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American Railway Signaling
Principles and Practices

SIGNAL DEPARTMENT.

CHAPTER XVII

Mechanical and Electro-Mechanical
Interlocking

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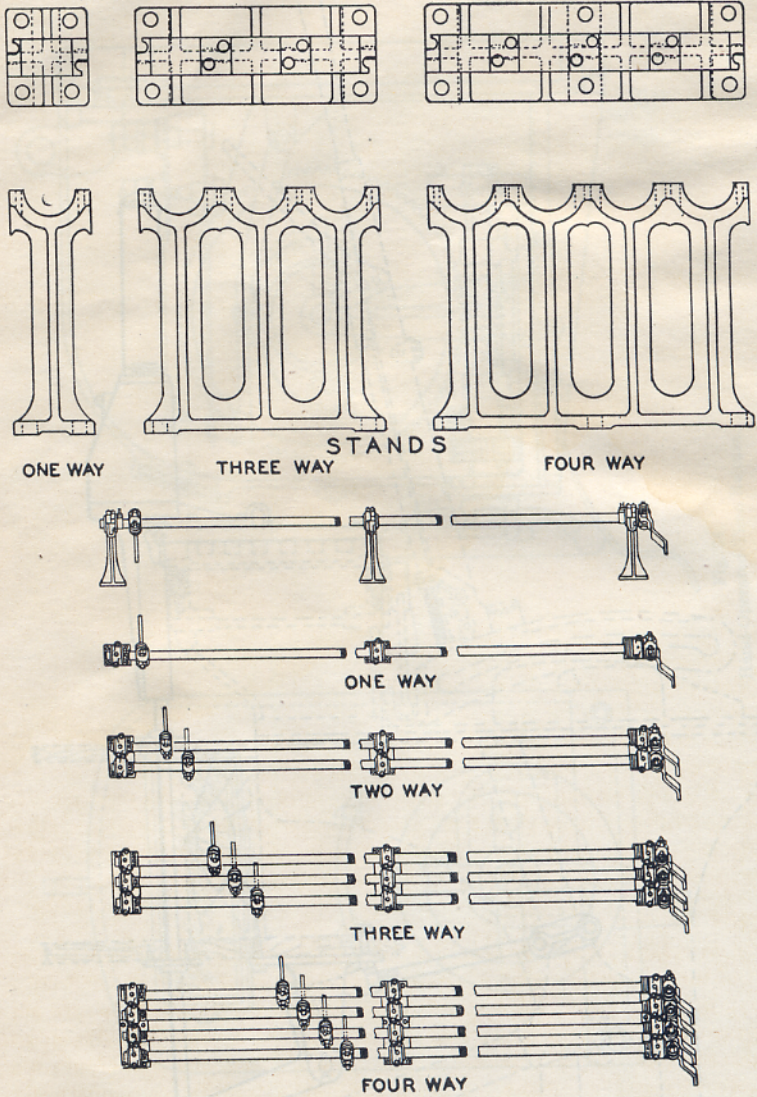


Fig. 36.
Rocker Shaft Assembly and Bearings.

extends vertically. If the vertical leadout is used, vertical cranks, rocker shafts or deflecting bars are used within the interlocking station to change the motion from vertical to horizontal. In either type, outside of station, horizontal cranks, rocker shafts or deflecting bars are employed, the cranks frequently being arranged in a frame and called a box crank. A combination of these is sometimes used in the same leadout.

If the machine is located at track level, a horizontal leadout is used. If the machine is elevated, a vertical leadout is necessary.

Rocker shaft leadout.

A rocker shaft is a 2 inch by 2 inch square steel bar of the required length, supported by bearings spaced horizontally not more than 6 feet apart secured to the leadout support by $\frac{3}{4}$ -inch bolts. The bearing within the interlocking station is so located on the rocker shaft as to permit an offset arm, to which the down rod is connected, to be placed on the end of the rocker shaft. Figure 36 illustrates the rocker shaft assembly and bearings.

The pipe-line connection to the leadout is by means of a solid jaw and a straight rocker shaft arm which is placed on the rocker shaft outside the interlocking station. In complicated leadouts it is often impossible to use straight arms and provide sufficient clearance with those adjacent. In such cases it is necessary to use offset arms as well as offset solid jaws in the pipe-line connection.

Deflecting bar leadout.

The Signal Section, A.R.A., defines Deflecting Bar as: A device used for making a turn in pipe line in lieu of a crank.

A deflecting bar consists of a curved bar which slides between two sets of rollers supported in a frame. Figure 37 illustrates a deflecting bar and vertical stand.

In a deflecting bar type of leadout the down rods are connected to vertical deflecting bars as illustrated in Fig. 38. Both ends of the leadout are connected to the deflecting bars by means of solid jaws, as are the pipe-line connections to the horizontal deflecting bars outside of the interlocking station. This type of leadout requires more space than the rocker shaft leadout for the same number of pipe lines although its parts are more accessible.

Crank leadout.

In the crank type of leadout the down rods and the connections leading out of the interlocking station are similar to those employed in the deflecting bar type. The down rods connect to the vertical cranks which in turn are connected to the horizontal cranks outside of the interlocking station to which the pipe line is connected by a solid jaw. The horizontal cranks are usually arranged in a frame and called box cranks, providing a compact and readily accessible arrangement. Figure 39 illustrates the layout of the crank type of leadout employing the box crank.

Figure 40 illustrates an arrangement of cranks and deflecting bars employing vertical cranks within and horizontal deflecting bars outside of the interlocking station.

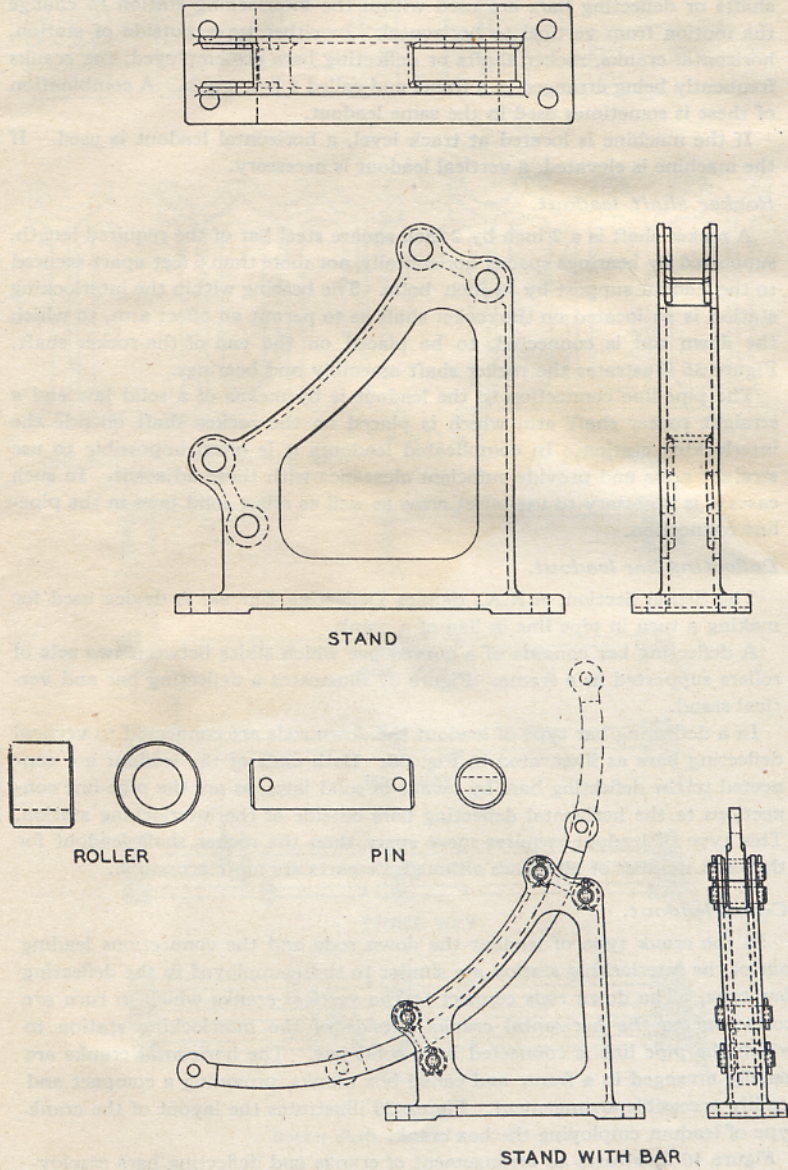


Fig. 37.
Deflecting Bar and Vertical Stand.

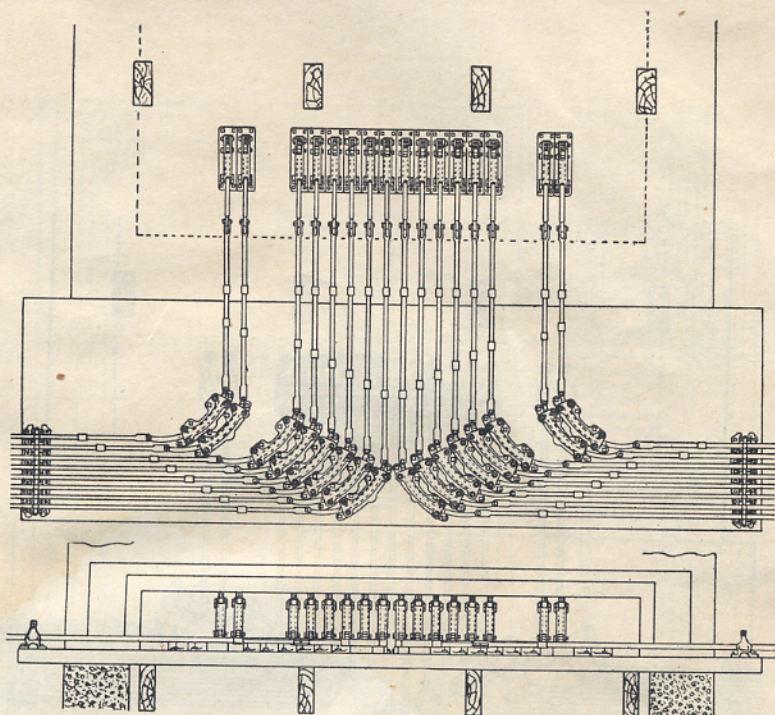


Fig. 38.
Deflecting Bar Leadout.

Figure 41 illustrates a leadout arrangement using deflecting bars and rocker shafts.

Foundation

Interlocking station and leadout.

The Signal Section, A.R.A., defines Foundation as: A fixed support, usually set in the ground, for signal devices.

Foundations for interlocking stations are usually of reinforced concrete, the size depending upon the size of the station and the nature of the ground on which the building is to be placed. Leadout foundations are usually constructed as a part of the foundation for the interlocking station. The leadout appliances are bolted to beams resting on the foundation. The details of a method for supporting the beams are shown in Fig. 42. The "I" beams are set in concrete and are parallel to the leadout. They extend from the leadout foundation through the front to the rear wall of the station.

Parallel to the front of the station, channel irons or wood planks which hold the leadout appliances are bolted to the "I" beams. The channel irons are more generally used for the construction of horizontal leadouts, spaced so as to provide supports for rocker shaft bearings not more than 6 feet apart.

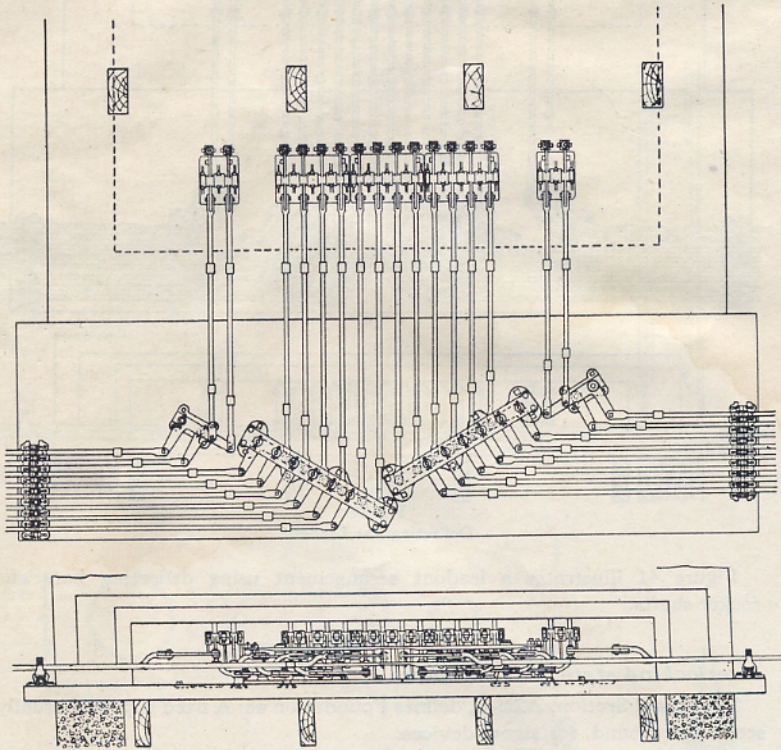
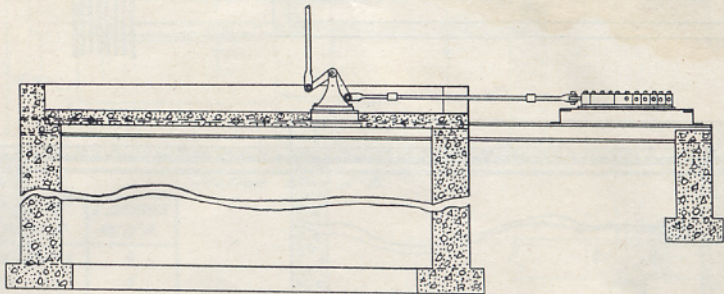
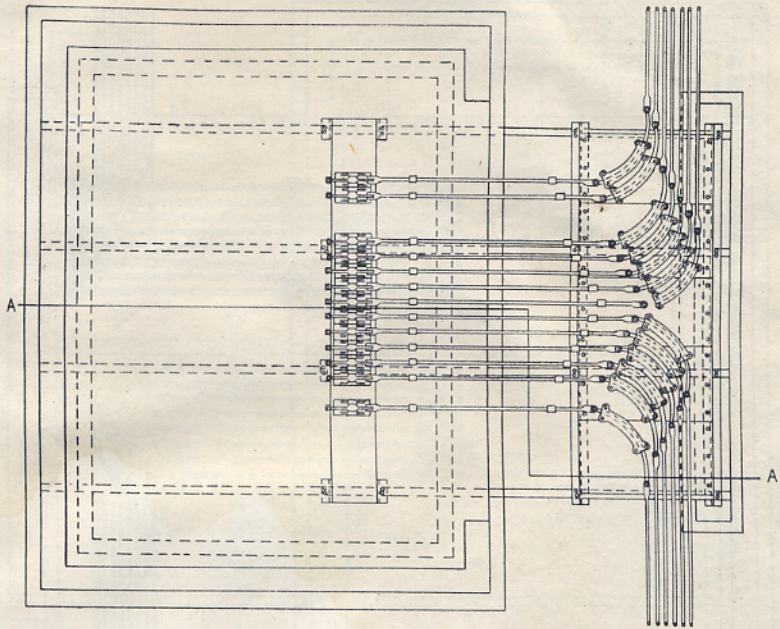


Fig. 39.
Crank Leadout.



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Fig. 40.
Vertical Cranks and Horizontal Deflecting Bars.

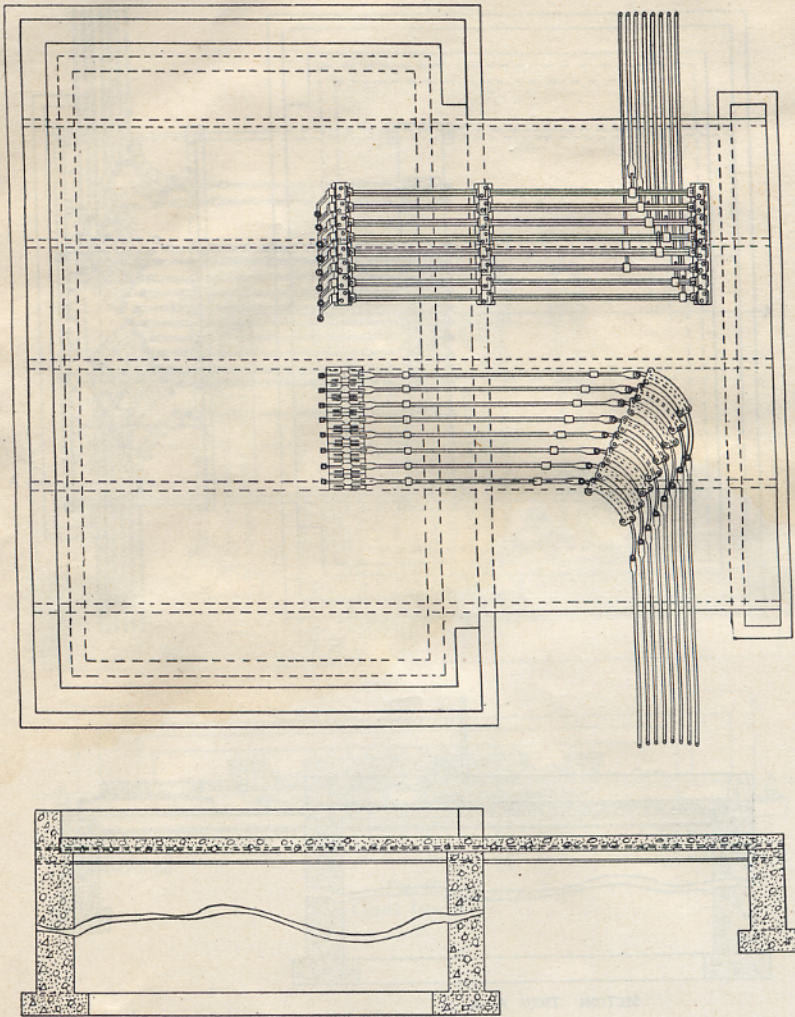


Fig. 41.
Deflecting Bars and Rocker Shafts.

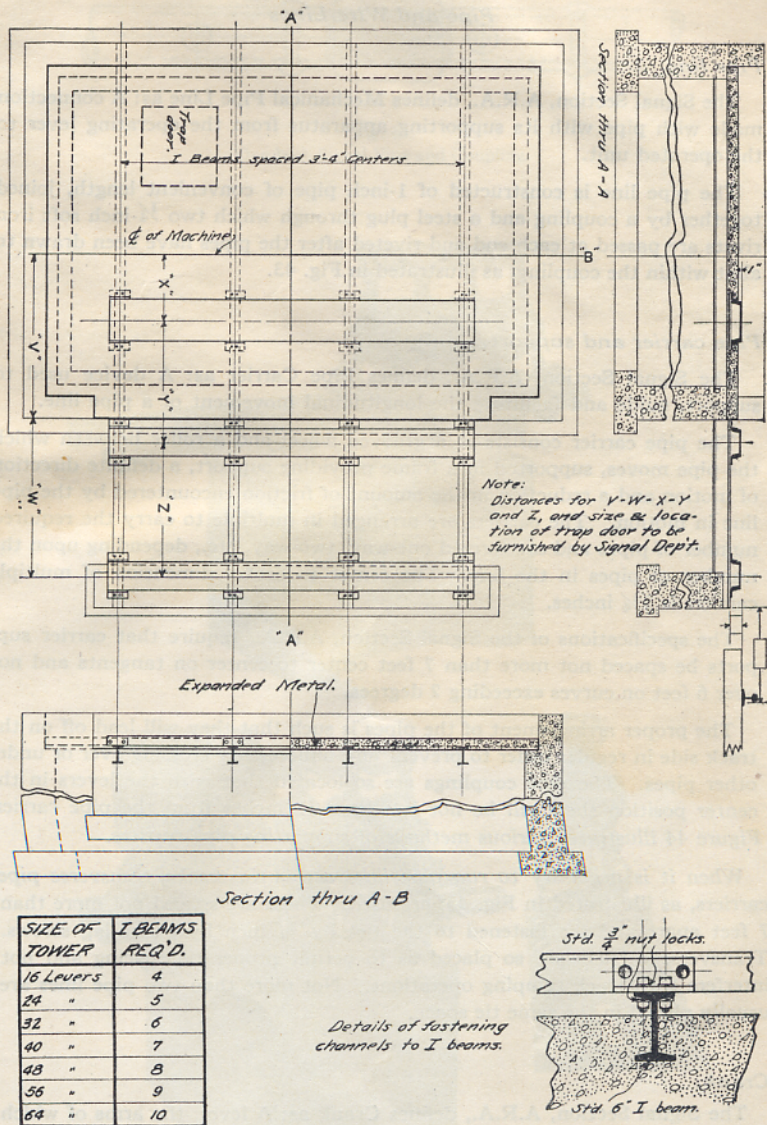


Fig. 42.
Leadout Foundations for Rocker Shafts.