

engine. Each engine is provided with an automatic safety stop, which operates a "Butterfly" valve placed above the throttle valve. An increase in speed of about seven per cent. will cause the engines to "throw out."

CONDENSERS AND CONDENSER AUXILIARIES.

The condensing equipments are of the barometric type, with separate water and dry vacuum pumps. The guaranteed vacuum, with the engines operating at full load is 28 inches when the barometer stands at 30 inches, with the injection water at 60 degrees F. to prevent any water which may be entrained by the air from passing into the dry vacuum pumps, a separator is provided at the highest point of the air line and drains to the tail pipe. Each condenser is provided with an atmospheric relief valve, which opens automatically in case the vacuum is lost, allowing the engine to exhaust to the atmosphere. The exhaust pipe, in each case, is carried down and under the engine room floor to a main exhaust header, which joins the uptake near the chimney.

The three air pumps are single, steam-driven, horizontal, straight line, rotative, dry vacuum pumps. The three circulating pumps are two stage turbine pumps, direct connected to single cylinder vertical engines. No foot valves are used in the suction pipes.

The method of priming a circulating pump is as follows:—The air pump is started and sufficient time given to allow the vacuum created to pull the water up through the pump; the circulating pump is then started. Steam ejectors, now being installed, will allow the circulating pumps to be started without the use of the air pump. The condensers operate successfully without the use of the air pumps, a vacuum of 27 inches being maintained with full load on the engines. The condensers were manufactured by the John McDougall Caledonian Iron Works.

BOILER WATER SUPPLY.

The circulating pumps, besides supplying the injection water to the condensers, also supply water to two Cochran open feed water heaters, the supply of water to the heaters being automatically regulated by floats. The exhaust pipes from all the main auxiliaries are brought together into one exhaust steam main, which discharges into the feed water heaters. The steam space in the heaters is in free connection with the outside atmosphere by being joined to the main exhaust uptake, thus preventing any back pressure on the auxiliary engines. From the heaters, which are located at the east end of the engine room basement, the water falls by gravity to the boiler feed pumps located in the "dry well" directly below the heaters. The boiler feed pumps, of which there are two, one being a spare, are Fairbank-Morse outside packed duplex plunger pumps, fitted with automatic pressure regulating governors. These governors are controlled by the pressure in the main discharge pipe, to which they are connected by a small pipe. As the water tender closes the feed valves to the different boilers the pumps slow down or are stopped automatically. The opening of the same valves starts the pumps up again. Connections are arranged so that the water may be forced either through the economizers or direct into the boilers. Two

service pumps, one a spare, also fitted with automatic pressure regulating governors, supply water to a service tank located on the economizer floor. This service tank is also connected to the city water mains. Both supplies are governed by floats. The boilers are supplied from the service tank by the use of injectors, when the boiler feed pump is not running. For taking care of the high pressure drains separate

OILING SYSTEM.

To provide an adequate amount of oil for the engines a complete oil system has been arranged. In the engine room basement, next to the boiler room wall, are located the oil tanks, oil filters and motor operated oil pumps. Three tanks, two for engine oil and one for cylinder oil, are fastened on the engine room wall above the engines, into which the oil is pumped from the

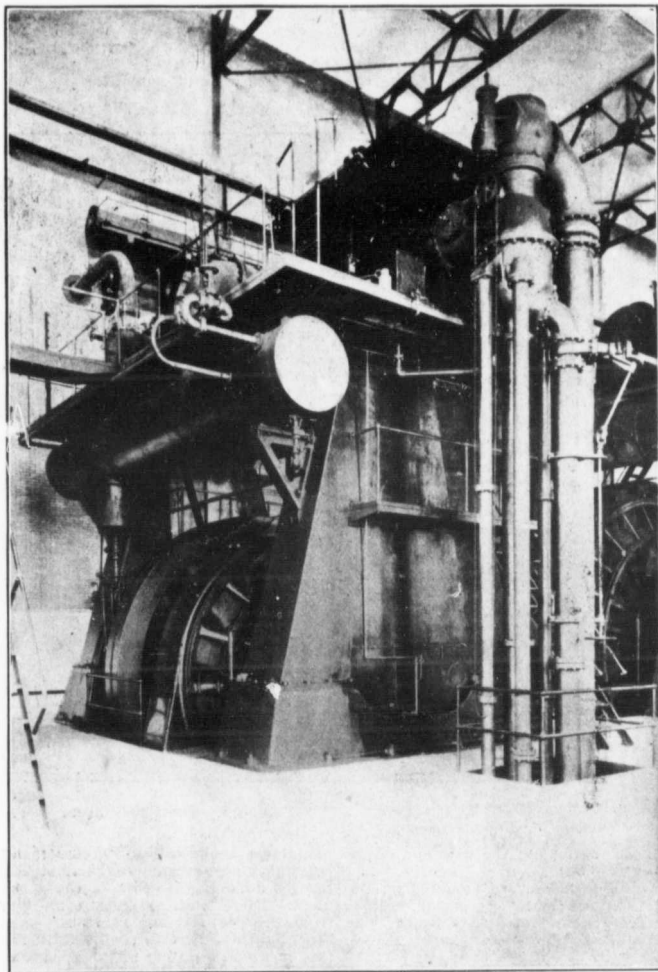


FIG. 4.—The 1000 K. W. Canadian General Electric Unit.

Holly systems have been installed, one in connection with the superheated steam mains and the other in connection with the auxiliary steam mains. In each case all the drains are carried to a receiving tank, and from this tank, which is at boiler pressure, the water is forced to a closed tank 34 feet above the boilers, from which it drains direct to the boilers, passing first of all to a common loop, from which all the boilers can feed.

The cylinder oil flows by gravity to a small tank on the platform of the large engine, from which it is drawn and distributed by hand to the cylinder oil pumps on each engine. The engine oil flows by gravity to small tanks on the engine platforms, and from these tanks flows, by gravity, to the oiling system of the engines, and from thence to the oil filters and tanks in the basement, and starts anew on its circuit.