

lamps, 85 street lamps, 2,000 c. p., 75 of which are all night lamps, and 700 incandescents. Residential lighting has recently been commenced, and the outlook in this direction is said to be very promising.

RECENT CANADIAN PATENTS.

Geo. Cassidy, of Vancouver, B.C., has obtained a patent on a belt joint, formed by cutting out of one end of the belt flatways a V shaped gap, the other end inserted and cemented in said gap after shaping it to form an exact counterpart of said gap.

The Reliance Electric Mfg. Co., of Waterloo, Ont., Assignees of Frank Bankson Roe, Detroit, Mich., have been granted a patent on a current indicator consisting of a magnet, the coils of which are included in the circuit to be measured. A semi-circular core-piece tapering from its base to its free end and a plate connected to the base and extending toward the free end of the core piece, an armature pivoted to the plate and carrying a ring shaped piece of soft iron embracing the core piece, and a pointer secured to the ring, and a segmental scale for the pointer.

A patent has been granted to Isaac Ives, Albany, P.L.L., for the combination on a water wheel of adjustable gates with their gate gear adjusted in an inner fixed case connected with tank, and the buckets, etc., fixed into the circumference of an annular wheel revolving horizontally around case, and fastened to shaft.

THE ELECTRICAL INTERESTS OF OTTAWA.

Ottawa is an interesting city from many points of view. Its situation is pleasant. It possesses in the Chaudière Falls one of the most wonderful water powers in the world, and around these falls are clustered saw-mills almost unequalled anywhere in point of capacity. Being the headquarters of Government for the Dominion, and the place of residence of the Queen's representative, it attracts many visitors. In conjunction with the twin city of Hull, it can boast of a number of important manufacturing industries.

Second to none of its features of interest are its electrical enterprises, a few particulars of which we take the opportunity of presenting to readers of the ELECTRICAL NEWS. The latest addition to these is the recently constructed

ELECTRICAL STREET RAILWAY,

the perfect operation of which is an object lesson, the effect of which let us hope will not be lost on parliamentary representatives of other towns and cities.

The management of the road is as follows. J. W. McRae, President, G. P. Brophy, Vice President, J. D. Fraser, Secretary-Treasurer. The road was constructed in less than two months by Messrs. Ahearn & Soper, of Ottawa, and notwithstanding the rapidity with which the undertaking was carried to completion, the workmanship in every particular is of the most substantial character. The road embraces eight miles of double and four miles of single track.

The equipment consists of sixteen cars of the vestibule type, manufactured by Messrs. Patterson & Corbin, of St. Catharines, Ont. The electric system employed is that of the Westinghouse Electric & Manufacturing Company, single reduction motors of 20 horse power each being used on each car. The dynamo room is located at the famous Chaudière Falls, where two turbine water wheels drive two 100 horse power Westinghouse compound dynamos and a third machine is kept in reserve. The difficulty in supplying steady current by water wheels was at first a matter of serious difficulty as, owing to the frequent stopping of all or nearly all the cars at the same instant, the water wheels were liable to race. By an ingenious mechanical arrangement the water wheel gates are now raised and lowered instantly, and by the introduction of a novel electric device sufficient load is kept on the dynamos at all times to keep down the speed of the water wheels. This device consists of several coils of iron wire, which are connected in shunt to the trolley circuit, and are so arranged that any current from 12 to 72 amperes may be made to flow through them. The wire is kept cool by being immersed in water, which is changed as it becomes warm. This useful device was designed by Mr. T. Ahearn.

The arrangement and facilities of the Ottawa electric railway for battling with and removing the heavy snow falls are of the most complete character. The snow is swept off the tracks by a Lewis & Fowler electric sweeper, and two Walkaway snow plows drawn by horses follow the sweeper and remove the snow bodily to the curb. A third Walkaway shoves the snow between double tracks on to the swept track, which is immediately gone over by the electric sweeper, and in turn is followed by the Walkaway. In this manner snowfalls of nine to twelve inches have

been handled in half a night throughout the whole length of the line. The snow is then shovelled into large boxes, mounded on double runners, and drawn away. A second sweeper will be in readiness in a few days. Preparations for winter were commenced as early as August. All the ordinary platform cars were converted into vestibule cars to make them comfortable for the motor men. Heavy duck canvas is fixed all around the trucks and almost reaches the rails. This prevents snow from reaching the motors and contributes to the comfort of the passengers. Special track sweepers and brooms are used on each car. The whole outfit is complete, and a more efficient service probably does not exist anywhere in America. The successful and profitable operation of a winter electric service has been so convincingly demonstrated that the influence upon other Canadian cities will no doubt be immediately felt. Much of the success of the road, especially under the severe conditions of the present winter, is due to the efforts of Superintendent J. E. Hutcheson.

The stock of the horse car line which extends from the Chaudière Falls to Rideau Hall, is now controlled by the owners of the electric road, and it is understood to be the intention to convert this line also to electricity.

The citizens are extremely proud of the electric road, and since it went into operation the traffic has largely increased.

Mr. Ahearn is the inventor of a new form of electric heater, in form an upright cylinder, which occupies about the same space as the ordinary car stove, and will heat a car to a temperature of 70 degrees in the coldest weather. It is understood to be the intention to establish in Ottawa a manufactory for the production of these heaters and other electrical devices.

STANDARD ELECTRIC COMPANY.

The Standard Electric Company was organized in February, 1891, with the following management: Hon. E. H. Bronson, President; C. Berkeley Powell of the firm of Perley & Pattee, General Manager; James Gibson, Secretary-Treasurer; Edward Seybold, General Agent; J. E. Brown, formerly with the Royal Electric Co., Electrician.

The Company commenced operations in February, 1891, in the old flour mill belonging to the Bronson-Weston Co., pending the erection of a new central station building especially adapted to their purposes. This was done in order to supply light and power to customers who were immediately in need of the same. The plant, which went into operation on the 1st of June, consisted of a 1500 light alternating dynamo and a 60 h. p. generator, built by the Royal Electric Co. of Montreal.

Immediately after the formation of the Company in February, workmen were set about quarrying out the wheel pit at the site of the new building. The work on the building was pushed with great vigor, the stone used being quarried on the spot. The construction is of the most substantial character, the walls being three feet thick, and the joists 12x12 inches, while the whole structure is literally "founded on a rock." The new station building was completed about the middle of August, and opened the latter part of that month.

There were placed in position two 1500 light alternating dynamos, and two 60 h. p. generators. There has since been added to this equipment two more 1500 light machines, and two 60 h. p. generators. The present capacity of the station is 6000 lights and 240 h. p.

The station is so laid out that the generators are all placed in line on one side of the building and the dynamos on the opposite side. These machines are driven from shafts on the first floor. The shafts run parallel with the building and are set on a solid stone foundation, and the foundation and stands of bearings being bolted into the solid rock, make vibration scarcely perceptible. From these shafts the belts cross each other and run to the dynamos on the second floor. Each circuit has its set of potential lines running from the centre of circuit back to potential indicator in the station. On each circuit is placed a reaction coil which keeps potential on each circuit at a uniform pressure. The switch board is a very handsome one, the switches being of white marble and polished brass. The arrangement is such that each circuit can be thrown on to any machine, and any machine on to each circuit.

The company is operating one of the largest motors in Canada, transmitting 70 h. p., and driving Messrs. Martin & Warnock's large flour mill situated a mile distant. The motor runs 24 hours per day for six days of every week, which will be admitted to be