

in small quantities the frazil is swept over the dam by the greater current there, but it cannot thus be disposed of when in great quantities, or on account of the frazil then tending to diminish the current from its very density. Anchor or ground ice is also encountered, this being the ice that forms on the rocks at the bottom. When this occurs the steam plant is put in operation



FIG. 3. ENGINE ROOM

until the morning's sun raises the temperature. Then the anchor ice rises immediately to the surface and is removed through the waste gate.

The power house is a wooden one-storey structure 150 feet long by 60 feet wide, extending from the outside of the head race on the wing dam to some distance on the shore. It is in three parts, the first situated on the head race being still a grist mill, not in operation, however, at present; the second, the power house proper, containing the electrical apparatus, and lastly the steam plant. The cobblestone foundations are laid on the bed rock, 12 feet below the ground surface.

The hydraulic equipment consists of four 50-inch Samson wheels of the vertical type, each capable of developing 225-h.p. under a head of 16 feet, and running

closed down without interfering with the operation of the remainder. Each section is connected to its neighbor by a rigid coupling keyed to the shaft and yet movable to and fro on it by means of a lever.

When it becomes necessary to couple one section to that already running, water is gradually let into the wheel by opening its gates slowly, and as soon as the wheel attains the correct speed the coupling attached to its section of shaft is moved along by the lever until it engages with the opposite coupling and is then locked in position. The guide blades for each wheel controlling the quantity of water are connected together, all operating at the same time and controlled by means of a regulated wheel situated in front of the switchboard in the power house above.

Connected closely to the jack-shaft are three pulleys, each belt-connected to a generator on the floor above, which may be thrown into operation by means of three large Hill friction clothes, each controlled by a wheel placed in front of the switchboard, by which it may be engaged or disengaged. Another pulley is placed on the jack-shaft belt-connected to a pump used for fire purposes only. The jack-shaft, with all the gearing, pulleys and friction clutches, were installed by Miller Bros. & Toms, of Montreal.

The electrical equipment consists of three 180-k.w. three-phase Canadian General Electric generators, "star" connected, each machine having 12 poles, running at 600 revs. per minute, and delivering current to the line at a pressure of 2500 volts and at a frequency of 60 cycles per second; two 6-k.w. standard bipolar Edison exciters, each belt-connected to a generator, and each capable of fully exciting the fields of the three generators; and a 4-pole, 5-k.w. Crompton exciter of the upright type, belt-connected to one of the generators and running at 1220 revs. per minute. The 18-inch oak tanned belt connecting each generator to its pulley on the jack-shaft below is guarded by a substantial iron railing. All the electrical apparatus, in-

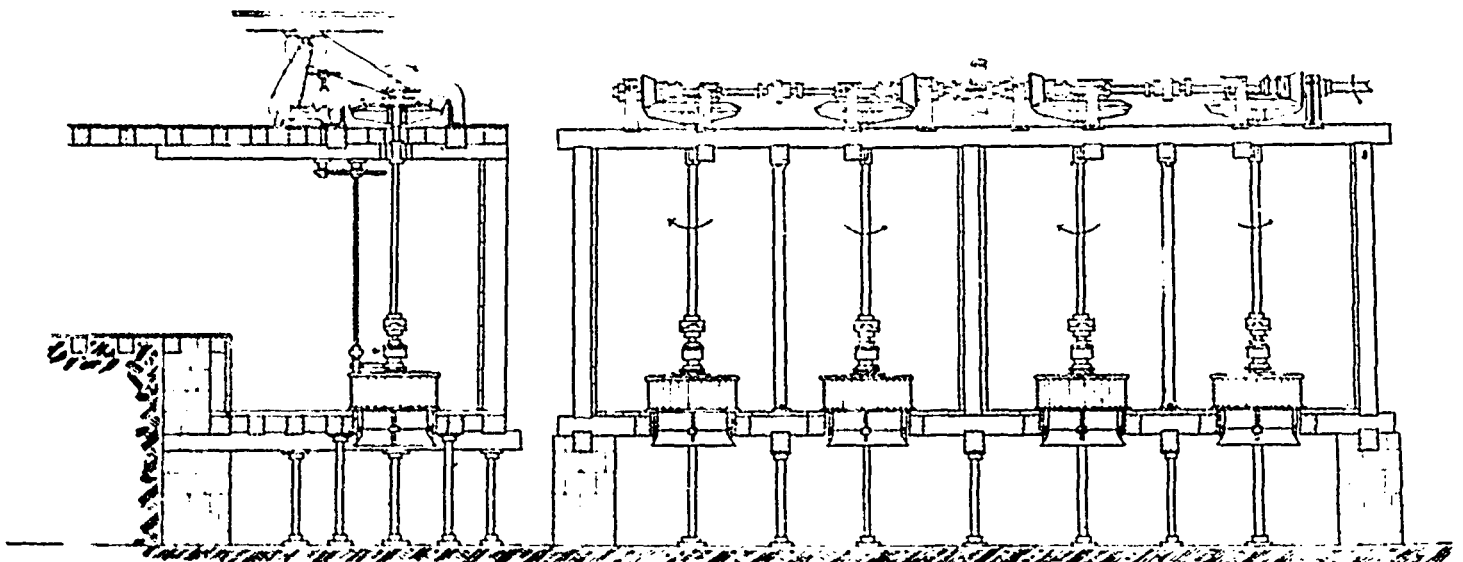


FIG. 4. ELEVATION OF WATER WHEELS.

at 65 revs. per minute, manufactured and installed by James Lefell & Co., Springfield, Ohio. There are two water flumes, each containing two wheels. Power is transmitted from each wheel by means of a heavy bevel mortise gearing to a 5-inch jack-shaft, running at 600 revs. per minute, under the floor of the power house and extending its total length. This jack-shaft is in four separate sections, so that any wheel may be

cluding the switchboard, but with the exception of the last mentioned exciter, was manufactured and installed by the Canadian General Electric Co., of Peterboro, Ont.

The switchboard, as may be seen from Fig. 1, is a four-panel skeleton hardwood board. The first panel is the exciter, the second and third are the generator panels, while the fourth and last is the line panel. The