Cabin Interlockings for Crossings

Plant Adapted for Certain Locations, Methods of Installation and Operation Explained

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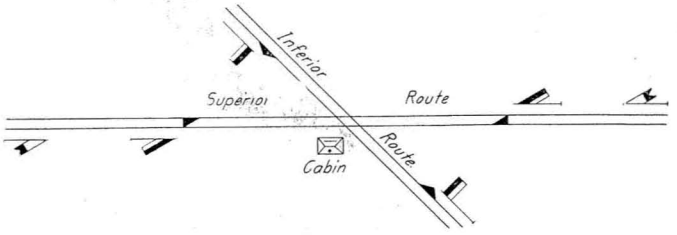
CABIN interlocking is a system or scheme of interlocking wherein the route is normally lined up for traffic on the superior and against traffic on the inferior road. This system possesses all the advantages of a standard interlocking plant for the superior road without the expense of levermen to either line. It is adapted only to simple crossings of a main line with a branch track of light traffic or a main line or branch track with such industry tracks as log and plantation tracks.

The one essential feature in the operation of a cabin system of interlocking is that the route be restored for traffic on the superior road after the crossing has been used by trains on the inferior line. This is accomplished in the following manner: The inferior train stops at its home signal and sends a trainman to the cabin to line up the route for it to pass through the plant. The trainman



Track Plan of Interlocker

enters the cabin and closes the door, which is of the sliding type. (Door must be closed before any lever can be operated). The first lever to be reversed (or placed normal, as the case may be) locks the cabin door shut, after which the signals and derails of the superior route are placed normal or against traffic. He next lines up the route for his own train which proceeds through the plant, after which he sets his own route against traffic and again sets up the superior route. In setting up the superior route for traffic the last lever operated unlocks the door which frees the trainman. All windows are barred in order to hold him captive while the door is locked shut.

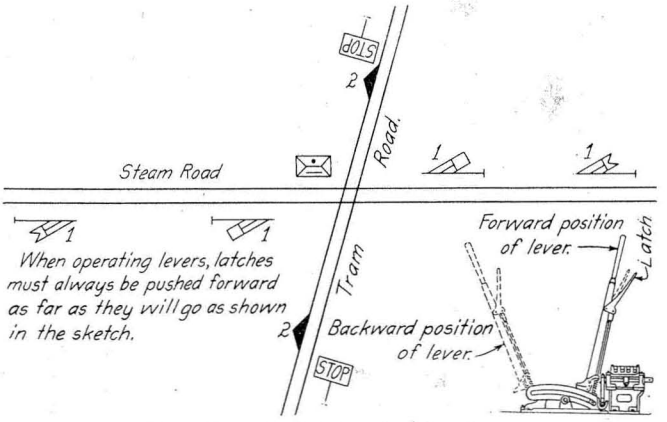
The type of plant to be installed depends entirely upon local conditions and cabin interlockings may vary from complete plants, less distant signals on the inferior route to a plant having only home signals on the superior route and only derails on the inferior road. The latter type might be called a Semi-Cabin Interlocking.

The building need be only large enough to house the machine and have sufficient room between levers and the back wall to operate the levers. The building should be set square with the superior road for dress effect, although a simpler leadout can, as a rule, be obtained when the building is set square with the inferior road. The building should be located so that a clear view can be had along the superior road. In case of a main line crossing, consideration should be given, when locating the tower, to the possible future construction of a second track. Where the building is for a horizontal Saxby and Farmer machine and of a small cross section, its height is considerably out of proportion to its width and length. Such a building should have its sills anchored to the concrete piers and some of the studding anchored to the sills to prevent high winds blowing it from off its foundation.

Whether or not derails are to be placed in the tracks of the superior road depends entirely upon the confidence its management has in the enginemen obeying the signal indications. No derails were placed in the tracks of our lines at cabin interlockings where our road was the superior one, as the management has confidence in the enginemen obeying the signal indications.

If a cabin interlocking is installed in existing block signal territory the signals nearest the crossing may be used as interlocking home signals without changing their location, provided they are not nearer than 500 ft. from the crossing or further than one-half mile, if on straight track.

Consider the type of cabin interlocking most often installed, i. e., a private track, like a log or plantation tram crossing a steam main track. It is not complete in the usual understanding of an interlocking plant, but it adequately serves the purpose for which it was installed. Such a plant would look about like the layout shown, with home and distant signals, but no derails on the steam road and lifting type derails with "Stop" signs



A Complete Cabin Interlocking Layout

placed where signals would ordinarily go. Most tram tracks grade uphill to the crossing and derails may ordinarily be placed from 90 to 150 ft. from it, with "Stop" signs about 50 ft. from the derails. The plant should be equipped with approach, detector and normal indication locking. If in existing block signal territory it may be convenient to install electric approach locking; if not, a mechanical time lock may be used for the necessary time interval to prevent setting up a route on the tram track for traffic until after a predetermined lapse of time after the steam road signals have been placed at "stop." The home and distant signals will be electric if in block signal territory, and the machine to operate this plant will require but two levers. Placing lever No. 1 normal locks

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the door and opens the circuits to home and distant signals No. 1. If they have assumed the stop and caution positions and there is no train on the approach or detector circuits, the lock on lever No. 2 is energized and this lever may now be reversed; then the trainman signals his engineman to proceed through the plant. The electric lock on lever No. 2 serves a fourfold purpose, viz., normal indication lock, approach lock, detector lock for steam road and detector lock for tram road. If the track between home signals No. 1 is occupied, lever No. 2 cannot be reversed, and if the track between "Stop" signs is occupied lever No. 2 cannot be placed normal; in other words, the electric lock on lever No. 2 locks it full normal and full reverse and can be released only when a train is in the approach circuit. I think detector locking is essential on the tram road, for if not installed, derailments would occur from trainmen throwing derails under their trains, and this would result in delays to the trains of the superior road. We will assume a tram crossing in block signal territory between the home and distant signals and near a passing track. Such a plant could be operated with but two levers and a circuit plan would be similar to the one shown.

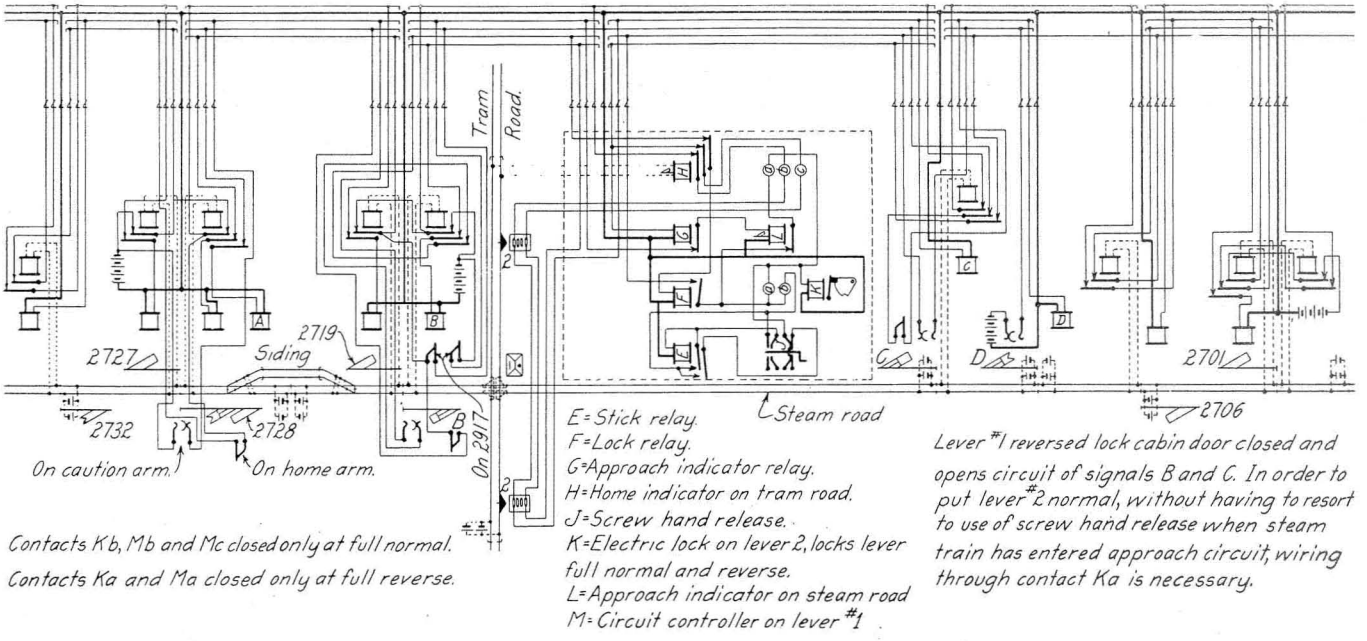
At times we have found the Hayes derails disconnected from the interlocker. This permitted the tram trains to use the crossing at will with all signals on the steam road indicating proceed. Of course, signals were set to stop and caution temporarily while the track between "Stop" signs was occupied. With this condition a greater hazard exists than if no interlocking existed because the protection afforded by approach locking is nullified. This condition can be protected against by putting switch boxes on the Hayes derails with the home signals of the steam road wired through them, so that with either derail off the track the steam road signals will be set to stop. One end of the switch box rod should be riveted to the switch box and the other to the derail to make sure that the position of the switch box will correspond with the position of the derail. With detector locking on the tram road, switch boxes must open the control circuits. Switch boxes must not short circuit the track, for if this is done, lever No. 2 cannot be placed back to normal.

In the mechanical plant (assuming there is locking between the home signal levers of the superior road) the last home signal to be placed at stop should be bolt-locked with both derails of the tram track with pins riveted to prevent the removal of the derails as long as the signals on the steam road indicate proceed. Compensators are not necessary in the pipe lines operating the Hayes derails, as the slide bar of the switch and lock movement can serve this purpose. On log trams the roadbed is usually built up of mill waste and is very unstable. Pipe carriers should be either clamped to the base of rail or supported on long ties, and all other apparatus should be supported on special ties, braced when necessary. On plantation trams the roadbed is of the natural earth of that particular locality and stable, and standard construction can be followed with respect to supporting pipe lines, cranks, etc.

The manipulation chart differs from that of a standard plant in that a complete detailed description must be given for getting the tram train across the steam track and again restoring the route for the steam road. This should show the procedure when the plant is clear and also when the steam train is within the approach locking limits. A manipulation chart for a cabin interlocking should anticipate that the employees of the tram road who will operate the plant know nothing about rules and signaling, and should be in such detail that it cannot be misunderstood. A framed set of instructions should be placed in the cabin showing who to call in case of trouble with the plant. A copy of these instructions should also go to the headquarters of the tram road.

The building serves a twofold purpose, one to house the machine, indicators, relays, etc., the other to hold the leverman captive until the route is restored for traffic on the superior road. If some means could be devised to compel the tram trainmen to restore the route to the superior road, other than holding him captive in an enclosure, a building would not be necessary.

When a plant is ready for service representatives of the signal department should meet the officers of the tram road with their train crews who will operate the plant, at the plant, and go over with them in the minutest detail the proper method of handling the plant. Such plants are often in outlying territory and when visited by the maintainer should be very closely inspected. He should be sure that everything is tight and adjusted.



A Typical Circuit Plan Through Plant When One Road Has Automatic Signals