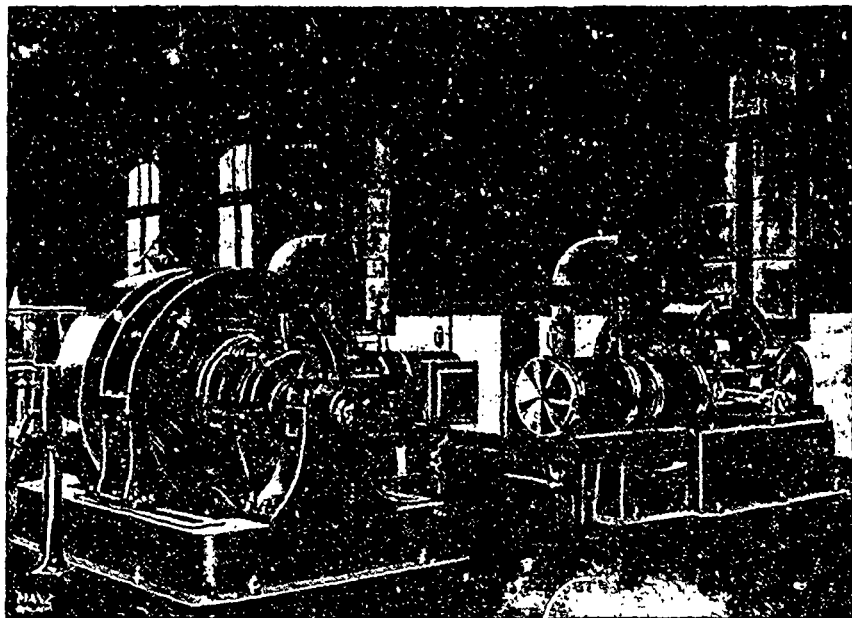


CANADIAN ENGINES IN SPAIN.

In October, 1897, contracts were placed for the equipment of electric tramways in Barcelona and Madrid, the two most important cities in Spain. The work was completed a few months ago, and the lines are now in successful operation. Barcelona, with a population of about 600,000, is the largest city in Spain, and is an important seaport and manufacturing centre. It is an



ROBB-ARMSTRONG ENGINES AT BARCELONA.

ideal city in many respects, but particularly from the standpoint of the owners of the electric railway, as it is well patronized on account of the climate being too warm for much walking. Madrid is the capital of Spain, and is nearly as large as Barcelona. It is situated inland, and has many parks, broad streets and fine buildings. In the character of its population it resembles a western American city, as not more than 40 per cent. of its residents are natives.

Although these systems are owned by British capital, and were built by British contractors, much of the apparatus was purchased on this side of the Atlantic. The main engines were manufactured in the United States, and three smaller engines were supplied by the Robb Engineering Company, of Amherst, N.S. These latter engines, as shown in the accompanying illustrations, are tandem compound, side crank type, with dynamos direct connected. They were installed principally for lighting the extensive car sheds and driving the machinery in the workshops connected with the tramway system, but are also used for running part of the cars late at night or early in the morning when the main engines are shut down.

The high pressure cylinder of these engines is 10 inches in diameter, low pressure 16 inches in diameter, stroke 15 inches, and they are rated at 115 horse power each. Both valves are controlled by the automatic governor in such a way as to divide the work equally between the two cylinders. The crank shaft, connecting rod and crank pin are of hammered open-hearth steel. The high pressure cylinder is placed next the

frame, and the low pressure in the rear, so that the cylinder heads and pistons can be removed without disturbing the cylinders. The throttle consists of a flat valve rotated through one-half revolution by a lever, and as the valve and seat are protected from the steam whether open or shut, they can neither wear nor rust. The main bearings have a ring oiling device, the oil being continuously conveyed from a cavity beneath the bearing

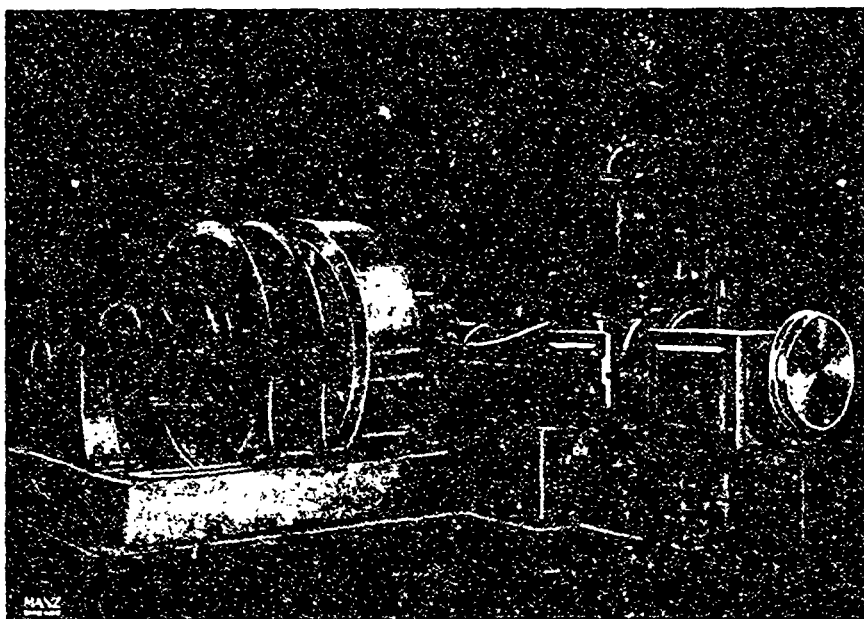
to the top of the shaft by metal rings which dip in the oil. All bearings are large and the parts of the engines few and simple and as strong as possible, making them well adapted to any service where continuous running and variable or severe work is required.

It is highly creditable to the Robb Engineering Company that their engines were selected as part of these installations, which are said to be the most important undertakings of the kind completed in any part of the world during the year 1898. The products of the Robb Company have been favorably known throughout Canada for a number of years, and we have no doubt their foreign shipments, which have been quite numerous during the past year will give as

good satisfaction and lead to a large increase of their business.

ACETYLENE GAS EXPLOSION.

On January 5th the village of Merrickville, Ont., was startled by a terrific explosion, which, on investigation, proved to have occurred on the premises occupied by the A. B. Scott Co., general merchants, due to the explosion



ROBB-ARMSTRONG ENGINES AT MADRID.

of their acetylene gas machine. The plate glass windows in the front of the building were almost totally wrecked; the windows on the second floor were also broken out. A large window in the centre of the back of the building was completely destroyed, being blown out, with its frame, leaving nothing but the brickwork. The cellar doors leading to the machine were broken from their hinges. Fortunately, no one was seriously injured.