

and electric tests made shortly after installation indicated no flow of electricity at all, although, the entire pipe line parallels an electric car line.

The expense of a line like this figured about three times greater than for an ordinary lead joint, but for a gas line it was considered very desirable that it should be no conductor of electricity.

It is probably true that the rubber used in these joints will in time disintegrate, but it is also true that it will last for quite a number of years, for the moisture in the earth and the absence of exposure to the atmosphere should keep the volatile particles of the rubber alive for a long while.

As an insulated joint to prevent pipe lines from carrying stray currents of electricity it would appear that it would be fully as serviceable for water as for gas lines.

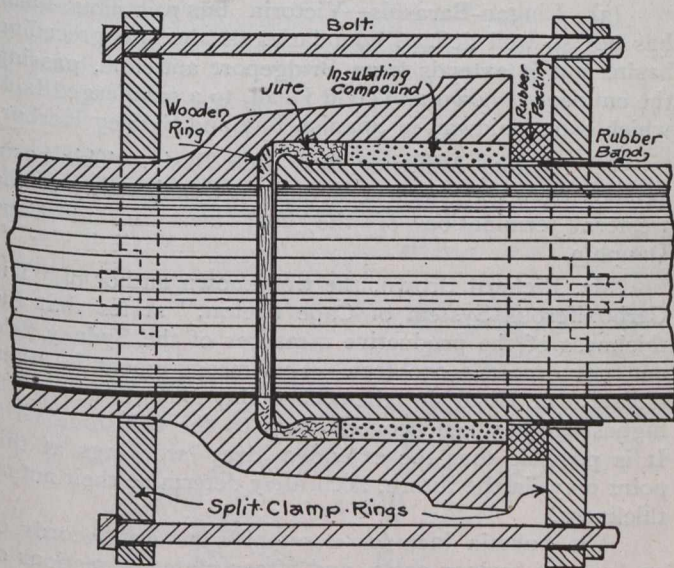


Fig. 2.—The Joint Constructed.

Since writing the above I learn from Mr. Brackett, chief engineer of the Metropolitan Waterworks, that rubber insulated joints have been used by them and were successful when installed, but due to a large amount of current charging the pipe from a heavy electric storm, the rubber was in part carbonized and thereby became a conductor rather than an insulator. It would appear, therefore, that so long as electricity can be prevented from collecting in large volume, the joint described is an efficient insulator, but one can never tell what is going to happen during an electric storm. If the rubber once becomes carbonized or loses volatile properties, it fails as an insulator.

The Lincoln Highway Association, formed to secure the establishment of an ocean-to-ocean highway, to be a memorial to Abraham Lincoln, has established headquarters at Detroit. The highway, plans for which are nearing completion, is to cost approximately \$10,000,000, of which \$4,200,000 has already been subscribed. The association proposes to co-operate with local communities in procuring the establishment of the highway, to be engaged in the improvement or reconstruction of existing highways, which will constitute a part of the route. Several States along the line have already taken steps towards the construction of improved highways from east to west to connect with the coast-to-coast route. Mr. H. B. Joy is president of the association.

THE SYDNEY COAL FIELDS.

By Joseph G. S. Hudson.

THE mines branch, Department of Mines, Ottawa, in a bulletin specially prepared for the International Geological Congress, by Mr. J. G. S. Hudson, gives some interesting historic facts concerning the Sydney coal fields of Cape Breton, Nova Scotia. The sketch is as follows:—

The maritime provinces of Canada, owing to their geological position on the Atlantic seaboard, were the first in Canada to have their mineral resources explored. Among these resources coal is one which stands pre-eminent, and Nova Scotia has for over 200 years had an enviable reputation as a producer of bituminous coal.

The first printed notice of the existence of coal in these areas appeared in 1672, when Nicholas Denys published in Paris, "La Description Geographique et Historique des Costes de l'Amerique Septentrionale." Eighteen years before, in 1654, Denys had obtained from Louis XIV., a concession granting the right to explore and work mines of gold and other minerals; for this privilege he agreed to pay the King a royalty of one-tenth. In 1677, M. Duchesneau, the Intendant of New France, issued a proclamation, exacting a royalty of 20 sous per ton, from all persons taking coal from Cape Breton. In 1711, Admiral Walker—who commanded an expedition to reduce Quebec—mentions in his journal, that he procured a supply of coal from the cliffs, with no other appliances than crowbars.

The initial attempt at systematic mining was made in 1720, when it was found necessary to procure a supply of fuel for the men who came from France to lay the foundations of the fortress of Louisburg. The pit openings then made, can be seen even at the present day, at Port Morien, Table Head, and other places. During the next 100 years, very little work was done, the coal mined being used almost exclusively by the garrison at Halifax. In 1820, however, when Cape Breton Island became part of the province of Nova Scotia, a considerable tonnage of coal was being mined. In 1827 all the mines were transferred to the company known as the General Mining Association by the London firm of goldsmiths (Rundle, Bridge, and Rundle) who had secured the mines and minerals concession for the entire island province of Cape Breton, from the Duke of York. The new owners immediately organized, opened out, and systematically operated, mines in Cape Breton, Pictou, and Cumberland counties. A formidable agitation had been started in the province for some years previous to 1858, claiming that the monopoly of the coal lands by the General Mining Association was seriously retarding the legitimate expansion of the coal trade; this agitation eventually resulted in the whole subject being referred to the privy council of Great Britain for equitable adjustment. In 1858, the Mining Association surrendered its claims to the provincial government of Nova Scotia. The government, in return, agreed to abolish the fixed rental of £3,000 per annum, together with the royalty on slack coal; to reduce the royalty on all screened coal up to 250,000 tons, to 4.80 pence per ton; and to reduce the royalty on all coal sold over 250,000 tons to 3.20 pence per ton. To the association, however, was reserved the exclusive right to 20 square miles in Cape Breton, and to 4 square miles each in Pictou, Joggins, and Springhill counties respectively. Under this new regime, mining developed to such magni-