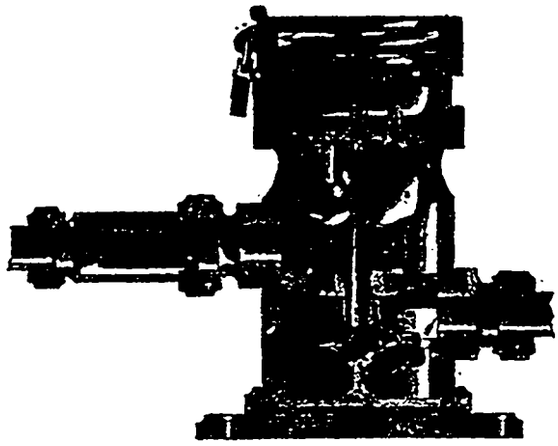
the population of the town. Analysts differ as to whether water can be poisoned by passing through galvanized or zinc pipes or not. I am positive that distilled water can be injured by using galvanized vessels, and if so other water must be injured to a less degree. Black iron, specially made very strong and soft in nature, so that it can be bent easily, is the healthiest article for use for service pipes. Some of the means suggested for removing the evil and still using lead pipes for domestic water supply, are: 1. To line the lead pipe one-sixteenth of an inch thick with block tin; 2. To give the pipes a bituminous coating; 3. To boil the lead pipe before using in a strong solution of sulphur and soda.

As a superintendent of waterworks, I have had the responsibility and care of many Siemens and Adams water meters, which are used largely because they are light and handy to fix. They are simple in construction, measuring the water by forcing it through a turbine or baker's wheel very similar to garden sprinklers that spin round when delivering the water. The act of the turbine turning round moves the dials and registers the quantity. I have never seen large meters of this kind in use. A meter to insure accuracy for a long period must measure the water by loading and unloading a vessel similar to a dry gas meter. When the Siemens pattern and all similar meters become worn, or the inside gets thickly coated with scale or dirt, the water will pass through unregistered, and they can also be easily tampered with. I here show a sketch and give the manufacturer's own description.



This meter is constructed upon the well known principle of Barker's mill The measuring medium consists of a drum, working on an upright spindle at the bottom, and in a collar at the top. The water is conveyed by the conducting tube into the centre of the drum, and allowed to escape at three or more apertures on the periphery of the same, giving to it a rotary motion. At each revolution of the drum a certain number of cubic inches of water is delivered, so that it is only necessary to register the number of revolutions to ascertain the quantity; this is effected by wheels and pinions, and the result indicated in gallons or feet, upon a graduated dial.

In conclusion, I may say that when the steel conduit was about being laid down across Toronto bay, I suggested, in a letter to the *Globe*, printed January 18th, 1888, that a subway should be made from the north side of the railway tracks to the nearest point of the Island, large enough for a car track, a carriage-way and two sidewalks for foot passengers; that the sidewalks should be raised similar to the long subway at Montreal, and that two conduits, one under each sidewalk, should be laid on blocks or rollers so that the tube could be easily inspected; after leaving the subway the two conduits should be joined and conveyed across the Island to the intake, trenched into the ground. Until something in this way be done to make Toronto supply from Lake Ontario a safe and permanent source, free from the contaminating influence of the filthy bay water, the supply will remain risky and polluted when the conduit leaks, or is loaded with sand.

ELECTRICITY IN RAISING OIL.

An interesting and highly successful experiment has been carried out at Petrolia by W. H. Ashworth, manager and electrician of the Electric Light Company of that town, in applying electricity to the pumping of oil. Out of the 8,000 oil wells, which yielded about 800,000 barrels in Canada last year, there are nearly 6,000 in and around Petrolia. One would think that in a town like Petrolia, where they have "oil to burn," so to speak, they would use some kind of crude oil engine, or at least use oil as fuel for the steam engines that are required on the fields. But they do neither. They use steam engines to work the pumps that lift the crude oil, and they use wood and coal for fuel for these engines. As those acquainted with the petroleum business know, the wells are bored in all directions about the town, many of them in the back yards of the owners' houses; so that the visitor on approaching the town sees a forest of derricks, looking like the stumps of trees left after a fire has passed through a green forest. Under each derrick is a well, worked either by a "walking beam" or a "kicker"—that is, two arms joined at right angles, one arm slanting vertically, the other horizontally, the latter having the pump rod attached to its outer end. A group or "batch" of these wells are operated from one engine, rods and scantlings being connected from the engines to the kickers and walking beams. The wells run by one engine are at all kinds of angles to each other, this being easily accomplished by a crude horizontal wheel, making a quarter turn and back, and so pushing and pulling the rods of the pumps on its line. By putting a wheel whenever a well has to be reached at an angle, a dozen or even thirty wells may be reached from a single engine. Mr. Ashworth last July undertook to operate a "batch" of wells from the dynamo in the Petrolia Electric Light Co.'s power house, and installed a six K. W. 500-volt Canadian general machine in a small building in the field beside one of the old engine houses. The little shed required for the purpose was only half the size of the steam power house, and no heavy foundation or boiler setting was required. The machine was placed on a frame consisting of two pieces of 10" by 10" timber on each side, one on top of the other, to give a clearance from the ground for the driving gear, which was a set of pulleys belted so as to reduce the motion imparted from a main shaft operating a crank at either end, the two cranks being placed so as to give an alternate motion to the two sets of pump rods; this simple apparatus was attached to 16 very heavy wells known as "water wells," and running at much higher than the usual speed, but they have been run most successfully by electricity ever since. No boy or man is required for firing, and the machine requires no attention after it is started each day. Last year in Ohio or Pennsylvania one or two wells were experimentally operated by electricity, there being a separate dynamo for each well, but this, we believe, is the first case on record when a "batch" of wells has been electrically operated.

JAMES LYDIATT, formerly of the Wallaceburg, Ont., Glass Works, proposes to start a glass factory in London, Ont., which has the necessary sand near as well as superior railway facilities. The city is of course expected to assist the project.