

tion to allow a film of water to form, and it is this film which collects most of the moisture and all dust or soot. The first projection prevents most of this film from being carried through, and the remaining projections remove thoroughly whatever water may remain. While we may depend upon the film to remove all water carried mechanically, the moisture carried by absorption is on the contrary increased to an amount dependent chiefly on the velocity

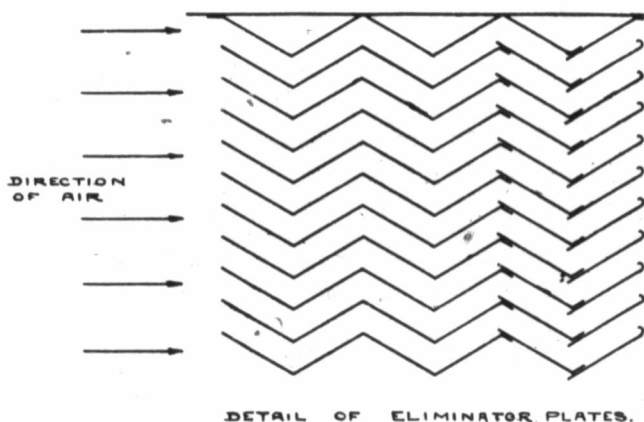


FIG. 2.

of air through the plates. At any given running speed of the fan this velocity is constant, and the relative humidity of air leaving the baffle plates at full speed remains nearly constant at 80 per cent., independent of the relative humidity of the entering air. If the temperature of the spray chamber is kept at 55 degrees, each cubic foot will carry 80 per cent. of 4.85 grains or 3.88 grains of water, which will give a constant humidity of a little more than 55 per cent. when the air is warmed to 65 degrees. The temperature in the spray chamber is kept constant by a thermostat, which operates a by-pass damper below the tempering coils, admitting enough cold air to reduce the temperature as required. The air in the tempered air ducts will remain at 80 per cent. humidity, and the air in the hot air ducts will enter the room at a low relative humidity, but in either duct 3.88 grains are carried by each cubic foot of air, which corresponds at 65 degrees to a humidity of 55 per cent., and if the rooms are kept at this temperature the humidity will be practically constant.

Both hot and tempered air ducts are made of galvanized iron of the following gauges:—