

Railway Signaling

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Protecting Main Line Switches

ALMOST all ordinary switch stands include provision for locking by placing the handle in a notch in which it is held by the padlock. However, the absence of suitable means for the ready adjustment of the normally closed point and the tendency to introduce lost motion and spring in the connections, in many cases, permits the movement of the handle to be completed when the switch point is blocked open far enough to cause derailments.

One of the principal advantages of automatic block signaling is the protection of main line switches, which is accomplished by connecting a switch circuit controller to the normally closed switch point so that if for any reason the point is loose or blocked away from the stock rail more than $\frac{1}{4}$ in. the signal protecting this layout will indicate danger. Such a switch controller, and the signals in connection therewith, provide protection by indicating the position of the switch up to the time the train passes the signal. From that time, the switch stand and connections are depended upon to hold the switch in position during the passing of the train.

Additional protection is afforded by an interlocked switch, in which the switch is actually locked in each position by a facing point lock or a switch and lock movement before the circuits can be completed to cause the signal which protects the layout, to assume the clear position.

In many reports of the earlier interim inspections of train control installations, as well as in later final inspection reports, the Interstate Commerce Commission has suggested to different roads that the type of fouling protection employed at sidings and crossovers be given consideration with the possibility of increasing protection. For a crossover this suggestion refers to an arrangement of shunt foulings that will permit the signals to clear, when both switches are closed, if a car or an engine is standing on the crossover, fouling both mains. Some roads eliminate such a possibility by installing a special arrangement of insulated joints and shunt-fouling circuits. Others install a separate track circuit and a few roads provide a locking arrangement that insures that both switches must be open or closed when the locking member is thrown. The Norfolk & Western; the Cincinnati, New Orleans & Texas Pacific; and the Pennsylvania are among the roads providing such protection. In fact, the Pennsylvania has not only equipped the crossovers but also the main line turnout switches with hand-operated switch and lock movements on the five divisions recently equipped with automatic train stop. On the West Shore line of the New York Central, recently equipped with automatic block signals, the crossovers are provided with lever stands that operate bolt locks for both switches; on the facing-point switches a single-lever

stand is arranged to operate the pipe-connected derail on the turnout and to bolt-lock the switch. For a number of years the Erie has been using a facing-point lock on all main-line switches in automatic territory on heavy traffic lines.

In consideration of the fact that some roads are installing locking arrangements on main-line switches, general consideration of the problem of better protection for switches would seem to be in order. The first question is to determine whether the standard switch stands in use are designed and maintained to afford the best protection possible. If those responsible consider additional protection over and above the switch stand and switch circuit controller necessary, some type of locking arrangement is the next logical step. Authorities differ as to whether such additional equipment is necessary or justified; nevertheless the subject is bound to come up and in order to be prepared to discuss the subject a study of both sides of the question should be made.

Why Not Use the Term "Automatic Interlocking"?

ON the floor of the recent convention of the Signal Section, A. R. A., a lively discussion developed on the question whether the term "automatic interlocking" should be applied to an installation now designated in the proceedings of the Signal Section as "automatic signal protection for railroad grade crossings."

One speaker contended that such an installation complied with the definition of an "interlocking," in that the movement of the functions "must follow each other in a predetermined order." The signal engineer of a large road put it this way, "A proper term to describe such an arrangement is 'Automatic Signals for the Protection of Railroad Grade Crossings'; however, the laws of several states require interlockings at railroad grade crossings if trains are to be allowed to pass without stopping. Therefore it is necessary in such states, that the installation be called an 'interlocking' for the purpose of securing approval of the railroad commission."

It is necessary also in referring to such an installation in the railroad time tables, to describe the layout as an interlocking, in order to use the name approved by the state commission and that which the railroad is permitted to use to enable trains to proceed over the crossing without stopping. It seems desirable, therefore, to refer to such protection as "automatic interlocking" although, properly speaking, the arrangement is practically that of an automatic signal installed for the protection of movements over a railroad grade crossing.

The practical use to which the protection will be