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**THAWING OF WATER PIPES BY
ELECTRICITY.**

A NUMBER of successful experiments have recently been made in Canada and the United States with the use of electricity for thawing out frozen water pipes. The Canadian experiments were made in Ottawa, Berlin and Chatham. Below are printed particulars of the methods pursued in the above mentioned cities, together with illustrations showing the apparatus employed :

The Berlin Gas and Electric Co. used alternating current of 2,080 volts primary and 104 volts secondary ; this was further reduced by means of a water rheostat

as described below to 50 volts. The apparatus, as shown in accompanying cut, consists of a large 200 light (40 G. S.K.C.) transformer, switchboard, several switches, C.G. watt meter to measure the current, all of which is placed on a small waggon for convenience in transportation, and a water rheostat. The water rheostat consists of the most simple type, a copper plate placed in the bottom of a

wooden pail, another copper plate placed some 6" to 8" above the first and so arranged that it can be moved up and down as found necessary. There is enough water poured into the pail to well cover both plates. When in use the water is kept from boiling by the addition of snow or ice.

The waggon is placed as near as possible to the place of operation. The wires of the primary circuit are brought to a D.P. switch on waggon switchboard, are then taken to the transformer, and back to a second D.P. switch on switchboard. The current is then conducted by two No. 6 wires to afford ample capacity for current without heating the wires and by means of a simple clamp these wires are attached to one end of frozen pipe. The second wire from the switch is then taken to the watt meter then by means of two No. 6 wires, is connected to lower plate in water rheostat. The wires from the top plate in the water rheostat are so connected to the other end of the frozen pipe that the frozen part remains between the terminals of the secondaries. A volt meter should be inserted in circuit

after leaving the rheostat, and the rheostat so adjusted that the current will be reduced to 50 volts. In ordinary sizes of black or galvanized iron pipe the voltage should not exceed 50 volts. For from 4" to 6" cast iron pipes the pressure may be increased to 100 volts. In any case a strong ampere current should be used. The current is then turned on and carefully manipulated.

Only a very few moments are necessary ordinarily to thaw out water service pipes. The connections are made at any most convenient point where the pipe is exposed, a city hydrant, private pipe, or faucet in dwelling may be used.



APPARATUS FOR THAWING OUT WATER PIPES.

It is necessary to use a source of current which does not affect the electric light lines by the grounding effected through connecting with the pipe, or danger may result.

In using this method to thaw the frozen condensation found in gas pipes the experience was that the thawing process had to be continued for a longer period of time.

Mr. John Murphy, superintendent of

power houses, and Mr. W. G. Bradley, superintendent of construction for the Ottawa Electric Company, along with a representative of the City Engineer, conducted the experiments in Ottawa. Two Packard transformers, type F, made for 1,000 and 2,000 volts on the primaries, ratio of transformation of one to twenty, 125 cycles, were mounted on a sleigh and driven around where required. It was usually drawn up to the foot of the pole and primary wires carrying about 1,000 volts were brought down to the transformers by means of flexible wires. The transformers were worked in parallel and had the connections so made as to obtain a ratio of transformation of forty to one so that about 25 volts were obtained on the secondary. With this arrangement it was found possible to do without the reactive coil and other means of regulation which had been used in the first trials, so that the pipe-thawing outfit consisted simply of the two transformers above referred to and an ampere meter which was inserted on the primary, their being no portable instrument with large enough range to put on