig. 4, heel 13 while being pulled rearwardly by contact with bar 22, is caused at the same time to drop also out of the path of said bar, so that an easy disengagement of the parts takes place and a forcible impact is avoided. For such purpose rod 14 is extended rearwardly and downwardly as shown at 29 in

Fig. 4, and a guide 31 is provided for this portion of the rod, so that said rod, instead of moving rearwardly in a straight line, moves also downwardly, thereby carrying heel 13 with it and out of reach of bar 22. See dotted lines in this figure.

The manipulation for swinging bar 22 into either one of its two positions proceeds from rod 25 and may be manually if close to a station. By preference however it is electrically which is most convenient, especially in cases where these track-devices are erected remote from stations. For such purpose a gear 32 is mounted upon rod 25 and meshed with a worm 33 which is subject to rotation by a small electric motor 34. This latter is supported upon the lower one of brackets 26 which is sufficiently extended for the purpose. Wires 35 connect this motor with a source of current and also with a switch provided in a station.

It will now be seen that an operator at a station may readily manipulate these track-devices from a distance and thereby control the movement of trains and stop or recall them if necessary.

The extent of action of the motor is so arranged as to limit the movement of arm 23 to the proper extent in either direction so that it merely moves from one of its extreme positions shown into the other one and back again. For the purpose of properly defining these two positions of the arm, stops 36 are provided and supported on the upper one of brackets 26. A brace 37 is arranged between the stops to hold them rigid.

In order to give the engineer also notice before-hand, when possible, and to prepare him for the coming action, signals are combined with the track-device which are rendered visible when this latter assumes operative position. In day-time a semaphore 38 is used, which is supported between the upright links 24 on arm 23. At night a lamp 39 serves, which is supported upon a post 40. Normally this lamp is rendered invisible by a hood 41 fitted over it and connected to the lower end of rod 25 so as to turn with it. This hood has an opening so located as to be directed toward the track when the track-devices are in operative position as shown in Fig. 2, thereby rendering the light visible to the approaching engineer. This light may of course be also electrically controlled, current being supplied by wires 43. This light-current is switched in by arm 23 which serves as a circuit-closer or switch when coming against contact pieces 44 provided on one of the stops 36. Inasmuch however as the track-devices (bar 22) act nevertheless upon heel 13 of the train-equipment, non-observance of these signals by the engineer by reason of inattention, or by reason of inability to see them, due to fog or darkness, will be of no



serious consequence; and the main object of the device will nevertheless be attained independent of these signals, or of any action by the engineer.

5 The train-devices are restored to normal position by the engineer after every action upon them by the track-devices.

Having described my invention, I claim as new:

10 1. In train controlling means, the combination of a heel-member carried by a train in a position so as to be above the same, supported to have a sliding motion and adapted to be acted upon by a complementary, stationary track-device when  
15 this latter is adjusted to extend over the train, a valve controlling the operation of the air-brake-outfit of the train and operative connection between this valve and the heel-  
20 member.

2. In train-controlling means, the combination of a heel-member carried by a train in a position so as to be above the same, means whereby it is supported in a manner  
25 to have a rear-wardly and downwardly directed motion when coming in contact with a complementary, stationary track-device when the same is adjusted to extend over the train, a valve controlling the operation of the air-brake-outfit of the train and operative connection between this valve and said heel member.

3. In train-controlling means, the combination of a heel-member carried by a train in  
35 a position so as to be above the same, supported to have a sliding motion and adapted to be acted upon by a complementary, stationary track-device when the same has been adjusted to extend over the train, a valve controlling the operation of the air-brake-outfit of the train, a signal provided on this latter and operative connection between valve and signal and said heel-member whereby  
40 action on this latter by the complementary track-device causes also actuation of both valve and signal.

4. In train-controlling means, the combination of a heel-member carried by a train in a position so as to be above the same and supported to be susceptible to action by a complementary, stationary track-device when the same extends into the path of this heel, a valve controlling the operation of the air-brake-equipment of the train, a signal-light  
45 carried by this latter and operative connection between valve and light and said heel-member whereby action on this latter by the complementary track-device causes also simultaneous actuation of both valve and  
50 light.

5. In train-controlling means, the combination of a bar adapted to act in conjunction

with a complementary train-device, an arm on which it is horizontally supported in an elevated position above the track, a rod from  
65 which this arm projects, bearings in which the rod is supported in an upright position beside a track and in a manner to be capable of rotation, a gear mounted on this rod, a worm in mesh with it and an electric motor to rotate  
70 this worm so as to cause rotation of the upright rod with the arm thereon in a manner to swing the bar supported on this latter in a position either outside of the track or so as to cause it to extend into the path of the  
75 complementary train-device.

6. In train-controlling means, the combination of an arm, a semaphore and a bar both supported by the former, said bar being adapted to act in conjunction with a complementary train-device, an upright rod on  
80 which this arm is supported in an elevated position adjacent to the track and means to rotate this rod with the arm so as to cause the semaphore and the bar supported on this arm  
85 to assume a position either outside of the track, or so that the bar extends into the path of the complementary train-device.

7. In train-controlling means, the combination of an arm, a bar supported thereon  
90 and adapted to act in conjunction with a complementary train-device, an upright rod on which this arm is supported in an elevated position adjacent to the track, means to rotate this rod with the arm so as to cause the  
95 bar supported on this latter to assume a position either outside of the track or so as to extend into the path of the complementary train-device, a light and means controlled by the adjustment of the bar for rendering this  
100 light visible.

8. In train-controlling means, the combination of an arm, a bar supported thereon and adapted to act in conjunction with a complementary train-device, an upright rod on  
105 which this arm is supported in an elevated position adjacent to the track, means to rotate this rod with the arm so as to cause the bar supported on this latter to assume a position either outside of the track or so as to extend into the path of the complementary train-device, a light supported below this rod and a hood provided with an opening and actuated by the rod to render said light visible  
110 or to obscure it.

In testimony whereof, I hereunto affix my signature in the presence of two witnesses.

JOHN G. SCHLEE.

Witnesses:

ANDREW J. ENGLISH,  
C. SPENGLER.