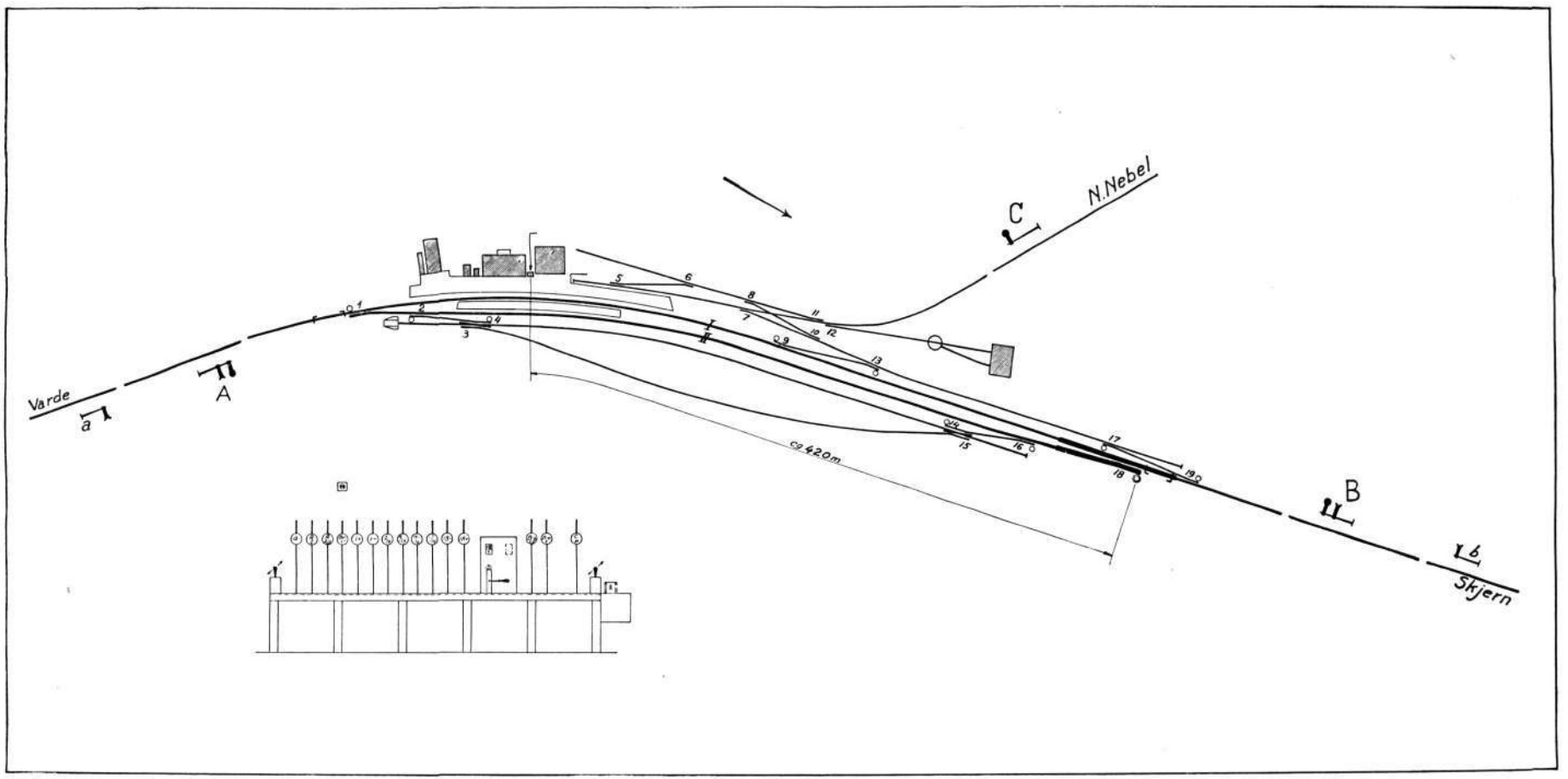


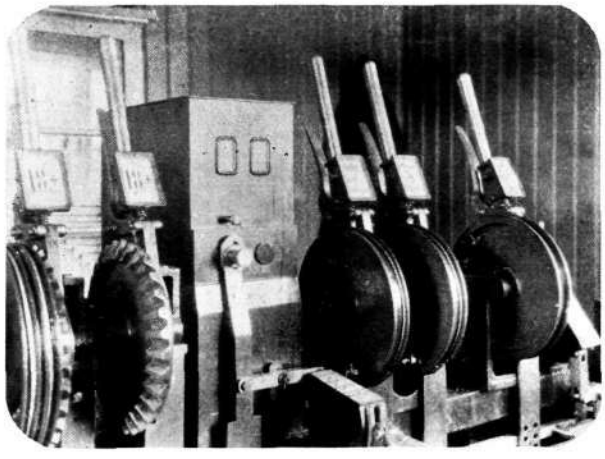
R 923

Fig. 1. Track Plan at Tarm, on the Danish State Railways.

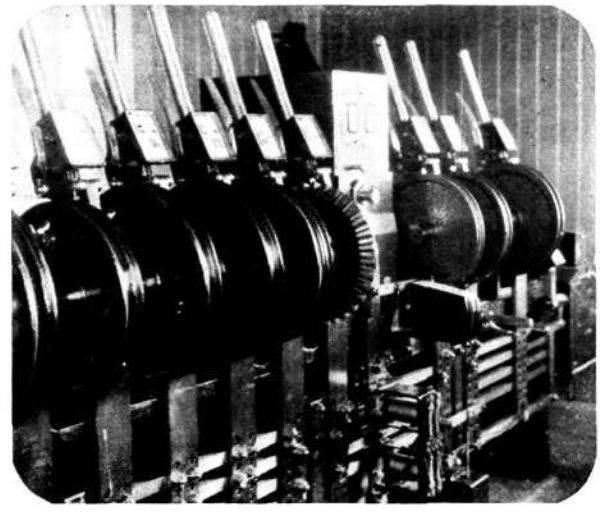
The smallest electric Interlocking Machine.

In 1925 the mechanical interlocking machine at the Tarm station on the Danish State Railways in Jutland was rebuilt. Formerly, the plant consisted of two interlocking machines, one in each end of the station yard, interconnected by means of electric lock- and block apparatus. On the rebuilding of the plant, which was undertaken for the direct purpose of lowering the operating expenses through a reduction in personnel, these two machines were replaced by a single one located in a new signal cabin near the station building. The distance between the interlocking machine and the most distant point controlled by the same was found to be so great and local conditions were of such a nature that the advisability of manoeuvering this point by means of purely mechanical means became extremely doubtful. This gave rise to the idea of providing electric control for the point in question together with local setting of the same according to the patented L. M. Ericsson system. Power was available for this purpose in the form of a 220 volt direct current, this current being deemed suitable for direct operation of the apparatus without a storage battery. The necessary supervisory current could be obtained from a 30 volt storage battery, which would also supply the energy required for the signal lamps of the incoming semaphores. In order to reduce the consumption of 30 volt current as much as possible it was proposed that this current be supplied only when needed and that the closing of the circuit should take place over a pedal contact placed in the floor in front of the lever for the manoeuvering of this point.

With the above requirements in view Signalbolaget prepared complete estimates for the project which were accepted and an order for the plant placed by the Danish State Railways.



R 924 Fig. 2.



R 925 Fig. 3.

This switch, which has been provided with a standard switching machine whose motor is driven by the 220 volt current, is manoeuvered by the aid of a small table type electric interlocking machine (figs. 2 and 3) placed on the top of the mechanical interlocking machine. This small interlocking machine is provided with only one lever, the usual point supervision and point locking magnets and a solenoid for the local setting of the point according to the above-mentioned system. A corresponding track lever in the mechanical interlocking machine is provided with locking magnets and contacts in order to obtain the required cooperation between the electric and the mechanical interlocking machines. When all the devices are in normal

position the system is dead and the track lever in the mechanical interlocking machine is locked in normal position. When the circuit is closed over the pedal contact, the lever magnets become energized, thus permitting the setting of the point lever on condition that the insulated track section nearest the point is free from rolling stock. The point is then set, the track lever being retained in normal position by the above-mentioned locking magnets. After the point has been set, the closing of the pedal contact will energize the locking magnet of the corresponding track lever, thereby releasing the same and permitting this track lever to be set to a position corresponding to that of the point. After the setting of the track lever, the point is locked through the breaking of the circuit over the points lock magnet and the simultaneous breaking of the circuit over the solenoid for local setting of the point, thus also preventing the point from being set locally.

As an added precaution this point is provided with a locking wheel for the mechanical locking of the same in similarity with the other points in the station area. This provides the added advantage of being able to admit trains to the station by signal in case the current supply from the local power plant should be cut off. If this should happen, the point must be set by hand by the aid of the crank for the point setting mechanism.

The mechanical cross locking gear provides such a mutual cooperation between the points lever in the electric interlocking machine and the two lever arms (+ and —) for the mechanical safety locking that the points lever cannot be set unless the other two lever arms are in normal position i. e. the point is unlocked; neither can a lever arm be moved unless the points lever is in the corresponding position.

This plant is an excellent example of how simply and efficiently serious problems attending mechanical interlocking can be solved by means of electric devices and auxiliary apparatus, and has won the unqualified approval of the personnel who make constant use of the same.

G. P.