DETAILS OF SWITCH-BOARD, SWITCHES, ETC.

MAIN SWITCH-BOARD.

The main switch-board (Fig. 10 and Fig. 10A) is constructed of 2″ blue Vermont marble panels, having a total height of 7 feet 6 inches. The panels are bolted to 3″ channels. This switch-board consists of four generator panels in the centre, two spacing panels, four exciter panels and four total output panels and at each end of the board is a panel for the recording instruments.

On the back of this board are two sets of exciter bus bars mounted on fibre block insulators, supported by cast iron brackets. These bus bars are ½″ x 2″ copper and they, as well as all the connecting strips, are insulated with oil linen and tape.

It is possible to disconnect the exciter bus bars into three separate sections for repairs, etc. Each panel provides for three generators and each generator has on this board a power factor indicator, one A. C. ammeter, one D. C. field ammeter, two reverse current relays and D. P. D. T. field switch with discharge resistance and an annunciator or signaling device. No overload automatic devices or fuses are provided for the generators, it being held that it is preferable to let the generators hang on in case of an overload, rather than interrupt the service.

In case of any short circuit in the generator cable or in case of the field current failing short circuit of the collector rings, the other generators would of course pump back into this disabled machine and thus reverse the current.

The reverse current relays will then automatically cut off the faulty cable or generator from the bus bars. In case that the generators when in parallel fail to work together, then the power factor indicator will indicate the trouble, and the reverse current relays will again operate. These relays can be adjusted to operate at 10% reverse current.

On the back of this board are fuses for the field cables, and these fuses are set for three times normal full load, so that they can only operate in case of a dead short circuit on the field or cables connected thereto.

On each exciter panel there are a triple pole double throw switch, a circuit breaker, a Thompson astatic ammeter and the illuminated annunciator.

The circuit breakers are employed principally to take care of the emergencies, such as would be caused by the failure of one of the water wheels driving the exciter, as in the event of the water wheel choking up or governor lowering speed, so that this exciter would fail to generate and possibly become a motor, the circuit breaker automatically opens on 10% reverse current.

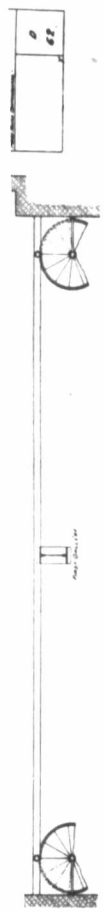

Fig. 9.