W. BUCHANAN.

Switch Signaling Apparatus.

No. 212,126. **Patented Feb. 11, 1879.**

Fig: 1

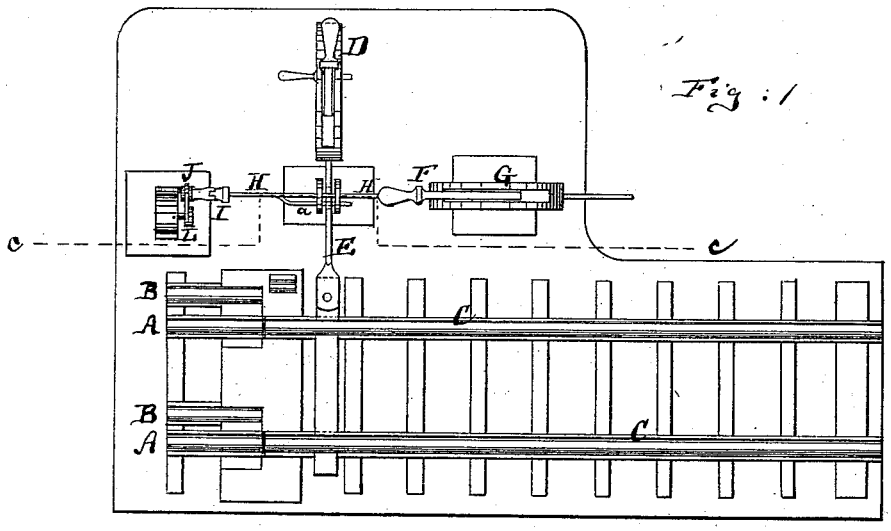


Fig: 2

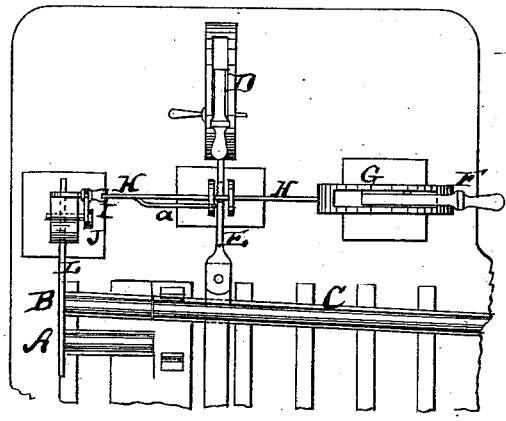
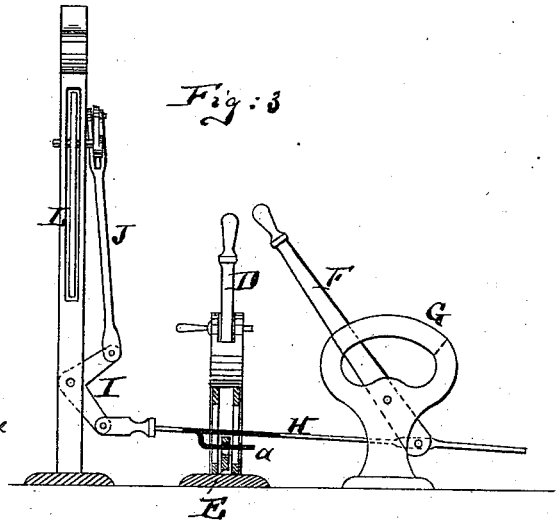


Fig: 3



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IMPROVEMENT IN SWITCH-SIGNALING APPARATUS.

Specification forming part of Letters Patent No. **212,126**, dated February 11, 1879; application filed December 16, 1878.

To all whom it may concern:

Be it known that I, WILLIAM BUCHANAN, of Yonkers, county of Westchester and State of New York, have invented an Improved Switch-Signaling Apparatus, of which the following is a specification:

This invention relates to a new apparatus for operating railroad signals and switches, and is intended as an improvement on the mechanism described in Letters Patent No. 190,465, dated the 8th day of May, 1877.

The present invention is more particularly adapted for outlying switches, cross-over switches, and sidings branching off the main line, the signal-rod being so constructed as to lock one or more switches, as the case may require. The signal can be one thousand, two thousand, or three thousand feet distant from the switch—far enough, in fact, to positively insure the stoppage of a train before reaching the switch. This device is so constructed that it compels the switch-tender to set the signal to "danger" before he can move any switch which the signal is intended to protect; neither can he restore the signal to indicate safety or "line clear" until all the switches are back in position and the line unbroken. When the switches are in position and the line is unbroken he can then lower this signal, which act locks all the switches for the main line.

The above description refers mainly to a double-track railroad; but the same device applies equally as well to a single-track railroad by carrying a signal both ways from the switch, which would be operated simultaneously by the one lever only. I do not wish to confine myself to this particular device or mechanism, as the same object can be accomplished by a cam bell-crank or lever and bolts connecting with the signal-rod and being brought in contact with the switch-rods. It will be readily seen, however, that the switch-tender is not required to exercise any judgment as to what lever he will first move. His duty simply consists in moving the lever which he finds free to move.

The invention consists in applying a bolt or pin to the signal-rod, which is at right angles to a perforated switch-rod, to lock the same.

In the accompanying drawings, Figure 1 represents a plan or top view of a piece of track in connection with my invention. Fig. 2 is a detailed plan view of a portion thereof, showing the switch in a different position from what it is in Fig. 1. Fig. 3 is a vertical section on the line *c c*, Fig. 1.

Similar letters of reference indicate corresponding parts in all the figures.

The letter A represents the main track, B a side track, and C the switch, of a railway. The switch can be set in line with either of the two tracks by means of a lever, D, which connects with the switch by a rod, E, in the usual way. F is a lever, pivoted in a stand, G, and connected by a rod, H, bell-crank I, and rod J, or by any other similar mechanism, with the signal L in such manner that by vibrating the lever F on its pivot the signal can be made to indicate danger or safety, as may be required, the object of the signal in this special illustration being to warn an approaching train on the main track A that the switch C has been set out of line of said track.

Now, my invention does not consist in any mechanism for moving the switch, nor in any mechanism for moving the signal. Both are well known and old; but it does consist in applying a bolt or pin, *a*, to the rod H where the same crosses the path of the rod E, and in adapting the rod E, by perforating it or otherwise, to be locked by the bolt *a*. In other words, as Fig. 3 of the drawings clearly shows, the bolt *a* will, when the signal is set into the position of safety, pass through the rod E, thus locking it and preventing the lever D from being operated; but when the lever F is moved to set the signal to the position of danger, as in Fig. 2 of the drawings, the perforation of the rod E, which admitted the bolt *a* in the position shown in Fig. 3, is out of line of said bolt, and the rod E consequently locks the lever F, so that it cannot be moved.

The practical effect of this arrangement is as follows: Whenever the switch is in line with the main track, as in Fig. 1, the signal is in the position of safety, as in Fig. 3, and locks the switch lever or mechanism. An approaching train on the track A finding the signal to indicate safety may proceed upon the switch. The switch-tender cannot by any possible means set the switch into line with the track B without first setting the signal to

indicate danger, because the switch-lever is locked, as stated, by the bolt on the signal-rod. Therefore, if the switch is to be set out of line of the main track A, the signal is first set to indicate danger. By this motion of the lever F the bolt *a* is drawn out of the rod E, and the switch-lever is liberated. The switch can now be set out of line of the track A, as in Fig. 2, by which motion a solid part of the rod E comes against the end of the bolt *a* and locks the signal, so that the signal cannot by any possible means be set to indicate safety until the switch has first been set into a safe position. Therefore, if the switch is to be brought back to the position shown in Fig. 1, the lever D is free to move it; and after having been brought into that position the perforation in the rod E is again brought into line with the bolt *a*, so that the signal will be free to be moved into the position of safety. All that the switch-tender, therefore, will have to do in order to properly change the position of switch and signal will be to first move that lever, D or F, which he finds unlocked, and then the other, and he will be sure, in so doing, to invariably set signal and switch to the proper position, because, when he finds the switch locked he cannot set it until the signal is first moved, and when he finds the signal locked he cannot move it until the switch is first moved, as already stated, and thus absolute safety to the trains is insured without requiring skillful attendance.

As already stated, the invention is more particularly intended for double-track railroads; but the same device applies equally to single-track railroads by carrying the signal both ways from the switch and operating two signals by one lever.

One particular advantage of my invention is that it is applicable to all existing switches and switch-operating mechanism in which the signal-rod is at right angles to the switch rod or rods. The same signal-rod may thus be used to lock a suitable number of switches.

I claim—

The combination of the switch-operating rod E, having one or more perforations, with the signal-operating rod H, having the bolt *a*, and passing at an angle over the rod E, so that by the bolt *a* the rods E and H will be directly and alternately interlocked, substantially as specified.

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