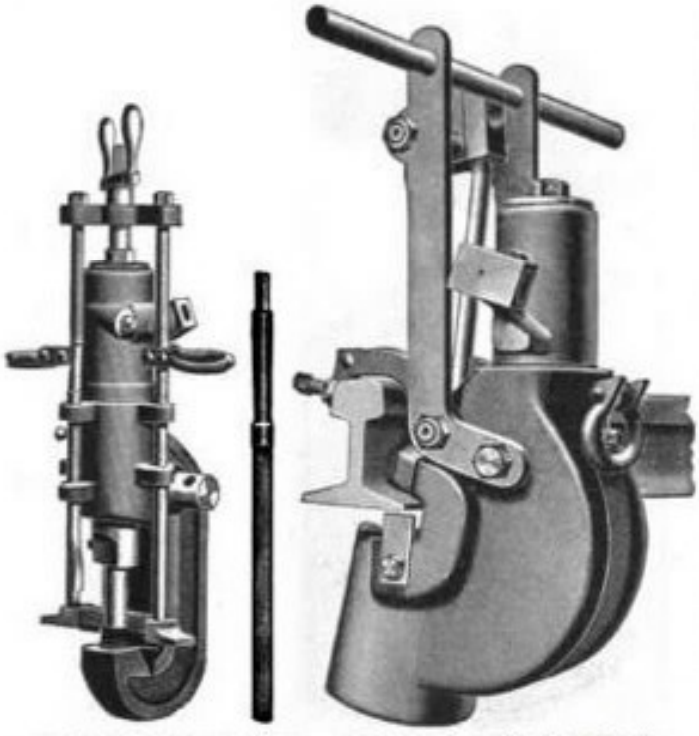
HYDRAULIC RAIL BONDING

In the construction of high-speed interurban roads requiring extra heavy rails, the joint plates frequently used rarely leave enough room under them to place bonds of sufficient capacity, and to meet the requirements of this situation the Electric Service Supplies Company, of Philadelphia and Chicago, has perfected a full line of hydraulic tools with which to install rail bonds underneath and through the base of the rail. In applying the bonds by the hydraulic method a tapered hole is punched in the base of the rail by the hydraulic punch illustrated herewith, which has an indicated power of 100 tons, the axis of the hole being at right angle to the top surface of the rail base, while the small end of the hole is underneath. The hole is clean, with bright, clear walls, and a crew of one mechanic and one helper can punch 200 holes per day sufficient for 100 bonds, assuming there is no material interference from traffic.

The form of bond used is the company's well-known "Protected" type L-3, with three crimps or tucks in the body portion to provide flexibility. The company estimates that this bond, when straight, should be made 1½ ins. longer than the final set length to provide the proper flexibility. The terminal heads of the bond are beveled to compensate for the tapered shape of the rail base and to give the compressing tool firm hold on the copper and a bearing underneath equivalent to a right angle with the axis of the compressing ram.

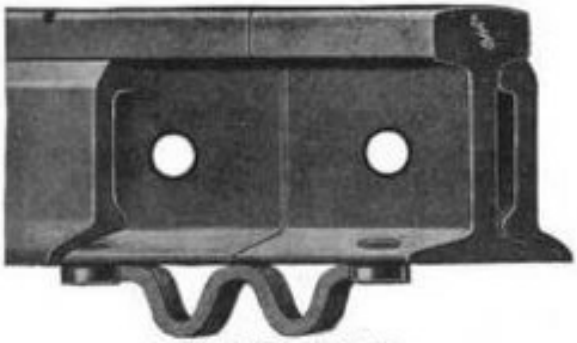


THE COMPRESSOR USED TO ATTACH THE BOND

HYDRAULIC PUNCH FOR PREPARING HOLES IN RAIL

An hydraulic compressor is used in attaching the bond. It has an indicated power of 35 tons, and is self aligning on the rail, so as to permit the compressing ram to operate in a line parallel with the axis of the bond terminal. The beveled shape of the bond head gives the tool a flat and solid grip on the terminal. The hole for the terminal being punched tapered with the small aperature underneath, the compressing ram forces the copper down against the taper until flush with the rail, producing a dry contact in the first instance, and absolutely sealing the connection so that it is moisture proof. This operation so densifies and kneads the copper into close relation with the sides of the hole that the union cannot be ruptured by any action in service. With this compressing tool, a crew of two men can apply 300 terminals, or 150 bonds per day, if there is no interference from traffic.

The company says that with this method of bonding, the union between rail and copper is so perfect, both when first made and after years of service, as to test practically nil in resistance. While this method of bonding was originally designed for extra heavy work, where space under the joint plate did not permit sufficient capacity, the company is now supplying these bonds in lighter capacities, and recommends the method as one of the most perfect for 4/0 bonding. If the bonds are painted black, as they should be, they are not conspicuous, and do not attract the copper thief, nor is



THE BOND APPLIED

there enough material in them to make removal worth while. The bond is sufficiently exposed to permit of easy inspection, and being made to lie close against the rail, ballasting material will not interfere with it. Nearly 1,000,000 bonds are in service that were installed by this method.

A LIGHT, TAPERED STEEL POLE

An extremely light and durable steel trolley pole, known as the Pittsburg standard trolley pole, is being manufactured by the Pittsburg Pole & Forge Company, of Verona, Pa., which manufactures steel poles and forgings of every description. The pole is tapered under a special process, and it is said not to be possible to break it at the acknowledged weak places in the ordinary pole. The Pittsburg pole is made of specially rolled tubing and will stand a test of from 75 to 125 lbs. The poles are made in half-foot sizes from 10 ft. to 16 ft., with outside diameter at the base of 1½ ins. and tip diameter of 1 in. The inside diameter at the tip in each instance is 49/64 in. The weights of the plain poles are as follows: 10 ft., 16 lbs.; 10 ft. 6 ins., 16¾ lbs.; 11 ft., 17½ lbs.; 11 ft. 6 ins., 18¾ lbs.; 12 ft., 19 lbs.; 12 ft. 6 ins., 19¾ lbs.; 13 ft., 20½ lbs.; 13 ft. 6 ins., 21¼ lbs.; 14 ft., 22 lbs.; 14 ft. 6 ins., 22¾ lbs. The weights of the reinforced poles are as follows: 10 ft., 18 lbs.; 10 ft. 6 ins., 18¾ lbs.; 11 ft. 19½ lbs.; 11 ft. 6 ins., 20¼ lbs.; 12 ft., 21 lbs.; 12 ft. 6 ins., 21¾ lbs.; 13 ft., 22½ lbs.; 13 ft. 6 ins., 23¼ lbs.; 14 ft., 24 lbs.; 14 ft. 6 ins., 24¾ lbs.

The right of way for the electric railway to be built between Temple and Waco by Dr. T. M. Barnes of Fort Worth and associates has been obtained, and the construction of the line is said to be assured. The road will run from Temple east to Marlin, a distance of about twenty-five miles, and from Marlin it will run northwest to Waco, a distance of about twenty miles.