THE CANADIAN ENGINEER

September 14, 1916.



Fig. 9.—Views of Suction Well. (Left) Showing Framework and Lowering of Portion of 72-in. Gate Valve; (Right) Interior of Well, Showing First Half of the 72-in. Gate Valves in Place.

the other. It will let in strong solutions at the top and water at the bottom until balance is obtained, and then the hydrometer just floats in a solution containing 5 per cent. of aluminum sulphate. Any change from this strength causes the hydrometer to move, closing one valve and opening the other. It should be noted that a 5 per cent. solution of aluminum sulphate is about $2\frac{1}{2}$ per cent. heavier than water, and it is upon this fact that



Fig. 10.—Chemical Feed Device.

the apparatus depends, not only from the point of view of supply of energy to move the hydrometer, but also to mix the diluting water with the solution already in chamber 2. The heavier liquid put in at the top tends to sink to the bottom, and, on the other hand, the lighter liquid fed in at the bottom tends to rise to the top; thus, inside the chamber, too, the liquid is kept in circulation. Above the hydrometer is a beam arrangement with knife edges which provides the means for permanent adjustment and also to work with any desired density of solution, a scale with divisions for each 1/10 grain of aluminum sulphate per gallon of raw water being provided for this purpose. By simply moving a weight along the beam any desired amount of aluminum sulphate may be added to the water. The solution passes from the measuring tank (marked 4), controlled by venturi meter, to the suction well, as previously described. For every rate of water passing through the raw water meter there is a corresponding position for the hydraulic piston and gauging slot in tank 4. The chemical feed apparatus is all in duplicate to avoid possible interruption to plant operation.



Fig. 11.—Concrete Work Under Way for Suction Well. Portion of Chemical Store Building in Background.

Filter House.—The filters are ten in number, placed in two rows equally spaced on either side of a central gallery. This central gallery provides a space in which all the main supply pipes are laid and on top there is a gangway which carries the operating tables for working and indicating the hydraulic gate valves that control the filters. This platform also carries the various meters, indicating and recording apparatus and gauges necessary for the control of the plant. Each filter is 50 feet in diameter and contains 30 sand cones or units, eighteen in the outer circle and twelve in the inner circle.

207