weather is to be filled with moss, leaves or other insulating material.

Each pair of distributors is operated by an endless wire cable. All three sets of cables are driven by one 6-horse-power Otto gasoline engine, which gives the distributors a speed of 38 feet per minute. The change in direction of the distributors is accomplished by means of the reversing lever shown in Fig. 4.

The distributors have realized every expectation. Less than two horse-power is required to drive all six distributors. The writer believes that the distribution of the liquid over the bed is more uniform than can be obtained by the methods now in use in this country. The more uniformly the liquid is distributed upon a filter, the greater the quantity of sewage that can be applied to the filter to obtain the same degree of purification; or, with a given quantity of sewage, the more uniform the distribution, the greater the purification.

To the knowledge of the writer this is the first time that power-driven traveling distributors have been used in this country. The range of temperature at Springfield makes this installation an important one as indicating possible limitations of service in extreme winter weather without covering the filters.

Final Treatment of Filter Effluent.—The existing sewer conveys the filter effluent to the final settling basin located near the mouth of the existing sewer. This final settling basin is 150 feet long and 50 feet wide and has a capacity of 150,000 gallons. A reinforced concrete channel admits the sewage to the basin at the upper end and at the lower end a similar channel conveys the settled liquid through a short length of the existing sewer to the outlet into Wilson creek. It has not been deemed necessary to sterilize the effluent.

Sludge Disposal.—The sludge which is drawn off from the main settling tanks is conveyed by a concrete trough laid to a grade of 5/10 of 1 per cent. to the sludge beds. The sludge bed, which takes in an area of .35 of an acre, is divided by wooden partitions into twelve units, each unit being 25 feet wide and 50 feet long. Each sludge bed is underdrained with graded gravel 18 inches deep at the centre and 12 inches deep at the sides. Down the centre of each unit extends a 6-inch vitrified underdrain laid with open joints. The surface of the gravel is covered with a thin course of mortar sand to prevent the sludge from working its way into the gravel. The bed is given a slope of 1 inch in 10 feet away from the sludge inlet to assist in the distribution of the sludge over the entire bed.

The sewage disposal plant for the northern district, located near Doling Park, has a capacity of 500,000 gallons in 24 hours and, with the exception of the distribution of the sewage over the filter, is in all respects similar to the plant just described. Instead of mechanical distribution, nozzles are used to distribute the sewage over the beds.

The general movement towards the thorough and adequate equipment of Canada's great trade portals, Halifax, St. John, Quebec, Montreal, Vancouver and Victoria, as well as the development of harbors along the great lakes—such as, Toronto, Hamilton, Port Arthur and Fort William—is one which will, when completed, place our country in a position to compete effectively and successfully for its legitimate share of the world's trade.

A CANADIAN ELECTRIC STEEL FURNACE.

By T. R. Loudon, B.A.Sc.,
James, Loudon and Hertzberg.

In 1906 the Dominion Government issued the results of extensive investigations on the electric furnace iron and steel industry of Europe. Since the publishing of this report, which has been and still is a reference of great value, there has been very little evidence in Canada of commercial interest in electric smelting and refining, as far as the actual iron and steel industry has been concerned. Several electro metallurgical plants of great importance have grown up, but none of these has made any attempt to manufacture pig iron, or place steel products on the market on an extended scale. In 1911, the published results of the successful electro smelting of iron ores in Sweden added greatly to the hopes of those interested in electric metallurgy, as it was proven by these Swedish experiments that practical electro smelting was an accomplished fact, provided power and ore were sufficiently low. Canada was naturally looked to as a possible field for the new Swedish processes, as it is well known that Canadian

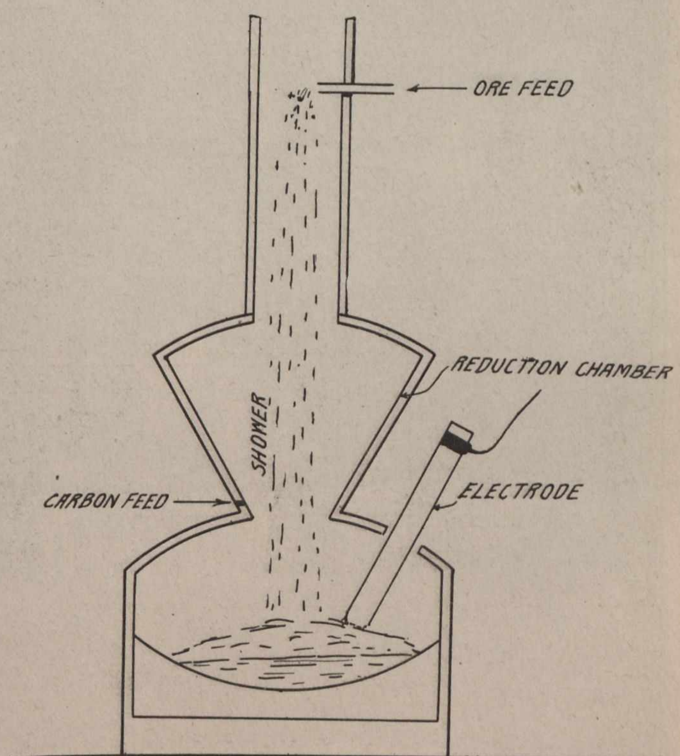

Fig. 1.

iron ores are not suitable for smelting in the ordinary blast furnace without concentrating and briquetting, but can be handled by electro-thermic method. In fact, the Dominion Government electric furnace experiments at Sault Ste. Marie were carried on with a view to making use of these ores. Interesting as the Swedish experiments were, nothing resulted commercially in Canada.

There are, of course, many economic reasons why the electric furnace has not been used in Canada in the steel industry; but, over and above these economic reasons, there exists one that is very largely responsible for the lack of advancement after the beginning made in 1906. This reason may be concisely stated by the well-known phrase, "lack of experience." These new processes required operators familiar with the actual run-