

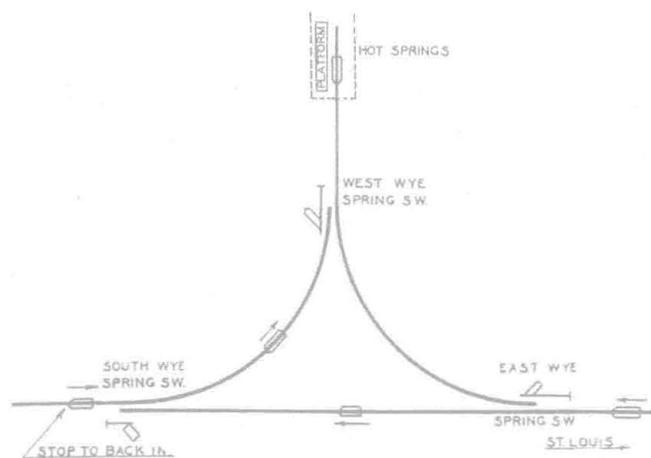
around on the wye before loading for the return trip.

These three spring switches and their respective indicating signals were placed in service in February of this year at a total cost of \$4,700. Approximately 2,000 trains turn on this wye through these spring switches in a year so that, figuring time saved in eliminating stops, plus saving in wear and tear on equipment and in labor, we estimated a total saving of \$11,400 per year, or 243 per cent on the original investment.

Buffer Type Spring Switch Used

The type of spring switch in use on the Missouri Pacific is shown in the heading illustration, and is the standard for all switches thus equipped. This picture illustrates the most recent installation, that on the switch at end of double track from the south near Tower Grove station, St. Louis, Mo.

These switches may be trailed through without injuring the points or may be thrown by hand for irregular facing point moves. A heavy coil spring is used to force the switch point back to normal, after a car wheel has trailed through. An oil buffer



Track plan of spring switches at Hot Springs, Ark.

cylinder is provided to retard this return movement so that with a train passing through at reasonable speed, in heading out, the switch point will not go back enough between trucks to cause a continual "banging" of the point. This eliminates wear and tear on equipment, as well as on the points themselves, and provides a steady positive movement. The facing point signal is used simply as a switch indicator to show that the switch point is fitting properly up against the stock rail.

Maintenance and Operating Suggestions

In connection with a spring switch installation, two items of maintenance are very essential to dependable operation. First, it is of utmost importance that the "stop brackets" between the switch point and the stock rail are properly installed and at all times maintained so that when the switch point is against the stock rail the "stop brackets" will bear firmly against the web of the stock rail to prevent any lateral motion. If this is not done there is a probability that, on a facing point move, the pressure of the pony trucks, plus any lateral pounding, may force the heel of the point rail over and open the switch point under the drivers.

The second important feature to be watched closely in the maintenance, is the quality and amount of oil

used in the buffer cylinder. A machine oil or pale semaphore oil should be used and in such quantity as to retard the return movement of the switch point sufficiently to prevent the "banging" of the points between trucks.

From an operating standpoint it may be well to mention that when trailing point movements (which operate the switch points) are made, the direction of the movement must not be reversed until the entire train has passed through the switch.

The decision as to the choice of a spring switch installation or a remote control installation at a selected point depends upon whether nearly all of the facing point movements are over one track or whether some through movements, other than emergency, requiring the switch to be moved, are to be made. In the former case a spring switch is desirable and is much more economical.

Michigan Central Train Control Approved

WASHINGTON, D. C.

I NSTALLATIONS of the automatic train-stop (automanual) system of the General Railway Signal Company on portions of the Detroit, Middle and West divisions of the Michigan Central under the Interstate Commerce Commission's orders of June 13, 1922, and January 14, 1924, were approved as meeting the requirements of the commission's specifications and order, with exceptions, in reports by Division 1 of the Commission made public on October 22.

The first installation extends from West Detroit, Mich., to Jackson, 72.64 miles, with 100 locomotives equipped, and the second extends from Jackson, Mich., to Niles, 116.82 miles, with 99 locomotives equipped. The cost of the first installation, as reported by the carrier, covering roadside and locomotive equipment, was \$178,282, while the cost of the second was reported as \$202,559.

Exceptions

The exceptions are the same in both reports, as follows:

1. The reset contactor must be so located on all locomotives, or so constructed and installed as to require that the locomotive be brought to a stop after an automatic brake application before a release of the brakes can be effected. This was not the case on some of the locomotives found during the inspection.
2. Pusher and other locomotives operated backward in road service with the current of traffic must be equipped with the train-stop device for such movements.
3. (a) Non-equipped locomotives must not be operated in road service in train-stop territory unless double-headed behind a locomotive the train-stop equipment of which is in service.
(b) Locomotives must not be run in road service from terminals in train-stop territory with the device cut out unless double-headed behind a locomotive the train-stop equipment of which is in service.
(c) When necessary to operate locomotives through to terminals with the train-stop device cut out, account failure enroute, special protection must be provided.

Michigan Central Voluntary Train-Stop Approved

The Interstate Commerce Commission has also approved, with exceptions, the installation of the automatic train-stop system of the General Railway Signal Company on the West division of the Michigan Central from Niles, Mich., to Kensington, Ill., 78.47 miles, adjoining the territory between Detroit and Niles which includes the Detroit and Middle

divisions. This was the first voluntary installation approved.

The additional installation was made voluntarily, the report says, after the train-stop system had been in use on the Detroit and Middle divisions "a sufficient length of time to demonstrate its practicability from an operating standpoint." The carrier reported that it was felt that to get the benefit of all the protection the system might afford for main line traffic between Detroit and Chicago the West division should likewise be equipped, and this was accordingly done. Kensington is within the city limits of Chicago and is the point at which Michigan Central trains enter the tracks of the Illinois Central electrified line to run to Central Station. The majority of the locomotives operating between Detroit and Chicago were equipped with the device to operate over the Detroit and Middle divisions. Forty-eight additional locomotives were equipped and on April 1, 1927, the system was placed in service in connection with the ten interlockers located on the West division.

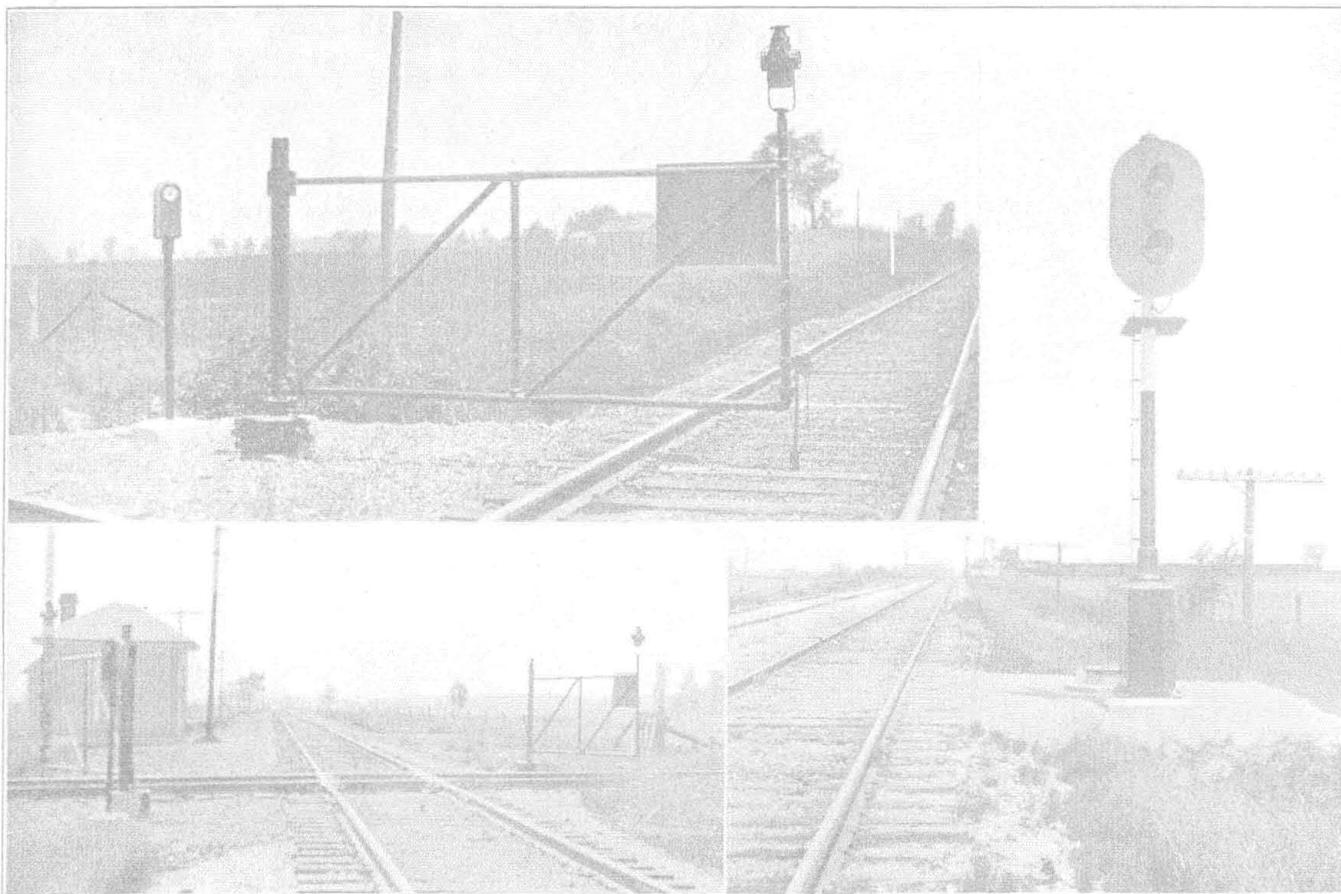
Half-Interlocker on D. T. & I.

AT the intersection of the main line of the Detroit, Toledo & Ironton with the Fayette branch of the New York Central at Bimo, Mich., the first half-interlocker has been completed on the former road. The heavy volume of traffic on the D. T. & I., combined with a stiff grade made it necessary to provide protection at this rail intersection, because under the regulations many unnecessary train stops and delays to trains occurred. Prior to the new installation it was necessary to stop all trains and flag them over the crossing in accordance with state regulations.

Two-position color-light home signals located 700 ft. in advance of the crossing, displaying red for "stop" and green for "proceed" and semaphore type distant signals 2,000 ft. in advance of the home signals, displaying a fixed caution indication comprise the signaling facilities. The home signals are approach-lighted, being operated from 10 cells of Edison 500 a.h. primary battery and controlled by the manual operation of the crossing gates at the intersection. The track circuits are fed by 3 Edison cells in multiple. Normally the gates are lined up across the New York Central tracks thus allowing D. T. & I. trains to operate under proceed signals over the crossing without stopping.

To provide information as to approaching trains on the D. T. & I. for the benefit of New York Central trainmen a semaphore indicator has been installed and serves the same function as at a main line switch. That is, the New York Central trains stop at the crossing under normal operating conditions and the train men note from the semaphore indicator whether or not a D. T. & I. train is approaching. If not, the gates are reversed, thus causing the D. T. & I. home signals to display a stop indication. Upon completion of the movement of the N. Y. C. train over the crossing, the gates must be restored to their normal position over the N. Y. C. tracks after the train has been flagged over the crossing, thus changing the D. T. & I. home signals to the green or proceed indication normally displayed.

As at fully automatic signaling interlocking plants the Bimo installation is without derails. Passenger trains on the D. T. & I. are permitted to operate over the crossing at a speed of 30 mi. an hour while freight trains are permitted to cross at a maximum speed of 20 mi. an hour.



Views of crossing and, at right, home signal on D. T. & I.