

master controller operates the various switches in the switch group by current from the 20 volt storage battery circuit. In the operation of the locomotive, the controller can be left in any of the seventeen running notches as there is no resistance to overheat and burn out. The engineer is guided in the operation of the controller by an ammeter mounted directly before him in the cab. In the event of the engineer moving his controller handle too fast, the circuit breaker will open and cannot be re-set until he has moved the controller handle to the "off" position.

Across the top of the controller are located a number of push buttons which, when pressed, operate respectively, the pneumatic bell ringer, pneumatic sanders, circuit breaker re-set and pantagraph trolley. Foot pedals are within reach of the engineer's foot which also serve to operate the bell and sanders.

There is no doubt but that we will find the largest item in connection with the general overhauling of the locomotives will be the turning of tires and the painting. There should be far less tire wear than with the steam locomotives because there is seldom any slipping of the wheels. It has been stated that with the electric locomotives the wear is only one thirty-second of an inch for 30,000 miles run as compared with 8,000 or 9,000 for the steam locomotives.

The inspection of an electric locomotive consumes more time than that required for a steam locomotive, owing to the greater number of parts requiring attention, but this is, perhaps, offset owing to the fact that the inspections are not so frequent.

Upon a locomotive going to the shop for inspection, the dust is blown out of the electrical apparatus by an air blast; all motors, brushes, commutators, controllers and the entire control system are examined and cleaned; the air brake system is also inspected and tested and, if found necessary, the pantagraph shoe is renewed, at the same time all journals are examined and oiled and the sand boxes refilled.

#### DISTRIBUTION SYSTEM.

All cables leaving the Power House are taken into the tunnel through a vertical, concrete shaft containing the various cable ducts. This concrete shaft is directly over the tunnel at the south side of the Power House, near the bank of the St. Clair River at Port Huron, and the locomotive feeders tap the trolley and rail at this point. The trolley extends a distance of about 3.7 miles and where passing through the tunnel, is supported by insulators secured to the roof; these insulators are known as the "barrel" type and support two steel messenger cables at a distance of about three inches