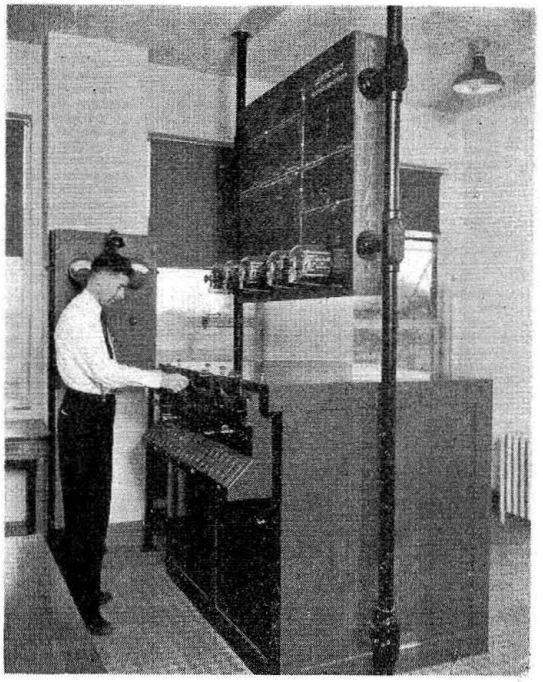
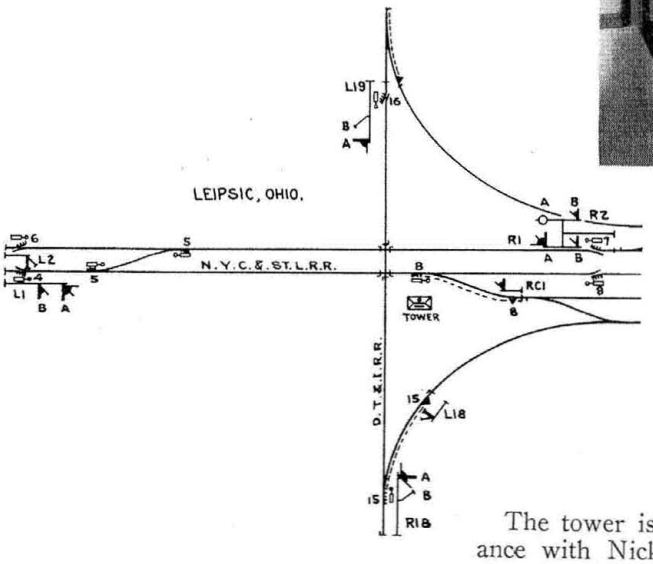
Electric Interlocking

Constructed by the

Nickel Plate

Rectangular-type relay shelf developed to fit space in tower—Sheet metal square conduit used





By

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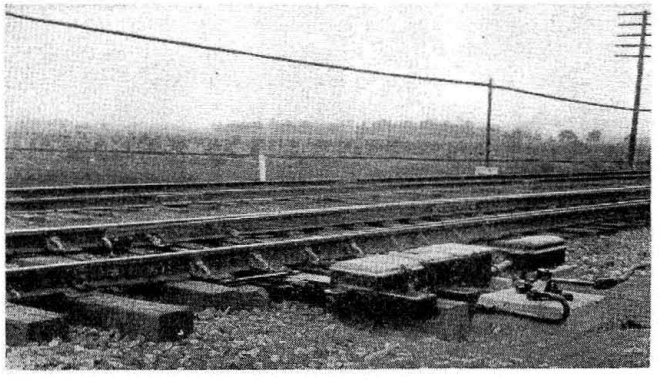


A NEW electric interlocking was installed recently at the crossing of the New York, Chicago & St. Louis and the Detroit, Toledo & Ironton near Leipsic, Ohio. This new plant replaces an old 20-lever mechanical interlocking, built in 1898 by the National Signal Company, which included pipe-connected switch and lock movements, the signals, both home and distant, being operated by wire connections. Additional track facilities were to be included in the plant and, as the old interlocking was obsolete, it was decided to abandon it in favor of an entirely new installation. An electro-mechanical plant would have handled the present layout as well as proposed additions quite satisfactorily, however, it was evident that an all-electric interlocking would fit in better with possible future developments at this point.

The tower is constructed of paving brick, in accordance with Nickel Plate standards, and, while rougher than face brick, it presents a very substantial appearance. On account of a lack of adequate drainage, it was not feasible to provide a basement, therefore, the ground floor is divided into two rooms by a full partition, the heating plant, coal bin and toilet being in one room, and the relays, battery and charging apparatus in the second room.

As a result of this arrangement the apparatus room is somewhat smaller than ordinarily encountered at such a plant. Therefore, there was no space available for a long relay rack of the usual type. After considerable study, a new type of relay rack was designed. This rack was constructed in a rectangular arrangement with instruments on three sides, and one side toward the wall of the room is open for a doorway. At each corner there is a five-inch angle-iron upright to which the asbestos, boards, known as transite, are bolted. The edges of adjacent sections of the asbestos board are kept flush by short pieces of strap iron with a bolt through each board.

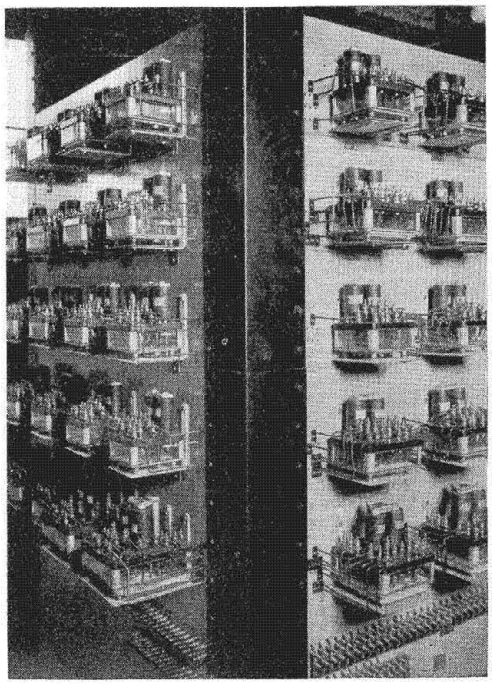
As shown in the illustrations, each relay is mounted on an individual shelf with wall brackets bolted through the asbestos board. Each relay is supported on its shelf by a coil spring at each corner. With this arrangement, the relays are spring-supported but are held in proper position without drooping out of alinement, as is the case oftentimes with spring-supported wall-type relays.

The wires from the relay terminal posts are run through holes in the asbestos board to the rear, where square Bull-dog duct is used for cross runs as well as vertical runs. This duct is constructed of light sheet metal, enameled to resist corrosion. It is made in sections

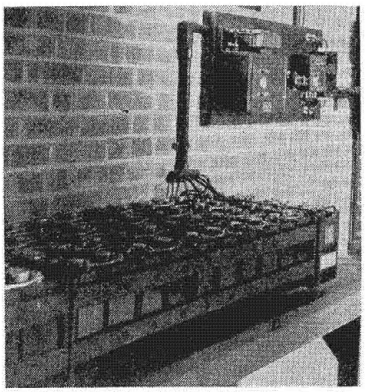
of various lengths and sizes with fittings so as to be readily adaptable to this type of construction. The front of each main section is hinged at the bottom to swing down, thereby affording access to the duct when running in the wires or for making changes or inspection. One-inch knock-outs are arranged along the top and bottom of the main sections and small porcelain bushings are fitted into these holes before running the wires.

All wires, both those coming down from the relays and those coming from other points, are terminated on terminals mounted on the asbestos board as shown below the relays in the illustration.

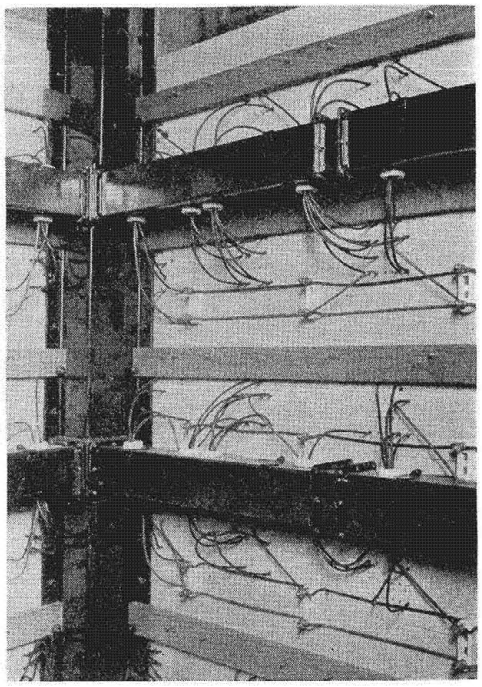
The main 110-volt battery consists of 80 cells of Edison Type-B6H nickel-iron storage cells. A 12-volt battery, of 8 cells of the B4H type, is used for the control circuits. Likewise, at each signal location, there is a set of B4H cells of the same type for control circuits and as a standby for operation of the signal in case of an a-c. power outage. All storage batteries are on a-c. floating charge through Union rectifiers.



Relay rack constructed of asbestos board



The main battery and rectifiers



Interior of the relay rack

The Interlocking Machine

The interlocking machine, in the second floor of the tower, is the Union Type-F, with 12 working levers, and 7 spare spaces. The illuminated track diagram, mounted over the machine, consists of an oak cabinet with a face of ebonite upon which the tracks and symbols were painted with Duco. With this type of construction no glass covering is required and the face of the diagram can be washed, when necessary, without harm. This illuminated track diagram was constructed by the Nickel Plate signal forces.

From the instrument board on the ground floor the cables run in a chase way in the floor to the outside of the building. Heavy runs outside the tower are carried in aerial braided cable supported from Copperweld stranded messenger by Raco cable straps. On the D. T. & I. this cable is supported on the regular pole line, but on the Nickel Plate the cable is supported on 3 in. by 8 ft. cable posts set in concrete foundations spaced about 80 ft. apart. Each break of the cable is made in a junction box, from which point the distribution to various functions is made in steel-taped parkway underground cables.

The instrument cases at the locations are made of wood and are set on concrete bases with iron brackets supporting the case and keeping it free from the concrete so as to prevent moisture from coming up from the ground and foundation. Each case is large enough to house the instruments and the standby battery at each location. Each track circuit is operated by three cells of Edison primary battery in multiple. The rail joints are bonded with A. S. & W. Company stranded plug-type bonds with a center conductor of copper. Two P & M bond protectors are used on each bond.

The signals are the color-light type using 18-watt 10-volt lamps burned normally from the a-c. supply. The switch machines for the switches and derails are the Union Model-M2. All the signaling equipment for this installation was furnished by the Union Switch & Signal Company, the wire by the Kerite Company, and the batteries by the Edison Company. The construction was handled by the Nickel Plate's signal forces under the direction of E. E. Schroff, signal supervisor, and D. N. Heck, signal foreman.

P. R. R. safety trophy for 1931